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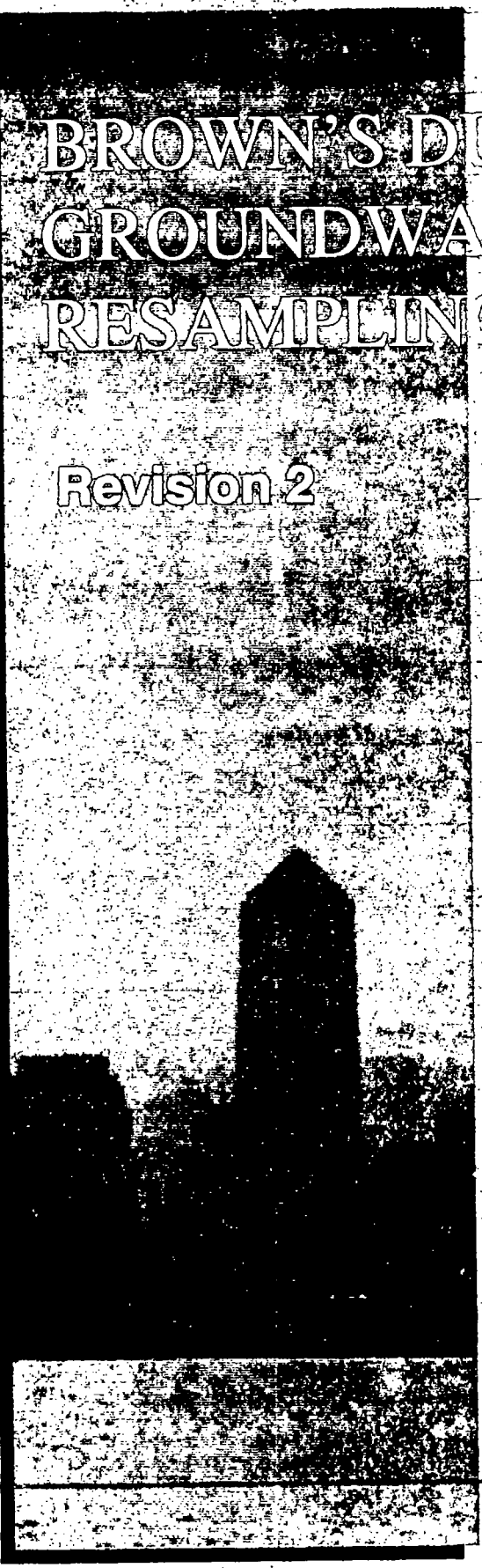
BROWN'S DUMP SITE GROUNDWATER RESAMPLING REPORT

Revision 2



CITY OF JACKSONVILLE, FLORIDA

CH2M HILL

November 2003

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BROWN'S DUMP SITE
GROUNDWATER RESAMPLING REPORT
REVISION 1

CH2M HILL

July 2003

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1.0 INTRODUCTION AND SCOPE

Section 1.0 Introduction and Scope

Monitoring wells were installed and sampled during the remedial investigation activities conducted from March through September 2000. Results from the remedial investigation showed that the groundwater is uncontaminated and not impacted by ash. EPA requested the City to resample the Brown's monitoring wells to confirm the initial results from the remedial investigation. CH2M HILL submitted the Brown's Dump Site Groundwater Monitoring Plan Revision No. 1 in May 2002, which was subsequently approved by EPA.

CH2M HILL submitted the Brown's Dump Site Groundwater Resampling Report, Revision 0 in March 2003. Revision 1 incorporates review comments received from EPA in June 2003.

Field work was conducted from September 3 through September 6, 2002. In accordance with the approved work plan , CH2M HILL sampled 13 of 15 existing shallow groundwater monitoring wells and one existing intermediate-depth groundwater monitoring well at Brown's Dump Site.

The monitoring wells were sampled in accordance with the EPA-approved Work Plan and Quality Assurance Project Plan for the Remedial Investigation/Feasibility Study for Brown's Dump Site (CH2M HILL, February 2000). The wells were purged using a peristaltic pump and low-flow sampling techniques until the turbidity was less than 10 NTUs. One set of depth to groundwater measurements were recorded at the time of groundwater sampling. The wells and analyses are summarized in Table 1, and shown on Figure 1.

Collected groundwater samples were sent overnight to STL Laboratories, Savannah, Georgia. STL analyzed the samples and submitted the results including an EPA Level III data package.

2.0 SAMPLE RESULTS

Section 2.0 Sample Results

2.1 Total Analyte List (TAL) Inorganic Analyses

The TAL inorganics analyses included 23 metals and cyanide. Analyses were performed on both unfiltered and field filtered groundwater samples. The results are summarized in Tables 2 and 3.

The only metal detected above its primary drinking water standard was cadmium in well BDMW005, which was present at 0.0053 mg/l, which is slightly higher than the primary drinking water standard of 0.005 mg/l. The field filtered groundwater sample from BDMW005 had a cadmium concentration of 0.0046 mg/l.

Several wells exceeded secondary drinking water standards and Groundwater Preliminary Remediation Goals (PRGs) for some parameters.

Aluminum exceeded its secondary drinking water standard and Groundwater PRG of 0.20 mg/l in wells BDMW001 and BDMW002; however, the dissolved aluminum concentration in both of these wells was below 0.20 mg/l.

Iron exceeded its secondary drinking water standard and Groundwater PRG of 0.3 mg/l for both total and dissolved iron in wells BDMW003, BDMW004, BDMW005, BDMW8, BDMW009, BDMW010, BDMW011, BDMW013, and BDMW014. One of the background monitoring wells, BKBDMW002 also exceeded 0.30 mg/l secondary standard.

Manganese exceeded its secondary drinking water standard and groundwater PRG of 0.05 mg/l for both total and dissolved manganese in wells BDMW003, BDMW004, BDMW005, BDMW008, BDMW009, BDMW011, BDMW012, BDMW013, and BDMW014.

Iron and manganese are naturally occurring in the shallow groundwater in the Jacksonville area.

2.2 Semivolatile Organic Compounds (SVOCs)

The SVOC analyses included 61 semivolatile organic compounds. The results are summarized in Tables 4 and 5. All groundwater samples were below primary drinking water standards and groundwater PRGs for all SVOC parameters. The only SVOCs detected were acenaphthalene and phenanthrene. Acenaphthalene was detected in well BDMW004 at a concentration of 0.51J ug/l, which is below the Groundwater PRG of 210 ug/l. Phenanthrene was also detected in well BDMW004 at a concentration of 0.63J ug/l, which is below the Groundwater PRG of 210 ug/l.

2.3 Pesticides and PCBs

The pesticides/PCBs analyses included 20 pesticides and 7 PCBs. The results are summarized in Tables 6 and 7. Alpha-BHC, beta-BHC, and dieldrin were detected above Groundwater PRGs in background monitoring well BKBDMW001. No pesticides were detected in any of the other monitoring wells. No PCBs were detected in any of the monitoring wells.

2.4 Volatile Organic Compounds (VOCs)

The VOCs analyses included 44 volatile organic compounds. The results are summarized in Tables 8 and 9. Tetrachloroethene was detected in well BDMW002 at a concentration of 17 ug/l, which is above the primary drinking water standard and Groundwater PRG of 3 ug/l. Acetone was detected in well BDMW014 at a concentration of 13J ug/l, which is below the Groundwater PRG of 700 ug/l. No other VOCs were detected in any of the groundwater monitoring wells.

Well BDMW002 was resampled for VOCs on November 19,2002. No VOCs were detected in the November 19 sample.

2.5 Dioxins/Furans

The dioxins/furans analyses included 7 dioxin congeners and 10 chlorinated furan congeners. The results are summarized in Table 10.

The congener results were converted to 2,3,7,8-TCDD Toxicity Equivalents (TEQs) in accordance with EPA approved methodology. The concentration of each congener is multiplied by its Toxic Equivalent Factor (TEF) to convert to 2,3,7,8-TCDD Toxicity Equivalent (TEQs), which are then added to calculate the total 2,3,7,8-TCDD TEQs. The TEFs used in this conversion are the TEFs developed by Van den Berg et al., 1998, which have been adopted by the World Health Organization. Congeners that are below detection limits are assumed to be zero.

All four groundwater samples analyzed had TEQs of zero. The primary drinking water standard and Groundwater PRG for dioxins/furans is 30 pg/l TEQ.

3.0 SUMMARY AND CONCLUSIONS

Section 3.0 Summary and Conclusions

3.1 Summary

The concentrations of volatile organic compounds (VOCs) for the most recent round of sampling met primary drinking water standards and Groundwater PRGs in all of the wells tested. VOCs also met primary drinking water standards and Groundwater PRGs in the wells tested for the 2000 sampling event.

The concentrations of semivolatile organic compounds (SVOCs) for the most recent round of sampling met primary drinking water standards and Groundwater PRGs for all of the monitoring wells and background wells. SVOCs also met primary drinking water standards and groundwater PRGs for the 2000 sampling event.

The concentrations of pesticides for the most recent round of sampling met primary drinking water standards and Groundwater PRGs in all of the monitoring wells. However, alpha-BHC, beta-BHC, and dieldrin were detected above Groundwater PRGs in background well BKBDMW001. This same background well had elevated pesticides above groundwater PRGs for the 2000 sampling event.

No PCBS were detected in any of the monitoring wells or background wells for the most recent round of sampling. PCBs were either not detected or below primary drinking water standards and Groundwater PRGs for the 2000 sampling event.

The concentrations of dioxins/furans for the most recent sampling event met groundwater primary drinking water standards and Groundwater PRGs in all of the monitoring wells tested. Dioxins/furans also met primary drinking water standards and Groundwater PRGs in the wells tested for the 2000 sampling event.

The only metal that exceeded a primary drinking water standard was cadmium at 0.0053 mg/l, which slightly exceeded the cadmium primary drinking water standard of 0.0050 mg/l. However, the dissolved cadmium concentration for this well was 0.0046B mg/l, which is below the primary drinking water standard. None of the wells sampled in 2000 exceeded any of the primary drinking water standards for metals. Several wells exceeded secondary drinking water standards and Groundwater PRGs for aluminum, iron, and manganese. Several of the wells sampled in 2000 also exceeded secondary drinking water standards and Groundwater PRGs for iron and manganese. However, the dissolve aluminum concentrations were all below secondary drinking water standards. Also, both iron and manganese are naturally occurring in shallow groundwater in the Jacksonville Area.

A comparison of September 2002 and the 2000 sampling results is summarized in Table 11.

3.2 Conclusions

The most recent September 20002 groundwater sampling results for Brown's Dump Site confirms the conclusions of the 2000 sampling event that groundwater at the Brown's Dump Site is not impacted by ash contamination.

TABLES

TABLE 1
MONITORING WELLS AND ANALYSES
BROWN'S DUMP SITE

Monitoring Well	TAL	TCL	VOC	Dioxin
BKBDMW001	X	X		X
BKBDMW002	X			
BDMW001	X	X		
BDMW002	X	X	X	X
BDMW003	X	X		
BDMW004	X	X		
BDMW005	X	X	X	X
BDMW008	X	X		
BDMW009	X	X		
BDMW010	X	X		
BDMW011	X	X		
BDMW012	X	X		
BDMW013	X	X		
BDMW014	X	X	X	X

TABLE 2
BROWN'S DUMP SITE
GROUNDWATER RESAMPLING TAL SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDEDING GWCTL	NUMBER OF SAMPLES
Aluminum (total)	mg/l	0.2	0.066	0.53	5	2	14
Aluminum (dissolved)	mg/l	0.2	0.012	0.12	14	0	14
Antimony (total)	mg/l	0.006	U	U	0	0	14
Antimony (dissolved)	mg/l	0.006	U	U	0	0	14
Arsenic (total)	mg/l	0.05	U	U	0	0	14
Arsenic (dissolved)	mg/l	0.05	U	U	0	0	14
Barium (total)	mg/l	2	0.021B	0.32	14	0	14
Barium (dissolved)	mg/l	2	0.020B	0.32	14	0	14
Beryllium (total)	mg/l	0.004	0.00029B	0.0015B	3	0	14
Beryllium (dissolved)	mg/l	0.004	0.00049B	0.0013B	2	0	14
Cadmium (total)	mg/l	0.005	0.0015B	0.0053	2	1	14
Cadmium (dissolved)	mg/l	0.005	0.0013B	0.0046B	2	0	14
Calcium (total)	mg/l	NA	2.3B	160	14	NA	14
Calcium (dissolved)	mg/l	NA	2.2B	160	14	NA	14
Chromium (total)	mg/l	0.1	U	0.0013B	1	0	14
Chromium (dissolved)	mg/l	0.1	U	U	0	0	14
Cobalt (total)	mg/l	0.22	0.0014B	0.0087B	4	0	14
Cobalt (dissolved)	mg/l	0.22	0.00077B	0.002B	5	0	14
Copper (total)	mg/l	1	0.002B	0.0056B	2	0	14
Copper (dissolved)	mg/l	1	0.00076B	0.0044B	5	0	14
Iron (total)	mg/l	0.3	0.23	31	14	10	14
Iron (dissolved)	mg/l	0.3	0.045B	29	14	10	14
Lead (total)	mg/l	0.015	0.00078B	0.00092B	2	0	14
Lead (dissolved)	mg/l	0.015	U	U	0	0	14
Magnesium (total)	mg/l	NA	1.2B	39	14	NA	14
Magnesium (dissolved)	mg/l	NA	1.2B	38	14	NA	14
Manganese (total)	mg/l	0.05	0.0036B	0.59	14	9	14
Manganese (dissolved)	mg/l	0.05	0.0033B	0.58	14	9	14
Nickel (total)	mg/l	0.1	0.0023B	0.029B	4	0	14
Nickel (dissolved)	mg/l	0.1	0.010B	0.029B	2	0	14
Potassium (total)	mg/l	NA	0.74B	59	14	NA	14
Potassium (dissolved)	mg/l	NA	0.74B	57	14	NA	14
Selenium (total)	mg/l	0.05	U	0.0083	1	0	14
Selenium (dissolved)	mg/l	0.05	U	0.0086	1	0	14
Silver (total)	mg/l	0.1	U	U	0	0	14
Silver (dissolved)	mg/l	0.1	U	U	0	0	14
Sodium (total)	mg/l	NA	1.6B	52E	14	NA	14
Sodium (dissolved)	mg/l	NA	1.6B	51	14	NA	14
Thallium (total)	mg/l	0.002	U	U	0	0	14
Thallium (dissolved)	mg/l	0.002	U	U	0	0	14
Vanadium (total)	mg/l	0.026	0.0014B	0.0016B	2	0	14
Vanadium (dissolved)	mg/l	0.026	U	0.0013B	1	0	14
Zinc (total)	mg/l	5	0.0032B	1.9	8	0	14
Zinc (dissolved)	mg/l	5	0.0032B	1.8	8	0	14
Mercury (total)	mg/l	0.002	U	U	0	0	14
Mercury (dissolved)	mg/l	0.002	U	U	0	0	14
Cyanide (total)	mg/l	0.2	U	U	0	0	14

U means that the constituent was analyzed for but not detected.
B means that the constituent was detected above the method detection limit but below the reporting limit.
NA means not available at the time of this report
PRGS are the primary and secondary drinking water standards, or the EPA Region 9 PRGs, when available. Otherwise the FDEP groundwater cleanup target levels are used.

TABLE 3
BROWN'S DUMP SITE
GROUNDWATER MONITORING TAL RESULTS

Analyte	Sample ID / Units	BDMW005R1	BDMW002R1	BDMW003R1	BDMW0001R1	BKBDMW002R1	BKBDMW001R1	BDMW009R1	BDMW004R1	BDMW014R1
Aluminum (total)	mg/l	0.066J	0.520J	0.018U	0.530J	0.150B	0.110B	0.060U	0.024U	0.043U
Aluminum (dissolved)	mg/l	0.014	0.12	0.012	0.12	0.048	0.075	0.039	0.022	0.022
Antimony (total)	mg/l	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U
Antimony (dissolved)	mg/l	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U
Arsenic (total)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
Arsenic (dissolved)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
Barium (total)	mg/l	0.056B	0.110B	0.180B	0.034B	0.021B	0.170B	0.064B	0.047B	0.031B
Barium (dissolved)	mg/l	0.060B	0.110B	0.180B	0.031B	0.020B	0.170B	0.062B	0.051B	0.029B
Beryllium (total)	mg/l	0.00027U	0.00029B	0.00027U	0.00027U	0.00027U	0.00049B	0.0015B	0.00027U	0.00027U
Beryllium (dissolved)	mg/l	0.00027U	0.00027U	0.00027U	0.00027U	0.00027U	0.00049B	0.0013B	0.00027U	0.00027U
Cadmium (total)	mg/l	0.0059	0.00035U	0.0015B	0.00035U	0.00035U	0.00035U	0.00035U	0.00035U	0.00035U
Cadmium (dissolved)	mg/l	0.0046B	0.00035U	0.0013B	0.00035U	0.00035U	0.00035U	0.00035U	0.00035U	0.00035U
Calcium (total)	mg/l	110	13	150	2.3B	6.8	3.5B	8.6	35	51
Calcium (dissolved)	mg/l	110	12	150	2.2B	6.8	3.5B	8.4	37	51
Chromium (total)	mg/l	0.00085U	0.0013B	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U
Chromium (dissolved)	mg/l	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U
Cobalt (total)	mg/l	0.00070U	0.00070U	0.00070U	0.00070U	0.00070U	0.002B	0.0087B	0.00070U	0.00070U
Cobalt (dissolved)	mg/l	0.00079B	0.0007U	0.00070U	0.00070U	0.00070U	0.002B	0.0082B	0.00070U	0.00070U
Copper (total)	mg/l	0.0056B	0.00045U	0.002B	0.00045U	0.00045U	0.00045U	0.00045U	0.00045U	0.00045U
Copper (dissolved)	mg/l	0.0044B	0.0013B	0.0021B	0.0017B	0.00045U	0.00045U	0.00045U	0.00045U	0.00045U
Iron (total)	mg/l	2	0.25	18	0.2	0.45	0.17	2.2	11	2.1
Iron (dissolved)	mg/l	1.3	0.048B	13	0.045B	0.33	0.14	2.2	6.6	1.3
Lead (total)	mg/l	0.00075U	0.00078B	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U	0.00092B
Lead (dissolved)	mg/l	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U
Magnesium (total)	mg/l	13	8.9	6.9	1.2B	1.9B	5.3	5.2	9.9	14
Magnesium (dissolved)	mg/l	13	8.5	6.6	1.2B	1.8B	5.3	5.1	10	14
Manganese (total)	mg/l	0.091	0.034	0.39	0.0036B	0.025	0.026	0.055	0.0443	0.12
Manganese (dissolved)	mg/l	0.12	0.032	0.38	0.0033B	0.025	0.026	0.062	0.065	0.074
Nickel (total)	mg/l	0.029B	0.0023U	0.0023U	0.0023U	0.0023U	0.0023U	0.010B	0.0023U	0.0023B
Nickel (dissolved)	mg/l	0.029B	0.0023U	0.0023U	0.0023U	0.0023U	0.0023U	0.010B	0.0023U	0.0023U
Potassium (total)	mg/l	15	13	5.4	2B	0.740B	2.5B	1.7B	1.6B	1.6B
Potassium (dissolved)	mg/l	16	13	5.3	2B	0.74B	2.4B	1.6B	2.3B	1.6B
Selenium (total)	mg/l	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U
Selenium (dissolved)	mg/l	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U	0.0021U
Silver (total)	mg/l	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U
Silver (dissolved)	mg/l	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U
Sodium (total)	mg/l	10	3.7B	12	1.6B	14E	20E	22B	15B	12B
Sodium (dissolved)	mg/l	11	3.7B	12	1.6B	14	20	22	16	12
Thallium (total)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
Thallium (dissolved)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
Vanadium (total)	mg/l	0.0011U	0.0011U	0.0011U	0.0016B	0.0011U	0.0011U	0.0011U	0.0011U	0.0011U
Vanadium (dissolved)	mg/l	0.0011U	0.0011U	0.0011U	0.0011U	0.0011U	0.0011U	0.0011U	0.0011U	0.0011U
Zinc (total)	mg/l	1.9	0.003U	0.11	0.0030U	0.0099B	0.0034B	0.061	0.0034B	0.003U
Zinc (dissolved)	mg/l	1.8	0.0032B	0.1	0.0036B	0.0096B	0.0041B	0.042	0.0043B	0.003U
Mercury (total)	mg/l	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U
Mercury (dissolved)	mg/l	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U
Cyanide (total)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U

Exceeds the groundwater PRG
U means that the constituent was analyzed for but not detected.
B means that the constituent was detected above the method detection limit but below the reporting limit.
E means that the reported value is estimated because of the presence of interference

TABLE 3 - Continued
BROWN'S DUMP SITE
GROUNDWATER MONITORING TAL RESULTS

Analyte	Sample ID / Units	BDMW008R1	BDMW013R1	BDMW012R1	BDMW011R1	BDMW010R1				
Aluminum (total)	mg/l	0.022U	0.073U	0.022U	0.024U	0.020U				
Aluminum (dissolved)	mg/l	0.022B	0.043B	0.023B	0.024B	0.021B				
Antimony (total)	mg/l	0.0025U	0.0025U	0.0025U	0.00025U	0.0025U				
Antimony (dissolved)	mg/l	0.0025U	0.0025U	0.0025U	0.0025U	0.0025U				
Arsenic (total)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U				
Arsenic (dissolved)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U				
Barium (total)	mg/l	0.080B	0.31	0.096B	0.32	0.026B				
Barium (dissolved)	mg/l	0.085B	0.3	0.096B	0.32	0.024B				
Beryllium (total)	mg/l	0.00027U	0.00027U	0.00027U	0.00027U	0.00027U				
Beryllium (dissolved)	mg/l	0.00027U	0.00027U	0.00027U	0.00027U	0.00027U				
Cadmium (total)	mg/l	0.00035U	0.00035U	0.00035U	0.00035U	0.00035U				
Cadmium (dissolved)	mg/l	0.00035U	0.00035U	0.00035U	0.00035U	0.00035U				
Calcium (total)	mg/l	56	160	35	83	64				
Calcium (dissolved)	mg/l	55	160	35	84	64				
Chromium (total)	mg/l	0.0085U	0.00085U	0.00085U	0.00085U	0.00085U				
Chromium (dissolved)	mg/l	0.00085U	0.00085U	0.00085U	0.00085U	0.00085U				
Cobalt (total)	mg/l	0.00070U	0.0015B	0.0014B	0.00070U	0.00070U				
Cobalt (dissolved)	mg/l	0.00070U	0.00077B	0.0015B	0.00070U	0.00070U				
Copper (total)	mg/l	0.00045U	0.00049U	0.00045U	0.00045U	0.00045U				
Copper (dissolved)	mg/l	0.00076B	0.00045U	0.00045U	0.00045U	0.00045U				
Iron (total)	mg/l	1	31	0.23	9.2	1.3				
Iron (dissolved)	mg/l	0.42	29	0.23	9.3	2.5				
Lead (total)	mg/l	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U				
Lead (dissolved)	mg/l	0.00075U	0.00075U	0.00075U	0.00075U	0.00075U				
Magnesium (total)	mg/l	17	39	9.9	14	16				
Magnesium (dissolved)	mg/l	17	38	10	15	16				
Manganese (total)	mg/l	0.12J	0.59	0.16	0.42	0.04				
Manganese (dissolved)	mg/l	0.16	0.55	0.16	0.42	0.039				
Nickel (total)	mg/l	0.0023U	0.0032B	0.0023U	0.0023U	0.0023U				
Nickel (dissolved)	mg/l	0.0023U	0.0023U	0.0023U	0.0023U	0.0023U				
Potassium (total)	mg/l	59	14	3.7B	7.7	2.6B				
Potassium (dissolved)	mg/l	57	14	3.8B	7.7	2.6B				
Selenium (total)	mg/l	0.0083	0.0021U	0.0021U	0.0021U	0.0021U				
Selenium (dissolved)	mg/l	0.0086	0.0021U	0.0021U	0.0021U	0.0021U				
Silver (total)	mg/l	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U				
Silver (dissolved)	mg/l	0.00095U	0.00095U	0.00095U	0.00095U	0.00095U				
Sodium (total)	mg/l	29J	52J	36J	18J	13J				
Sodium (dissolved)	mg/l	28	51	36	18	13				
Thallium (total)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U				
Thallium (dissolved)	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U				
Vanadium (total)	mg/l	0.0011U	0.0014B	0.0011U	0.0011U	0.0011U				
Vanadium (dissolved)	mg/l	0.0011U	0.0013B	0.0011U	0.0011U	0.0011U				
Zinc (total)	mg/l	0.003U	0.0056B	0.0032B	0.003U	0.003U				
Zinc (dissolved)	mg/l	0.003U	0.003U	0.0030U	0.003U	0.0030U				
Mercury (total)	mg/l	0.000072U	0.00072U	0.000072U	0.000072U	0.000072U				
Mercury (dissolved)	mg/l	0.000072U	0.000072U	0.000072U	0.000072U	0.000072U				
Cyanide	mg/l	0.010U	0.010U	0.010U	0.010U	0.010U				

Exceeds the groundwater PRG
U means that the constituent was analyzed for but not detected.
B means that the constituent was detected above the method detection limit but below the reporting limit.

TABLE 4
BROWN'S DUMP SITE
GROUNDWATER RESAMPLING SVOC SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDING GWCTL	NUMBER OF SAMPLES
Phenol	ug/l	10	10U	10U	0	0	13
bis(2-Chloroethyl)ether	ug/l	4	10U	10U	0	0	13
2-Chlorophenol	ug/l	35	10U	10U	0	0	13
2-Methylphenol	ug/l	182	10U	10U	0	0	13
2,2'-Oxybis(1-Chloropropane)	ug/l	NA	10U	10U	0	0	13
3-Methylphenol	ug/l	182	10U	10U	0	0	13
N-Nitroso-di-n-propylamine	ug/l	4	10U	10U	0	0	13
Hexachloroethane	ug/l	2.5	10U	10U	0	0	13
Nitrobenzene	ug/l	4	10U	10U	0	0	13
Isophorone	ug/l	37	10U	10U	0	0	13
2-Nitrophenol	ug/l	56	10U	10U	0	0	13
2,2-Dimethylphenol	ug/l	140	10U	10U	0	0	13
bis(2-Chloroethoxy)methane	ug/l	NA	10U	10U	0	0	13
2,4-Dinitrophenol	ug/l	14	10U	10U	0	0	13
Naphthalene	ug/l	0.62	10U	10U	0	0	13
4-Chloroaniline	ug/l	28	10U	10U	0	0	13
Hexachlorobutadiene	ug/l	0.5	10U	10U	0	0	13
4-Chloro-3-methylphenol	ug/l	63	10U	10U	0	0	13
2-Methylnaphthalene	ug/l	20	10U	10U	0	0	13
Hexachlorocyclopentadiene	ug/l	50	10U	10U	0	0	13
2,4,6-Trichlorophenol	ug/l	3.2	10U	10U	0	0	13
2,4,5-Trichlorophenol	ug/l	4	25U	25U	0	0	13
2-Chloronaphthalene	ug/l	560	10U	10U	0	0	13
2-Nitroanaline	ug/l	50	25U	25U	0	0	13
Dimethylphthalate	ug/l	70,000	10U	10U	0	0	13
Acenaphthalene	ug/l	210	10U	0.51J	1	0	13
3-Nitroanaline	ug/l	50	25U	25U	0	0	13
Acenaphthene	ug/l	20	10U	10U	0	0	13
2,4-Dinitrophenol	ug/l	14	25U	25U	0	0	13
4-Nitrophenol	ug/l	56	25U	25U	0	0	13
Dibenzofuran	ug/l	28	10U	10U	0	0	13
2,4-Dinitrotoluene	ug/l	0.1	10U	10U	0	0	13
2,6-Dinitrotoluene	ug/l	0.1	10U	10U	0	0	13
Diethylphthalate	ug/l	5,600	10U	10U	0	0	13
4-Chlorophenylphenyl ether	ug/l	NA	10U	10U	0	0	13
Fluorene	ug/l	24	10U	10U	0	0	13
4-Nitroanaline	ug/l	21	25U	25U	0	0	13
4,6-Dinitro-2-methylphenol	ug/l	NA	25U	25U	0	0	13
N-Nitrosodiphenyl ether	ug/l	NA	10U	10U	0	0	13
4-Bromophenylphenyl ether	ug/l	406	10U	10U	0	0	13
Hexachlorobenzene	ug/l	1	10U	10U	0	0	13
Pentachlorophenol	ug/l	1	25U	25U	0	0	13
Phenanthrene	ug/l	210	10U	0.63J	1	0	13
Anthracene	ug/l	183	10U	10U	0	0	13
Di-n-butylphthalate	ug/l	3,600,000	10U	10U	0	0	13
Fluoranthene	ug/l	146	10U	10U	0	0	13
Pyrene	ug/l	18.3	10U	10U	0	0	13
Butylbenzylphthalate	ug/l	7,300,000	10U	10U	0	0	13
3,3'-Dichlorobenzidine	ug/l	12	10U	10U	0	0	13
Benzo(a)anthracene	ug/l	0.09	10U	10U	0	0	13
bis(2-Ethylhexyl)phthalate	ug/l	6	10U	10U	0	0	13
Chrysene	ug/l	0.2	10U	10U	0	0	13
Di-n-octylphthalate	ug/l	140	10U	10U	0	0	13
Benzo(b)fluoranthene	ug/l	0.2	10U	10U	0	0	13
Benzo(k)fluoranthene	ug/l	0.2	10U	10U	0	0	13
Benzo(a)pyrene	ug/l	0.2	10U	10U	0	0	13
Indeno(1,2,3-cd)pyrene	ug/l	0.2	10U	10U	0	0	13
Dibenzo(a,h)anthracene	ug/l	0.2	10U	10U	0	0	13
Benzo(g,h,i)perylene	ug/l	210	10U	10U	0	0	13
Carbazole	ug/l	3.4	10U	10U	0	0	13
1-Methylnaphthalene	ug/l	20	10U	10U	0	0	13

U means that the compound was analyzed for but not detected.
J means that the compound was detected above the method detection limit but below the reporting limit.
NA means not available at the time of this report
PRGS are the primary drinking water standards, or the EPA Region 9 tap water PRGs, when available
Otherwise, the FDEP groundwater cleanup target levels are used.

TABLE 5
BROWN'S DUMP SITE
GROUNDWATER MONITORING SVOC RESULTS

	Sample ID	BDMW005R1	BDMW002R1	BDMW003R1	BDMW001R1	BKBDMW001R1	BDMW009R1	BDMW004R1	BDMW014R1
Analyte	Units								
Phenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
bis(2-Chloroethyl)ether	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2-Chlorophenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2-Methylphenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,2'-Oxybis(1-Chloropropane)	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
3-Methylphenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
N-Nitroso-di-n-propylamine	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Hexachloroethane	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Nitrobenzene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Isophorone	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2-Nitrophenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,4-Dimethylphenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
bis(2-Chloroethoxy)methane	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,4-Dinitrophenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Naphthalene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
4-Chloroaniline	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Hexachlorobutadiene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
4-Chloro-3-methylphenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2-Methylnaphthalene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Hexaxhlorocyclopentadiene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,4,6-Trichlorophenol	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,4,5-Trichlorophenol	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
2-Chloronaphthalene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2-Nitroanaline	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
Dimethylphthalate	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Acenaphthalene	ug/l	10U	10U	10U	10U	10U	10U	0.51J	10U
3-Nitroanaline	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
Acenaphthene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,4-Dinitrophenol	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
4-Nitrophenol	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
Dibenzofuran	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,4-Dinitrotoluene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
2,6-Dinitrotoluene	ug/l	10UJ	10UJ	10UJ	10UJ	10U	10U	10U	10U
Diethylphthalate	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
4-Chlorophenyphenyl ether	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Fluorene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
4-Nitroaniline	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
4,6-Dinitro-2-methylphenol	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
N-Nitrosodiphenyl ether	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
4-Bromophenylphenyl ether	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Hexachlorobenzene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Pentachlorophenol	ug/l	25U	25U	25U	25U	25U	25U	25U	25U
Phenanthrene	ug/l	10U	10U	10U	10U	10U	10U	0.63J	10U
Anthracene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Di-n-butylphthalate	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Fluoranthene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Pyrene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Butylbenzylphthalate	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
3,3'-Dichlorobenzidine	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Benzo(a)anthracene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
bis(2-Ethylhexyl)phthalate	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Chrysene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Di-n-octylphthalate	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Benzo(b)fluoranthene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Benzo(k)fluoranthene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Benzo(a)pyrene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Indeno(1,2,3-cd)pyrene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Dibenzo(a,h)anthracene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Benzo(g,h,I)perylene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
Carbazole	ug/l	10U	10U	10U	10U	10U	10U	10U	10U
1-Methylnaphthalene	ug/l	10U	10U	10U	10U	10U	10U	10U	10U

U means that the compound was analyzed for but not detected.
J means that the compound was detected above the method detection limit but below the reporting limit.

TABLE 5 - Continued
BROWN'S DUMP SITE
GROUNDWATER MONITORING SVOC RESULTS

	Sample ID	BDMW008R1	BDMW013R1	BDMW012R1	BDMW011R1	BDMW010R1				
Analyte	Units									
Phenol	ug/l	10U	10U	10U	10U	10U				
bis(2-Chloroethyl)ether	ug/l	10U	10U	10U	10U	10U				
2-Chlorophenol	ug/l	10U	10U	10U	10U	10U				
2-Methylphenol	ug/l	10U	10U	10U	10U	10U				
2,2'-Oxybis(1-Chloropropane)	ug/l	10U	10U	10U	10U	10U				
3-Methylphenol	ug/l	10U	10U	10U	10U	10U				
N-Nitroso-di-n-propylamine	ug/l	10U	10U	10U	10U	10U				
Hexachloroethane	ug/l	10U	10U	10U	10U	10U				
Nitrobenzene	ug/l	10U	10U	10U	10U	10U				
Isophorone	ug/l	10U	10U	10U	10U	10U				
2-Nitrophenol	ug/l	10U	10U	10U	10U	10U				
2,4-Dimethylphenol	ug/l	10U	10U	10U	10U	10U				
bis(2-Chloroethoxy)methane	ug/l	10U	10U	10U	10U	10U				
2,4-Dinitrophenol	ug/l	10U	10U	10U	10U	10U				
Naphthalene	ug/l	10U	10U	10U	10U	10U				
4-Chloroaniline	ug/l	10U	10U	10U	10U	10U				
Hexachlorobutadiene	ug/l	10U	10U	10U	10U	10U				
4-Chloro-3-methylphenol	ug/l	10U	10U	10U	10U	10U				
2-Methylnaphthalene	ug/l	10U	10U	10U	10U	10U				
Hexaxhlorocyclopentadiene	ug/l	10U	10U	10U	10U	10U				
2,4,6-Trichlorophenol	ug/l	10U	10U	10U	10U	10U				
2,4,5-Trichlorophenol	ug/l	25U	25U	25U	25U	25U				
2-Chloronaphthalene	ug/l	10U	10U	10U	10U	10U				
2-Nitroanaline	ug/l	25U	25U	25U	25U	25U				
Dimethylphthalate	ug/l	10U	10U	10U	10U	10U				
Acenaphthalene	ug/l	10U	10U	10U	10U	10U				
3-Nitroanaline	ug/l	25U	25U	25U	25U	25U				
Acenaphthene	ug/l	10U	10U	10U	10U	10U				
2,4-Dinitrophenol	ug/l	25U	25U	25U	25U	25U				
4-Nitrophenol	ug/l	25U	25U	25U	25U	25U				
Dibenzofuran	ug/l	10U	10U	10U	10U	10U				
2,4-Dinitrotoluene	ug/l	10U	10U	10U	10U	10U				
2,6-Dinitrotoluene	ug/l	10U	10U	10U	10U	10U				
Diethylphthalate	ug/l	10U	10U	10U	10U	10U				
4-Chlorophenyphenyl ether	ug/l	10U	10U	10U	10U	10U				
Fluorene	ug/l	10U	10U	10U	10U	10U				
4-Nitroaniline	ug/l	25U	25U	25U	25U	25U				
4,6-Dinitro-2-methylphenol	ug/l	25U	25U	25U	25U	25U				
N-Nitrosodiphenyl ether	ug/l	10U	10U	10U	10U	10U				
4-Bromophenylphenyl ether	ug/l	10U	10U	10U	10U	10U				
Hexachlorobenzene	ug/l	10U	10U	10U	10U	10U				
Pentachlorophenol	ug/l	25U	25U	25U	25U	25U				
Phenanthrene	ug/l	10U	10U	10U	10U	10U				
Anthracene	ug/l	10U	10U	10U	10U	10U				
Di-n-butylphthalate	ug/l	10U	10U	10U	10U	10U				
Fluoranthene	ug/l	10U	10U	10U	10U	10U				
Pyrene	ug/l	10U	10U	10U	10U	10U				
Butylbenzylphthalate	ug/l	10U	10U	10U	10U	10U				
3,3'-Dichlorobenzidine	ug/l	10U	10U	10U	10U	10U				
Benzo(a)anthracene	ug/l	10U	10U	10U	10U	10U				
bis(2-Ethylhexyl)phthalate	ug/l	10U	10U	10U	10U	10U				
Chrysene	ug/l	10U	10U	10U	10U	10U				
Di-n-octylphthalate	ug/l	10U	10U	10U	10U	10U				
Benzo(b)fluoranthene	ug/l	10U	10U	10U	10U	10U				
Benzo(k)fluoranthene	ug/l	10U	10U	10U	10U	10U				
Benzo(a)pyrene	ug/l	10U	10U	10U	10U	10U				
Indeno(1,2,3-cd)pyrene	ug/l	10U	10U	10U	10U	10U				
Dibenzo(a,h)anthracene	ug/l	10U	10U	10U	10U	10U				
Benzo(g,h,i)perylene	ug/l	10U	10U	10U	10U	10U				
Carbazole	ug/l	10U	10U	10U	10U	10U				
1-Methylnaphthalene	ug/l	10U	10U	10U	10U	10U				

U means that the compound was analyzed for but not detected.
J means that the compound was detected above the method detection limit but below the reporting limit.

TABLE 6
BROWN'S DUMP SITE
GROUNDWATER RESAMPLING PESTICIDES/PCBS SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDING GCTL	NUMBER OF SAMPLES	REMARKS
Alpha-BHC	ug/l	0.01	0.050U	0.011J	1	1	13	BKBDMW001R1
Beta-BHC	ug/l	0.04	0.050U	0.48	1	1	13	BKBDMW001R1
Delta-BHC	ug/l	NA	0.050U	0.050U	0	NA	13	
Heptachlor	ug/l	0.4	0.050U	0.050U	0	0	13	
Aldrin	ug/l	4	0.050U	0.050U	0	0	13	
Heptachlor Epoxide	ug/l	0.2	0.050U	0.050U	0	0	13	
Endosulfan	ug/l	21.9	0.050U	0.050U	0	0	13	
Dieldrin	ug/l	0.004	0.10U	0.045J	1	1	13	BKBDMW001R1
4,4'-DDE	ug/l	0.2	0.10U	0.10U	0	0	13	
Endrin	ug/l	2	0.10U	0.10U	0	0	13	
Endrin Aldehyde	ug/l	NA	0.10U	0.10U	0	0	13	
Endosulfan II	ug/l	21.9	0.10U	0.10U	0	0	13	
4,4'-DDD	ug/l	0.28	0.10U	0.10U	0	0	13	
Endosulfan Sulfate	ug/l	NA	0.10U	0.10U	0	0	13	
4,4'-DDT	ug/l	0.2	0.10U	0.10U	0	0	13	
Endrin Ketone	ug/l	NA	0.10U	0.10U	0	0	13	
Methoxychlor	ug/l	40	0.50U	0.50U	0	0	13	
Alpha-Chlordane	ug/l	2	0.050U	0.050U	0	0	13	
Gamma-Chlordane	ug/l	2	0.050U	0.050U	0	0	13	
Toxaphene	ug/l	3	5.0U	5.0U	0	0	13	
Arochlor-1016	ug/l	0.5	1.0U	1.0U	0	0	13	
Arochlor-1221	ug/l	0.5	2.0U	2.0U	0	0	13	
Arochlor-1232	ug/l	0.5	1.0U	1.0U	0	0	13	
Arochlor-1242	ug/l	0.5	1.0U	1.0U	0	0	13	
Arochlor-1248	ug/l	0.5	1.0U	1.0U	0	0	13	
Arochlor-1254	ug/l	0.5	1.0U	1.0U	0	0	13	
Arochlor-1260	ug/l	0.5	1.0U	1.0U	0	0	13	

U means that the compound was analyzed for but not detected.
J means that the compound was analyzed for but not detected.
PRGs are the primary drinking water standards, when available. Otherwise, the EPA Region 9 tap water PRGs are used.

TABLE 7
BROWN'S DUMP SITE
GROUNDWATER MONITORING PESTICIDES/PCBs RESULTS

	Sample ID	BDMW005R1	BDMW002R1	BDMW003R1	BDMW001R1	BKBDMW001R1	BDMW009R1	BDMW004R1	BDMW014R1
Analyte	Units								
Alpha-BHC	ug/l	0.050U	0.050U	0.050U	0.050U	0.011J	0.050U	0.053U	0.050U
Beta-BHC	ug/l	0.050U	0.050U	0.050U	0.050U	**0.48**	0.050U	0.053U	0.050U
Delta-BHC	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Heptachlor	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Aldrin	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Heptachlor Epoxide	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Endosulfan	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Dieldrin	ug/l	0.10U	0.10U	0.10U	0.10u	**0.045J**	0.10U	0.11U	0.10U
4,4'-DDE	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
Endrin	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
Endrin Aldehyde	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
Endosulfan II	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
4,4'-DDD	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
Endosulfan Sulfate	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
4,4'-DDT	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
Endrin Ketone	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U	0.11U	0.10U
Methoxychlor	ug/l	0.50U	0.50U	0.50U	0.50U	0.50U	0.50U	0.53U	0.50U
Alpha-Chlordane	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Gamma-Chlordane	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.053U	0.050U
Toxaphene	ug/l	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.3U	5.0U
Arochlor-1016	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1221	ug/l	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Arochlor-1232	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1242	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1248	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1254	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1260	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

Exceeds the Groundwater PRG
U means that the compound was analyzed for but not detected.
J means that the compound was detected above the method detection limit but below the reporting limit.

TABLE 7 - Continued
BROWN'S DUMP SITE
GROUNDWATER MONITORING PESTICIDES/PCBs RESULTS

Analyte	Sample ID / Units	BDMW008R1	BDMW013R1	BDMW012R1	BDMW011R1	BDMW010R1				
Alpha-BHC	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Beta-BHC	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Delta-BHC	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Heptachlor	ug/l	0.050U	0.050U	0.050U	0.050U	0.050UJ				
Aldrin	ug/l	0.050U	0.050U	0.050U	0.050U	0.050UJ				
Heptachlor Epoxide	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Endosulfan	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Dieldrin	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
4,4'-DDE	ug/l	0.10U	0.10U	0.10U	0.10U	0.10UJ				
Endrin	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
Endrin Aldehyde	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
Endosulfan II	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
4,4'-DDD	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
Endosulfan Sulfate	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
4,4'-DDT	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
Endrin Ketone	ug/l	0.10U	0.10U	0.10U	0.10U	0.10U				
Methoxychlor	ug/l	0.50U	0.50U	0.50U	0.50U	0.50U				
Alpha-Chlordane	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Gamma-Chlordane	ug/l	0.050U	0.050U	0.050U	0.050U	0.050U				
Toxaphene	ug/l	5.0U	5.0U	5.0U	5.0U	5.0U				
Arochlor-1016	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U				
Arochlor-1221	ug/l	2.0U	2.0U	2.0U	2.0U	2.0U				
Arochlor-1232	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U				
Arochlor-1242	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U				
Arochlor-1248	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U				
Arochlor-1254	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U				
Arochlor-1260	ug/l	1.0U	1.0U	1.0U	1.0U	1.0U				

U means that the compound was analyzed for but not detected.
J means that the compound was detected above the method detection limit but below the reporting limit.

TABLE 8
BROWN'S DUMP SITE
GROUNDWATER RESAMPLING VOC SUMMARY

Analyte	Units	PRG	MINIMUM DETECTED	MAXIMUM DETECTED	NUMBER DETECTED	NUMBER EXCEEDING GWCTL	NUMBER OF SAMPLES
Chloromethane	ug/l	2.7	10U	10U	0	0	3
Bromomethane	ug/l	9.8	10U	10U	0	0	3
Vinyl Chloride	ug/l	2	10U	10U	0	0	3
Chloroethane	ug/l	NA	10U	10U	0	0	3
Methylene Chloride	ug/l	5	10U	10U	0	0	3
Acetone	ug/l	700	10U	13	1	0	3
Carbon Disulfide	ug/l	700	10U	10U	0	0	3
1,1-Dichloroethene	ug/l	7	10U	10U	0	0	3
cis-1,2-Dichloroethene	ug/l	70	10U	10U	0	0	3
trans-1,2-Dichloroethene	ug/l	100	10U	10U	0	0	3
Chloroform	ug/l	80	10U	10U	0	0	3
1,2-Dichloroethane	ug/l	3	10U	10U	0	0	3
2-Butanone	ug/l	4,200	10U	10U	0	0	3
1,1,1-Trichloroethane	ug/l	200	10U	10U	0	0	3
Carbon Tetrachloride	ug/l	5	10U	10U	0	0	3
Bromodichloromethane	ug/l	80	10U	10U	0	0	3
1,1,2,2-Tetrachloroethane	ug/l	0.2	10U	10U	0	0	3
1,2-Dichloropropane	ug/l	5	10U	10U	0	0	3
trans-1,3-Dichloropropene	ug/l	0.2	10U	10U	0	0	3
Trichloroethene	ug/l	5	10U	10U	0	0	3
Dibromochloromethane	ug/l	80	10U	10U	0	0	3
1,1,2-Trichloroethane	ug/l	5	10U	10U	0	0	3
Benzene	ug/l	5	10U	10U	0	0	3
cis-1,3-Dichloropropene	ug/l	0.2	10U	10U	0	0	3
Bromoform	ug/l	80	10U	10U	0	0	3
2-Hexanone	ug/l	280	10U	10U	0	0	3
4-Methyl-2-Pentanone	ug/l	NA	10U	10U	0	0	3
Tetrachloroethene	ug/l	5	10U	10U	0	0	3
Toluene	ug/l	1,000	10U	10U	0	0	3
Chlorobenzene	ug/l	100	10U	10U	0	0	3
Ethylbenzene	ug/l	700	10U	10U	0	0	3
Styrene	ug/l	100	10U	10U	0	0	3
Xylenes	ug/l	10,000	10U	10U	0	0	3
Dichlorodifluoromethane	ug/l	1,400	10U	10U	0	0	3
Trichlorofluoromrethane	ug/l	2,100	10U	10U	0	0	3
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	500,000	10U	10U	0	0	3
Methyl t-butyl ether	ug/l	50	10U	10U	0	0	3
Isopropylbenzene	ug/l	NA	10U	10U	0	0	3
1,3-Dichlorobenzene	ug/l	600	10U	10U	0	0	3
1,4-Dichlorobenzene	ug/l	75	10U	10U	0	0	3
1,2-Dichlorobenzene	ug/l	600	10U	10U	0	0	3
1,2-Dibromo-3-chloropropane	ug/l	0.2	10U	10U	0	0	3
1,2,4-Trichlorobenzene	ug/l	70	10U	10U	0	0	3
1,2-Dibromoethane	ug/l	5	10U	10U	0	0	3

NA means not available at the time of this report
U means that the compound was analyzed for but not detected.
PRGs are the primary drinking water standards, or the EPA Region 9 tap water PRGs, when available.
Otherwise, the FDEP groundwater cleanup target levels are used.

TABLE 9
BROWN'S DUMP SITE
GROUNDWATER MONITORING VOC RESULTS

	Sample ID	BDMW005-R1	BDMW002R1	BDMW014R1
Analyte	Units			
Chloromethane	ug/l	10U	10U	10U
Bromomethane	ug/l	10U	10U	10U
Vinyl Chloride	ug/l	10U	10U	10U
Chloroethane	ug/l	10U	10U	10U
Methylene Chloride	ug/l	10U	10U	10U
Acetone	ug/l	10UJ	10UJ	13J
Carbon Disulfide	ug/l	10U	10U	10U
1,1-Dichloroethene	ug/l	10U	10U	10U
cis-1,2-Dichloroethene	ug/l	10U	10U	10U
trans-1,2-Dichloroethene	ug/l	10U	10U	10U
Chloroform	ug/l	10U	10U	10U
1,2-Dichloroethane	ug/l	10U	10U	10U
2-Butanone	ug/l	10U	10U	10U
1,1,1-Trichloroethane	ug/l	10U	10U	10U
Carbon Tetrachloride	ug/l	10U	10U	10U
Bromodichloromethane	ug/l	10U	10U	10U
1,1,2,2-Tetrachloroethane	ug/l	10UJ	10UJ	10U
1,1-Dichloropropane	ug/l	10U	10U	10U
trans-1,3-Dichloropropene	ug/l	10U	10U	10U
Trichloroethene	ug/l	10U	10U	10U
Dibromochloromethane	ug/l	10U	10U	10U
1,1,2-Trichloroethane	ug/l	10U	10U	10U
Benzene	ug/l	10U	10U	10U
cis-1,3-Dichloropropene	ug/l	10U	10U	10U
Bromoform	ug/l	10UJ	10UJ	10U
2-Hexanone	ug/l	10UJ	10UJ	10U
4-Methyl-2-Pentanone	ug/l	10U	10U	10U
Tetrachloroethene	ug/l	10U	17/(10U)	10U
Toluene	ug/l	10U	10U	10U
Chlorobenzene	ug/l	10U	10U	10U
Ethylbenzene	ug/l	10U	10U	10U
Styrene	ug/l	10U	10U	10U
Xylenes	ug/l	10U	10U	10U
Dichlorodifluoromethane	ug/l	10U	10U	10U
Trichlorofluoromethane	ug/l	10U	10U	10U
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	10U	10U	10U
Methy t-butyl ether	ug/l	10U	10U	10U
Isopropylbenzene	ug/l	10U	10U	10U
1,3-Dichlorobenzene	ug/l	10U	10U	10U
1,4-Dichlorobenzene	ug/l	10U	10U	10U
1,2-Dichlorobenzene	ug/l	10U	10U	10U
1,2-Dibromo-3-chloropropane	ug/l	10UJ	10UJ	10U
1,2,4-Trichlorobenzene	ug/l	10UJ	10UJ	10U
1,2-Dibromoethane	ug/l	10UJ	10UJ	10U

17/10U 17 ug/l PCE in sample collected on 09/03/2002
Non-detect (10U) in resample collected on 11/19/2002
U means that the compound was analyzed for but not detected.
J means that the compound was detected above the method detection limit but below the reporting limit

TABLE 10
BROWN'S DUMP SITE
GROUNDWATER MONITORING DIOXINS/FURANS RESULTS

			Sample ID	BKBDMW001R1		BDMW014R1		BDMW002 R1		BDMW005R1	
Analyte	**TEF**	**Units**	**PRG**	**Result**	**TEQ**	**Result**	**TEQ**	**Result**	**TEQ**	**Result**	**TEQ**
2,3,7,8-TCDD	1	pg/l		10U	0	10U	0	10U	0	10U	0
1,2,3,7,8-PeCDD	1	pg/l		10U	0	10U	0	10U	0	10U	0
1,2,3,4,7,8-HxCDD	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,6,7,8-HxCDD	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,7,8,9-HxCDD	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,4,6,7,8-HpCDD	0.01	pg/l		25U	0	25U	0	25U	0	25U	0
OCDD	0.0001	pg/l		240U	0	50U	0	110	0	50U	0
2,3,7,8-TCDF	0.1	pg/l		10U	0	10U	0	10U	0	10U	0
1,2,3,7,8-PeCDF	0.05	pg/l		10U	0	10U	0	10U	0	10U	0
2,3,4,7,8-PeCDF	0.5	pg/l		10U	0	10U	0	10U	0	10U	0
1,2,3,4,7,8-HxCDF	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,6,7,8-HxCDF	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
2,3,4,6,7,8-HxCDF	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,7,8,9-HxCDF	0.1	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,4,6,7,8-HpCDF	0.01	pg/l		25U	0	25U	0	25U	0	25U	0
1,2,3,4,7,8,9-HpCDF	0.01	pg/l		25U	0	25U	0	25U	0	25U	0
OCDF	0.0001	pg/l		50U	0	50U	0	50U	0	50U	0
Total TEQ Concentration		**pg/l**	**30**		**0**		**0**		**0**		**0**

U means that the constituent was analyzed for but not detected.

TABLE 11
BROWN'S DUMP SITE
COMPARISON OF 2000 AND 2002 GROUNDWATER DATA
ABOVE SCREENING CRITERIA

		Sample ID	BKBDMW001		BDMW005		BDMW001		BDMW010	
Parameter	Units	Screening Criteria	2000	2002	2000	2002	2000	2002	2000	2002
Alpha BHC	ug/l	0.0107	0.09J	0.011J	U	U	U	U	U	U
Beta BHC	ug/l	0.0374	0.47J	0.48	U	U	U	U	U	U
Heptachlor Epoxide	ug/l	0.2	U	U	U	U	U	U	0.39/(U)	U
p,p-DDE	ug/l	0.198	U	U	U	U	U	U	0.2/(U)	U
p,p-DDT	ug/l	0.198	U	U	U	U	U	U	0.33/(U)	U
PCB-1016	ug/l	0.5	U	U	U	U	3/(U)	U	1.5/(U)	U
Tetrachloroethene	ug/l	3	U	U	U	U	U	U	U	U
Cadmium	mg/l	0.005	U	U	U	0.0053/(0.0046B)	U	U	U	U

U means that the constituent was analyzed for but not detected
J (organic), B (inorganic) means that the constituent was detected above the method detection limit but below the reporting
(0.0046B) Dissolved cadmium concentration
0.39/(U) The well was resampled and the constituent was not detected.

FIGURES

- Preliminary Figure - Not For Publication or Distribution - Official Use Only -

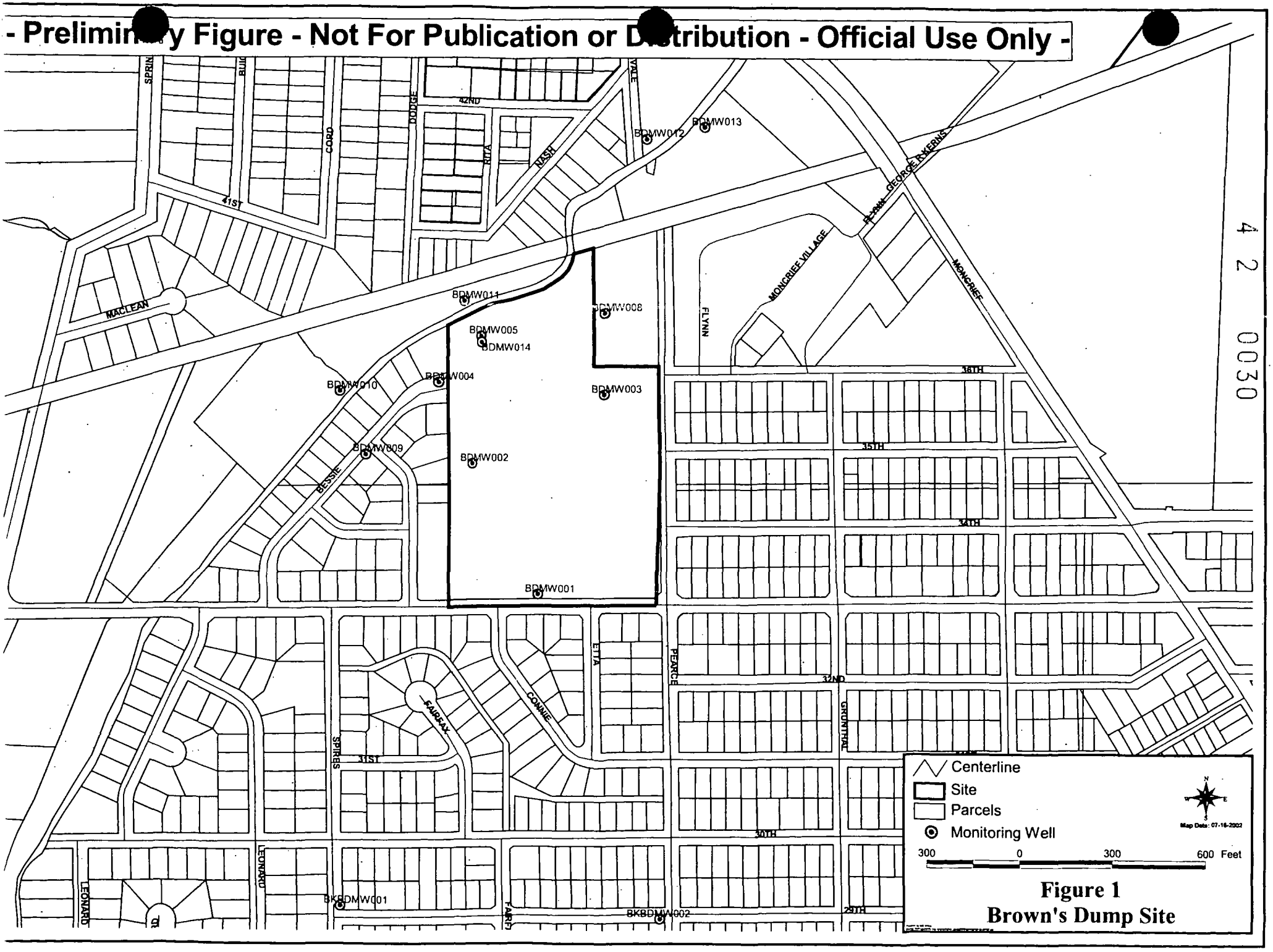

Figure 1
Brown's Dump Site

4 2 0030

APPENDICES

Appendix A

EPA - APPROVED GROUNDWATER SAMPLING PLAN

CH2M HILL
9428 Baymeadows Road
Suite 200
Jacksonville, FL 32256
Tel 904.733.9119
Fax 904.733.9570

CH2MHILL

4 2 0033

May 23, 2002

Mr. Wes Hardegree, Remedial Project Manager
Uited States Environmental Protection Agency, Region 4
Waste Management Division
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960

Subject: Groundwater Monitoring Plan Revision No. 1
Brown's Dump Site

Dear Mr. Hardegree:

On behalf of the City of Jacksonville,we are pleased to submit the Groundwater Monitoring Plan Revision No. 1 for sampling of the groundwater monitoring wells at Brown's Dump Site. Revision No. 1 incorporates EPA's review comments. We have also forwarded two copies to Mike Fitzsimmons of the FDEP Northeast District.

Please call if you have any questions or need additional information regarding this submittal.

Sincerely,

CH2M HILL

Norm Hatch, PE, PMP
Project Manager

JAX\Document2
c: Chris Pearson, COJ
Mike Fitzsimmons, FBEP

GROUNDWATER MONITORING PLAN
SAMPLING OF EXISTING GROUNDWATER MONITORING WELLS
BROWN'S DUMP SITE
Revision No. 1

Wells

Monitoring wells were installed and sampled during the remedial investigation activities conducted from March through September 2000. Results from the remedial investigation showed that the groundwater is uncontaminated and not impacted by ash. EPA has requested the City to resample the Brown's monitoring wells to confirm the initial results from the remedial investigation. CH2M HILL will sample 13 of 15 existing shallow groundwater monitoring wells and one existing intermediate-depth groundwater monitoring well at Brown's Dump Site. Wells BDMW005, 006 and 007 are within close promity to each other, thus only BDMW005 will be sampled.The initial well sampling was conducted in the spring of 2000. This round of sampling will be completed in the fall of 2002, thus capturing a full seasonal groundwater picture. Additional sampling will occur if any contaminants are detected above regulatory criteria or if a new chemical of potential concern is identified.

The monitoring wells will be sampled in accordance with the EPA-approved Work Plan and Quality Assurance Project Plan for the Remedial Investigation/Feasibility Study for Brown's Dump Site (CH2M HILL, February 2000). The wells will be purged prior to sampling until the turbidity is less than 10 NTUs. One set of depth to groundwater measurements will be recorded at the time of groundwater sampling. The wells and anayles are summarized in Table 1, and shown on Figure 1.

A residental well survey was conducted and is shown in Figure 2. There were no residential drinking water wells identified within a one half mile radius of the site.

Analyses

Collected groundwater samples will be sent overnight to STL Laboratories, Savannah, Georgia. STL will analyze the samples and submit the results including an EPA Level III data package. Table 2 includes a summary of analyses and methods including QC.

Data Validation

The sampling and analysis results will be validated by a project chemist using EPA's functional guidelines for data validation. Based on the data validation, the results will be appropriately flagged.

Database

The sampling and analytical data will be entered into the access database developed for the Brown's Dump Site remedial investigation.

Report

The sampling activities and results will be presented in a brief report that includes summary tables and figures. The summary report will include a comparison of groundwater results with health risk screening criteria and with previous results from the remedial investigation conducted in 2000.

Schedule

The schedule for the scope of services is summarized below:

Milestone/Deliverable	Weeks from Notice to Proceed
Complete Groundwater Sampling	2
All Laboratory Analyses Complete	8
Data Validation Complete	9
Report Complete	10

TABLE 1
MONITORING WELLS AND ANALYSES
BROWN'S DUMP SITE

Monitoring Well	TAL	TCL	VOC	Dioxin
BKBDMW001	X	X		X
BKBDMW002	X			
BDMW001	X	X		
BDMW002	X	X	X	X
BDMW003	X	X		
BDMW004	X	X		
BDMW005	X	X	X	X
BDMW008	X	X		
BDMW009	X	X		
BDMW010	X	X		
BDMW011	X	X		
BDMW012	X	X		
BDMW013	X	X		
BDMW014	X	X	X	X

TABLE 2
BROWN'S GROUNDWATER ANALYSIS SUMMARY

PARAMETER	METHOD	SAMPLES	DUPLICATES	MS/MSD	EQUIPMENT BLANK	TRIP BLANK	AMBIENT BLANK	TOTAL ANALYSES
TAL Metals, total	SW-846 6010/7470/7471	14	1	1	1		1	18
TAL Metals, dissolved	SW-846 6010/7470A/7471A	14	1	1	1'		1	18
TAL Cyanide	SW-846 9010B/9012A	14	1	1	1		1	18
TCL Semivolatiles	SW-846 8270C	13	1	1	1		1	17
TCL Pesticides/PCBs	SW-846 8081A/8082	13	1	1	1		1	17
TCL Volatiles	SW-846 8260B	3	1	1	1	1	1	8
Dioxins	SW-846 8290	4	1		1		1	7

Appendix B

DATA QUALITY EVALUATION

MEMORANDUM CH2MHILL

Browns Dump Site - Data Quality Evaluation – Supplemental Groundwater Sampling

TO: Norm Hatch/JAX
John Belyea/JAX

FROM: Herb Kelly/GNA

DATE: November 12, 2002

This technical memorandum (TM) presents the Data Quality Evaluation (DQE) completed for the Supplemental Groundwater Sampling event, as part of Phase II RI/FS Investigation at the Browns Dump Site in Jacksonville, Florida. These samples were collected between the dates of September 3 to September 5, 2002.

1.0 DQE Process

The purpose of the data quality evaluation process is to assess the effect of the overall analytical process on the usability of the data. The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance whether the laboratory analyzed the samples within the analytical method requirements. Evaluation of matrix interferences is more subtle and involves the analysis of several types of results, including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results.

Introduction

Before the analytical results were released by the laboratory, both the sample and QC data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reduced and the resulting data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the data package cover letter and case narrative.

All of the data packages were reviewed by the project chemists using the process outlined in two U.S. Environmental Protection Agency (EPA) guidance documents for evaluating data:

- *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA, July 1999); and
- *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA, October 2002).

The data validation and review process is independent of the laboratory's checks and focuses on the usability of the data to support the project data interpretation and decision-

making processes. Areas of review included holding time compliance, surrogate recoveries, matrix spiked sample results, method blank results, initial and continuing calibrations, laboratory control samples, internal standard response and retention times, instrument tuning criteria, laboratory duplicate sample results and field sample duplicate results. A data review worksheet was completed for each of these data packages.

In those instances where multiple analyses were performed, the analytical run with the lowest reporting limits was used, if the QC criteria were met for that analysis. If a sample was analyzed more than one time due to a target parameter concentration above the calibration range, the results for all parameters from the lowest dilution were used, except for those parameters exceeding the calibration range. The results for those parameters exceeding the calibration range in the initial analysis, were then reported from the diluted analysis. In those instances where multiple analyses were performed with QC criteria out in all analyses, the analytical run with the least number of exceptions or best possible QC was chosen for reporting purposes.

Sample results that were not within the acceptance limits (indicated by the query process) were appended with a qualifying flag, which consisted of a single- or double-letter code that indicated a possible problem with the data. The qualifying flags originated during the data review, validation, and database query processes. Although the qualifying flags are appended to data records during the database query process, they are included in the final data summary tables deliverable so that the data will not be used indiscriminately. These also include the secondary, or the two-digit "sub-qualifier" flags, that are entered into the comments field of the database. The secondary qualifiers provide the reasoning behind the assignment of a qualifier flag to the data. The secondary qualifiers are presented and defined in Table 1. The following primary flags were used to qualify the data:

- U Undetected. Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL) or instrument detection limit (IDL). Additionally, the "U" qualifier was used in those instances where a value was flagged as not detected due to blank contamination.
- UJ Detection limit estimated. Samples were analyzed for this analyte, but the results were qualified as not detected. The result is estimated.
- J Estimated. The analyte was present, but the reported value may not be accurate or precise.
- R Rejected. The data are unusable. (NOTE: Analyte/compound may or may not be present.)
- = Detected. Target parameter detected at the concentration reported.

Numerical sample results that were greater than the method detection limit but less than the Reporting limit (RL) were qualified with a "J" for estimated, as recommended by the EPA guidance documents.

Once the data validation review and processes were completed, the entire data set was reviewed for chemical compound frequencies of detection, dilution factors that might affect data usability, and patterns of target compounds distribution. The data set was also

evaluated to identify potential data limitations, uncertainties, or both in the analytical results. Table 2 lists the changes in data qualifiers due to the validation process.

2.0 Analysis Summary

The analytical methods used and the number of soil, sediment, surface water, and groundwater samples are summarized in Table 3. In general, samples were analyzed using the following analytical methods:

- Selected metals by SW-846 methods 6010 or the 7000 series
- Organochlorine Pesticides by SW-846 8081
- Polychlorinated Biphenyl Compounds by SW-846 8082
- GC/MS Volatile organic compounds (VOCs) by SW-846 method 8260
- GC/MS Semivolatile organic compounds (SVOCs) by SW-846 method 8270
- GC/MS Dioxins/Furans by method SW-846 8290
- Total and Amenable Cyanide by method SW-846 9012

The target parameter list for each analytical method and the required reporting limits are included in the project Quality Assurance Project Plan (QAPP).

Field QC samples were also collected as part of the field investigation and submitted to the laboratory for analysis, such as equipment rinsate blanks. Selected groundwater samples were filtered in the field and the samples submitted to the laboratory for analysis of the "dissolved" metals. Additional sample volumes were also collected for Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Field Duplicate (FD) samples and submitted with the primary soil samples.

2.1 Holding Times

Holding times for each of the analytical methods are presented in the QAPP. The holding times for each parameter were evaluated according to SW-846 methodology. All samples were analyzed within holding times.

2.2 Calibration

The majority of calibration criteria pertaining to all methods were met for these samples. Table 4 reflects data that were qualified due to initial or continuing calibration deficiencies. No results were rejected, and the affected results were qualified as estimated (J/UJ).

2.3 Method Accuracy

The Laboratory Control Sample (LCS) is a quality control sample utilized to monitor laboratory method performance. This sample does not posses a difficult matrix as it consists of a reagent blank, spiked with target parameters and processed through the entire method of preparation and analysis. The majority of LCS data, with only two exceptions, were within QC limits indicating the laboratory's analytical process was in control. The recovery

of 1,2,3,4,7,8-hexachlorodibenzo-p-dioxin in LCS G2I200000171C was 149 percent with an upper control limit of 135 percent. The recovery of Dichlorodifluoromethane in LCS JAD2262BS was 148 percent with an upper control limit of 126 percent. As both recoveries were slightly above QC limits and the target compounds were not detected in the associated samples, no flags were applied.

2.4 Potential Field Sampling and Laboratory Contamination

Several types of blank samples were used to monitor potential contamination introduced during field sampling, sample handling, shipping activities, as well as sample preparation and analysis in the laboratory.

- **Equipment Rinsate Blank (ERB)**: A sample of the target-free water used for the final rinse during the equipment decontamination process. This blank sample is collected by rinsing the sampling equipment after decontamination and is analyzed for the same analytical parameters as the corresponding samples. This blank is used to monitor potential contamination caused by incomplete equipment decontamination. One equipment rinsate blank sample was collected during this sampling event.

- **Field Blank or Ambient Blank (FB or AB)**: The field blank is an aliquot of the source water used for equipment decontamination. This blank monitors contamination that may be introduced from the water used for decontamination. One field blank should be collected from each source of decontamination water and analyzed for the same parameters as the associated samples. One ambient blank sample was collected during this sampling event.

- **Trip Blank (TB)**: A sample of ASTM Type II water that is prepared in the laboratory prior to the sampling event. The water is stored in VOC sample containers; it is not opened in the field, and travels back to the laboratory with the other samples for VOC analysis. This blank is used to monitor the potential for sample contamination during the sample container trip. One trip blank should be included in each sample cooler that contained samples for VOC analysis. One trip blank was submitted to the laboratory with these samples.

- **Laboratory Method Blank or Method Blank (MB)**: A laboratory method blank is ASTM Type II water that is treated as a sample in that it undergoes the same analytical process as the corresponding field samples. Method blanks are used to monitor laboratory performance and contamination introduced during the analytical procedure. One method blank was prepared and analyzed for every twenty samples or per analytical batch, whichever was more frequent.

- **Initial (ICB) and Continuing Calibration (CCB) Blanks** – Initial and Continuing calibration blanks for Metals were also evaluated for potential contamination.

According to the *EPA National Functional Guidelines*, concentrations of common organic contaminants detected in samples at less than ten times the concentration of the associated blanks can be attributed to field sampling and laboratory contamination rather than environmental site conditions. Common organic contaminants include acetone, methylene chloride, 2-butanone, and the phthalate compounds. For inorganic and non-common organic contaminants, five times the concentration detected in the associated blank samples

is used to qualify results as potential field and/or laboratory contamination rather than environmental contamination. The five or ten times rule was applied on a sample delivery group (SDG) basis, and not globally. Target parameters reported in the samples at levels less than the 5 or 10 times the concentration in the associated blanks were qualified as not detected.

2.5 Data Quality Effects from Potential Field Sampling and Laboratory Contamination

A comprehensive list of all detects in each blank is provided in Table 5A. Table 5B contrasts the frequency and magnitude of detection between normal field samples and blanks. Moreover, many results reported in blanks (especially metals) are well below any practical quantitation limit (PQL) and may represent Type I or II errors when associated with a matrix. A Type I (or alpha error) occurs when the value reported is dismissed as a biased high or false positive result, and a Type II (or beta error) is considered as a biased low or false negative result.

As stated above, the *EPA National Functional Guidelines*, concentrations of common organic contaminants detected in samples at less than ten times the concentration of the associated blanks can be attributed to field sampling and laboratory contamination rather than environmental site conditions.

When evaluating any significant amount of data such as this, there may be instances in which common laboratory contaminants are reported at low levels in samples, but are not detected in any associated blank samples. Phthalates are used as plasticizers, the most common of which is bis(2-ethylhexyl)phthalate (BEHP), and are often introduced into samples during handling. The field samplers often wear latex gloves during the field sampling process, and latex gloves are coated with plasticizers such as BEHP and di-n-butylphthalate to facilitate release of the gloves from the skin. Laboratory personnel also wear latex gloves during sample extraction and handling.

If a target parameter determined to be a common contaminant was reported in a field sample, and the concentration was below the level determined to be due to blank contamination, the following actions were taken:

- If the concentration was above the reporting limit, the numeric result was unchanged, but it was flagged "U", as undetected.
- If an inorganic parameter concentration was below the reporting limit, the numeric result was unchanged, but it was flagged "U", as undetected.
- If an organic parameter concentration was below the reporting limit, the numeric result was changed to the value of the reporting limit, and it was flagged "U", as undetected.

A short summary of the results presented in Table 5B are outlined below.

2.5.1 Dioxins

1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin was detected in a single laboratory method blank sample at a concentration of 85 pg/L. A single result of 240 pg/L in sample BKBDMW001R1 was qualified as not detected, due to potential blank contamination.

2.5.2 Metals

As detailed in Table 5B, a total of ten metals were reported in the ambient blank, equipment rinsate blank or laboratory method blank samples. Sample results less than five times the concentration found in the blanks associated with that SDG were attributed to field sampling or laboratory contamination and are not considered to be indicative of environmental contamination. Additionally, several values reported were at or near the method detection limit and could be Type I or Type II errors associated with instrument noise and the lack of precision and accuracy at this level. Sample results reflecting this condition that were qualified as not detected (26 metal results), are presented in Table 2.

The only sample results qualified as not detected (U/UJ) per element were: 26 aluminum results ranging from 18 ug/L to 150 ug/L and two copper results at 0.48 and 0.76 ug/L respectively.

Many of these metals are ubiquitous at low levels (aluminum, chromium, copper, iron, magnesium, sodium, and zinc). Chromium and iron are associated with alloys of steel. Aluminum and copper are the primary metals used in conduits, tubing, and some electrical wiring. Zinc is a common metal and is often used as a catalyst in many manufacturing processes. Elements associated with salts such as calcium, potassium and sodium are also common contaminants at low levels. Barium is not a common contaminants and was quantitated just above the MDL and could be a Type I error associated with instrument noise and matrix effects.

2.5.3 Volatile Organic Compounds (VOCs)

Two VOCs, 1,1,2-trichloro-1,2,2-trifluoroethane and methylene chloride, were detected in a single laboratory method blank and one equipment rinsate blank sample at concentrations of 2.1 and o.42 ug/L respectively. No sample results were qualified as not detected due to potential blank contamination.

2.6 Matrix Effects

2.6.1 Surrogate Spike Recovery

Surrogate spike compounds were added to every sample analyzed for the organic parameters including field and laboratory blanks as well as field environmental samples. Surrogate spikes consist of organic compounds which are similar to the method targets in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

Surrogate spike recoveries were used to monitor both laboratory performance and matrix interferences. Surrogate spike recoveries from field and laboratory blanks were used to evaluate laboratory performance because the blanks should represent an "ideal" sample matrix. Surrogate spike recoveries for field samples were used to evaluate the potential for matrix interferences. According to EPA *National Functional Guidelines,* data are not

qualified with respect to surrogate recoveries unless one or more volatile surrogates are out of specifications. Semivolatiles are not qualified unless two or more surrogates, within the same fraction (base/neutral or acid fraction), are out of specification.

Per SW-846, the laboratory should develop in-house performance criteria for surrogate recoveries. Once established, control limits and warning limits for surrogates should be updated at least semi-annually.

The reported surrogate spike recoveries, lower and upper and control limits for field and QC samples are presented in Table 6. Also presented in Table 6 is a qualification column that is populated with an asterisk if the recovery was outside of the control limits.

There were two field samples, BDMW005R1 and BDMW002R1, and three blank samples, BDWG001EB, BDWG002AB, and G2I200000171B, with surrogate recoveries for Dioxin/Furan analysis out of laboratory control limits. These samples are highlighted in Table 6. The Laboratory blank sample, (G2I200000171B) and field sample BDMW005R1 had two recoveries out, while the equipment blank and ambient blank samples (BDWG001EB and BDWG002AB), along with one field sample BDMW002R1, each had three recoveries slightly below QC limits. As all other surrogate recoveries were within acceptable control limits, the laboratory did not reanalyze the samples, nor were any results qualified.

There were no sample results that were qualified due to surrogate recoveries. These data indicate that the specific sample matrix did not greatly influence the overall analytical process or the final numerical sample result.

2.6.2 Matrix Spike/Matrix Spike Duplicate Precision and Accuracy

A matrix spike (MS) is an aliquot of sample spiked with a known concentration of target analyte(s). The sample is spiked with the solution containing target compounds prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix. The matrix spike duplicate (MSD) is an intra-laboratory-split sample spiked with identical concentrations of target analyte(s), and treated just as the matrix spike sample. Accuracy is evaluated from the spike recoveries, while precision is evaluated from comparison of the percent recoveries of the MS and MSD. The lower and upper and control limits, and the reported spike recoveries for field and QC samples are presented in Table 7.

Organic results are not qualified upon the results of MS/MSD results alone. Evaluation is in conjunction with surrogate, LCS, and internal standard (if applicable) results. Additionally, many MS/MSD samples require dilution and thus the spike compounds added are diluted out and unable to be evaluated.

Inorganic results may be qualified solely upon the results of the matrix spike/matrix spike duplicate precision and accuracy. Instances where the native sample concentration for a given element exceeds the spike added concentration by a factor of four or more are not evaluated as the spike added would be masked by the native concentration.

The target parameters that were qualified due to MS/MSD accuracy or precision results are summarized in Table 8.

The majority of the accuracy and precision results were well within established criteria, indicating that the specific sample matrix did not greatly influence the overall analytical process or the final numerical sample result.

2.6.3 Field Duplicate Sample Results

Duplicate field samples were collected and submitted to the laboratory for analysis. Both the native and duplicate samples were analyzed for the same parameters. Field duplicate analyses measure both field and laboratory precision and can also be affected by the homogeneity of the samples. Therefore the results may have more variability than laboratory duplicates, which measure only laboratory performance. Duplicate samples are not spiked; therefore, evaluation of duplicate sample results can only be performed on the comparison of positive sample results. Sample results are not qualified based on duplicate sample results; instead, the information is used to support the overall assessment of precision. According to the EPA *National Functional Guidelines*, there are no qualification criteria for field duplicate precision.

A control limit of ± 20 percent for the RPD was used for original and duplicate aqueous sample values greater than or equal to five times the RL. A control limit of ± 35 percent for the RPD was used for original and duplicate soil sample values greater than or equal to five times the RL. A control limit of ± the RL was used if either the sample for the duplicate value was less than five times the RL. In the cases where only one result is more than five times the RL level and the other is below, the ± RL criteria were applied.

Summarized in Table 9 are the native and field duplicate sample results greater than the reporting limit. All criteria were within control limits, therefore the field duplicate precision data indicate that matrix heterogeneity and sampling technique did not greatly influence the final numerical result.

2.7 Internal Standard Area Results

Internal standards are compounds added to the organic sample extracts prior to analysis, and their retention time and response are evaluated for method compliance. The internal standards are used in quantitation of the target parameters and monitor the instrument sensitivity and response for stability during each analysis. There were three results, 1,2,3,7,8-pentachlorodibenzofuran, 2,3,7,8-tetraachlorodibenzo-p-dioxin and 2,3,7,8-tetrachlorodibenzofuran for sample BDMW002R1, and two results, 2,3,7,8-tetraachlorodibenzo-p-dioxin and 2,3,7,8-tetrachlorodibenzofuran, associated with sample BDMW005R1 that were qualified due to low internal standard areas. The results for these samples were qualified "J", estimated for detected results and "UJ", estimated, for undetected results.

2.8 Metals Results near the Instrument Detection Limit

The samples were analyzed for a selected list of metals. The MDL is defined as the minimum concentration of an analyte that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero. Sample results at or near the MDL are not accurate or precise. This situation is often caused by instrument noise or low-level background shifts, rather than a true analyte signal. As concentrations approach a

"quantitation limit", the confidence in the values increase. If the reported result was above the MDL, but below the RL, the data was qualified as "J", as estimated.

2.9 Total and Dissolved Metals Results

As stated in Section 2.0, selected groundwater and surface water samples were filtered in the field, and the samples submitted to the laboratory for analysis of the "dissolved" metals. Table 10 presents a comparison of the "Total" versus "Dissolved" Metals results. Table 11 is a summary of those results in which the Dissolved concentration was greater than the Total concentration. There were a total of 265 results evaluated in which either the "Total" or "Dissolved" parameter was reported. There were 34 instances where the dissolved concentration was greater than the total concentration. Upon closer examination, the concentrations in the majority of these cases were very close, reflecting no substantial differences. The criteria used was if the Dissolved result was greater than the Total result by the value of the reporting limit, or greater than five percent for high concentrations. Two results for Total and two results for Dissolved Manganese in samples BDMW004R1 and BDMW008R1, were qualified "J" as estimated due to the difference between the Total and Dissolved results.

2.10 ICP Serial Dilution

The serial dilution of samples quantitated by ICP determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high, the serial dilution analysis must agree within a 10% difference of the original determination after correction for dilution.

Sodium was outside criteria for one serial dilution set for samples included in the Laboratory Report JAD226. Therefore all sodium results for the associated samples were qualified as estimated, "J" for detects and "UJ" for non-detects. A total of ten results were qualified.

2.11 Data Rejected during the Data Validation Process

Some samples are analyzed multiple times by the laboratory because of dilution requirements or because spike recoveries are outside the method target acceptance limits. The laboratory reports all analyses; therefore, it is possible that several sample results may exist for a specific sample and analysis. During the data validation, all the sample results are evaluated and the "best answer" for each sample and analysis is chosen, and the other results are rejected.

Additionally, selected sample results may be rejected for specific QC non-conformance issues. This data rejected for QC non-conformance issues is counted when the final project completeness is calculated.

There are no results that were rejected, for which there is not an associated "acceptable" result available.

2.12 PARCCs

2.12.1 Precision

Precision is defined as the agreement between duplicate results, and was estimated by comparing duplicate matrix spike recoveries, native duplicates, and field duplicate sample results. Other than the documented exceptions, the precision between native and field duplicate sample results were within acceptable criteria for the majority of the measurements, indicating that sample matrix did not significantly interfere with the overall analytical process.

2.12.2 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. For the organic analyses, each of the samples was spiked with a surrogate compound; and for organic and inorganic analyses a MS/MSD and Laboratory Control Sample (LCS) were spiked with a known reference material before preparation. Each of these approaches provides a measure of the matrix effects on the analytical accuracy. The LCS consists of a "controlled matrix", and results demonstrate accuracy of the method and the laboratory's to meet the method criteria. MS/MSD and native duplicate results establish precision and accuracy of the matrix. Accuracy can be estimated from the analytical data and was not measured directly. Spike recoveries were within the method acceptance limits for the majority of the measurements; therefore, there was no evidence of significant matrix interferences that would affect the usability of the data.

2.12.3 Representativeness

This criterion is a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the efficacy of the sampling plan design. Representativeness was demonstrated by providing full descriptions in the project-scoping documents of the sampling techniques and the rationale used for selecting sampling locations.

2.12.4 Completeness

Completeness is defined as the percentage of measurements that are judged to be valid compared to the total number of measurements made. A goal of 90 percent usable data was established in the project-scoping document. All of rejected data were associated with re-runs and dilutions (you can only have a single valid result per sample per target); therefore, greater than 90 percent of the data was determined to be valid, and the completeness goal has been met.

2.12.5 Comparability

Comparability is another qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix type, and analytical methods. Comparability is limited by the other PARCC parameters because data sets can be compared with confidence only when precision and accuracy are known.

3.0 Summary and Conclusions

Conclusions of the data quality evaluation process include the following:

- The laboratory analyzed the samples according to the EPA methods stated in the work plan as demonstrated by the deliverable summaries and analytical run sequences.
- Concentrations of blank contaminants were applied according to EPA *National Functional Guidelines* in order to reflect sample values that may be attributed to field or laboratory contamination.
- Sample results for metals above the MDL but less than five times the MDL may be attributed to instrument noise and/or low level contamination. Therefore, results at these low concentration levels may be described as potential false positives and may not be due to site-related activities.
- Sample results for target organic compounds above the MDL but less than the CRQL should be considered as uncertain but indicative of the presence of that compound at an estimated concentration.
- The low number of surrogate spike recoveries, MS/MSD, and field duplicate results, out of acceptance limits, indicate that the sample matrix did not significantly interfere with the overall analytical process.

The project objectives or PARCCs were met, and the data can be used in the project decision-making process as qualified by the data quality evaluation process.

Matrix	Parameter Class	Sample Type	Analytical Method	Preparation Method	Leach Method	Parameter	Number Analyzed	Number Detected
WG	DIOXIN	N	SW8290	METHOD	NONE	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	4	1
WQ	DIOXIN	LB	SW8290	METHOD	NONE	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	2	1
WQ	DissMetal	LB	SW6010	SW3010	FLDFLT	Aluminum	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Barium	14	14
WG	DissMetal	FD	SW6010	SW3010	FLDFLT	Barium	1	1
WQ	DissMetal	EB	SW6010	SW3010	FLDFLT	Barium	1	1
WQ	DissMetal	AB	SW6010	SW3010	FLDFLT	Barium	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Calcium	14	14
WG	DissMetal	FD	SW6010	SW3010	FLDFLT	Calcium	1	1
WQ	DissMetal	EB	SW6010	SW3010	FLDFLT	Calcium	1	1
WQ	DissMetal	AB	SW6010	SW3010	FLDFLT	Calcium	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Copper	14	4
WQ	DissMetal	EB	SW6010	SW3010	FLDFLT	Copper	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Magnesium	14	14
WG	DissMetal	FD	SW6010	SW3010	FLDFLT	Magnesium	1	1
WQ	DissMetal	EB	SW6010	SW3010	FLDFLT	Magnesium	1	1
WQ	DissMetal	AB	SW6010	SW3010	FLDFLT	Magnesium	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Potassium	14	14
WG	DissMetal	FD	SW6010	SW3010	FLDFLT	Potassium	1	1
WQ	DissMetal	EB	SW6010	SW3010	FLDFLT	Potassium	1	1
WQ	DissMetal	AB	SW6010	SW3010	FLDFLT	Potassium	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Sodium	14	14
WG	DissMetal	FD	SW6010	SW3010	FLDFLT	Sodium	1	1
WQ	DissMetal	EB	SW6010	SW3010	FLDFLT	Sodium	1	1

WQ	DissMetal	AB	SW6010	SW3010	FLDFLT	Sodium	1	1
WG	DissMetal	N	SW6010	SW3010	FLDFLT	Zinc	14	8
WQ	DissMetal	AB	SW6010	SW3005	FLDFLT	Zinc	1	1
WG	METALS	N	SW6010	SW3010	NONE	Aluminum	14	2
WQ	METALS	LB	SW6010	SW3010	NONE	Aluminum	2	1
WQ	METALS	EB	SW6010	SW3010	NONE	Aluminum	1	1
WG	METALS	N	SW6010	SW3010	NONE	Barium	14	14
WG	METALS	FD	SW6010	SW3010	NONE	Barium	1	1
WQ	METALS	EB	SW6010	SW3010	NONE	Barium	1	1
WQ	METALS	AB	SW6010	SW3010	NONE	Barium	1	1
WG	METALS	N	SW6010	SW3010	NONE	Calcium	14	14
WG	METALS	FD	SW6010	SW3010	NONE	Calcium	1	1
WQ	METALS	EB	SW6010	SW3010	NONE	Calcium	1	1
WQ	METALS	AB	SW6010	SW3010	NONE	Calcium	1	1
WG	METALS	N	SW6010	SW3010	NONE	Chromium, total	14	1
WQ	METALS	EB	SW6010	SW3010	NONE	Chromium, total	1	1
WG	METALS	N	SW6010	SW3010	NONE	Iron	14	14
WG	METALS	FD	SW6010	SW3010	NONE	Iron	1	1
WQ	METALS	EB	SW6010	SW3010	NONE	Iron	1	1
WQ	METALS	AB	SW6010	SW3010	NONE	Iron	1	1
WG	METALS	N	SW6010	SW3010	NONE	Magnesium	14	14
WG	METALS	FD	SW6010	SW3010	NONE	Magnesium	1	1
WQ	METALS	EB	SW6010	SW3010	NONE	Magnesium	1	1
WQ	METALS	AB	SW6010	SW3010	NONE	Magnesium	1	1
WG	METALS	N	SW6010	SW3010	NONE	Potassium	14	14

WG	METALS	FD	SW6010	SW3010	NONE	Potassium	1	1
WQ	METALS	EB	SW6010	SW3010	NONE	Potassium	1	1
WQ	METALS	AB	SW6010	SW3010	NONE	Potassium	1	1
WG	METALS	N	SW6010	SW3010	NONE	Sodium	14	14
WG	METALS	FD	SW6010	SW3010	NONE	Sodium	1	1
WQ	METALS	EB	SW6010	SW3010	NONE	Sodium	1	1
WQ	METALS	AB	SW6010	SW3010	NONE	Sodium	1	1
WQ	VOC	LB	SW8260	SW5030	NONE	1,1,2-trichloro-1,2,2-trifluoroethane	1	1
WQ	VOC	EB	SW8260	SW5030	NONE	Methylene chloride	1	1

Minimum Detected	Maximum Detected	Minimum Detection Limit	Maximum Detection Limit	Minimum Reporting Limit	Maximum Reporting Limit	Units
110	110	25	25	50	50	pg/L
85	85	25	25	50	50	pg/L
18	18	14	14	200	200	ug/L
20	320	0.6	0.6	200	200	ug/L
380	380	0.6	0.6	200	200	ug/L
4	4	0.6	0.6	200	200	ug/L
3.8	3.8	0.6	0.6	200	200	ug/L
2200	160000	22	22	5000	5000	ug/L
94000	94000	22	22	5000	5000	ug/L
26000	26000	22	22	5000	5000	ug/L
26000	26000	22	22	5000	5000	ug/L
1.3	4.4	0.45	0.45	12	12	ug/L
0.76	0.76	0.45	0.45	12	12	ug/L
1200	38000	55	55	5000	5000	ug/L
15000	15000	55	55	5000	5000	ug/L
4200	4200	55	55	5000	5000	ug/L
4200	4200	55	55	5000	5000	ug/L
740	57000	95	95	5000	5000	ug/L
8400	8400	95	95	5000	5000	ug/L
1200	1200	95	95	5000	5000	ug/L
1100	1100	95	95	5000	5000	ug/L
1600	51000	160	160	5000	5000	ug/L
19000	19000	160	160	5000	5000	ug/L
3200	3200	160	160	5000	5000	ug/L

3200	3200	160	160	5000	5000	ug/L
3.2	1800	3	3	20	20	ug/L
3.2	3.2	3	3	10	10	ug/L
520	530	14	14	200	200	ug/L
27	27	14	14	200	200	ug/L
14	14	14	14	200	200	ug/L
21	320	0.6	0.6	200	200	ug/L
370	370	0.6	0.6	200	200	ug/L
3.8	3.8	0.6	0.6	200	200	ug/L
3.8	3.8	0.6	0.6	200	200	ug/L
2300	160000	22	22	5000	5000	ug/L
91000	91000	22	22	5000	5000	ug/L
26000	26000	22	22	5000	5000	ug/L
26000	26000	22	22	5000	5000	ug/L
1.3	1.3	0.85	0.85	5	10	ug/L
1.1	1.1	0.85	0.85	5	5	ug/L
170	31000	9	9	50	100	ug/L
11000	11000	9	9	100	100	ug/L
11	11	9	9	50	50	ug/L
9.5	9.5	9	9	50	50	ug/L
1200	39000	55	55	5000	5000	ug/L
15000	15000	55	55	5000	5000	ug/L
4200	4200	55	55	5000	5000	ug/L
4200	4200	55	55	5000	5000	ug/L
740	59000	95	95	5000	5000	ug/L

8100	8100	95	95	5000	5000	ug/L
1100	1100	95	95	5000	5000	ug/L
1100	1100	95	95	5000	5000	ug/L
1600	52000	160	160	5000	5000	ug/L
18000	18000	160	160	5000	5000	ug/L
3200	3200	160	160	5000	5000	ug/L
3200	3200	160	160	5000	5000	ug/L
2.1	2.1	0.26	0.26	10	10	ug/L
0.42	0.42	0.31	0.31	10	10	ug/L

Table 1 - Secondary Qualifiers

Code	Definition
TN	Tune
BS	Blank Spike/LCS
BD	Blank Spike/Blank Spike Duplicate Precision
IS	Internal Standard
MS	Matrix Spike and/or Matrix Spike Duplicate Recovery
MD	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source
SD	Serial Dilution
SS	Spiked Surrogate
LR	Analyte present above linear (or calibration) range
IC	Initial Calibration
CC	Continuing Calibration Verification
PD	Pesticide Degradation
LD	Lab Duplicate
2C	Second Column (Confirmation)
HT	Holding Time
PS	Post Spike
BL	Blank
RE	Re-extraction
DL	Dilution
IB	In Between
FD	Field Duplicate
OT	Other

Table 2 - Changed Qualifiers

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Sample Type	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Final Result	Final Qual	Detection Limit	Reporting Limit	Units	Validation Notes
WG	DIOXIN	JAD225A	G2I050204002	BDMW002R1	N	SW8290	METHOD	NONE	1,2,3,7,8-pentachlorodibenzofuran	10	U	10	UJ	5.6	10	pg/L	IS
WG	DIOXIN	JAD225A	G2I050204002	BDMW002R1	N	SW8290	METHOD	NONE	2,3,7,8-tetrachlorodibenzo-p-dioxin	10	U	10	UJ	3.2	10	pg/L	IS
WG	DIOXIN	JAD225A	G2I050204002	BDMW002R1	N	SW8290	METHOD	NONE	2,3,7,8-tetrachlorodibenzofuran	10	U	10	UJ	2.1	10	pg/L	IS
WG	DIOXIN	JAD225A	G2I050204001	BDMW005R1	N	SW8290	METHOD	NONE	2,3,7,8-tetrachlorodibenzo-p-dioxin	10	U	10	UJ	3.2	10	pg/L	IS
WG	DIOXIN	JAD225A	G2I050204001	BDMW005R1	N	SW8290	METHOD	NONE	2,3,7,8-tetrachlorodibenzofuran	10	U	10	UJ	2.1	10	pg/L	IS
WG	DIOXIN	JAD226A	G2I060200001	BKBDMW001R1	N	SW8290	METHOD	NONE	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	240	= B	240	U	25	50	pg/L	BL
WG	DissMetal	JAD225	S246329*6	BDMW001R1	N	SW6010	SW3010	FLDFLT	Aluminum	120	BN	120	U	14	200	ug/L	BL
WG	DissMetal	JAD225	S246329*2	BDMW002R1	N	SW6010	SW3010	FLDFLT	Aluminum	120	BN	120	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246377*3	BDMW004R1	N	SW6010	SW3010	FLDFLT	Aluminum	22	B	22	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246377*3	BDMW004R1	N	SW6010	SW3010	FLDFLT	Manganese	65	=	65	J	0.7	15	ug/L	TD
WG	DissMetal	JAD226	S246400*6	BDMW008R1	N	SW6010	SW3010	FLDFLT	Manganese	160	=	160	J	0.7	15	ug/L	TD
WG	DissMetal	JAD226	S246400*6	BDMW008R1	N	SW6010	SW3010	FLDFLT	Aluminum	22	B	22	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246400*6	BDMW008R1	N	SW6010	SW3010	FLDFLT	Copper	0.76	B	0.76	U	0.45	25	ug/L	BL
WG	DissMetal	JAD226	S246377*2	BDMW009R1	N	SW6010	SW3010	FLDFLT	Aluminum	39	B	39	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246400*5	BDMW010R1	N	SW6010	SW3010	FLDFLT	Aluminum	21	B	21	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246400*4	BDMW011R1	N	SW6010	SW3010	FLDFLT	Aluminum	24	B	24	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246400*3	BDMW011R1FD	FD	SW6010	SW3010	FLDFLT	Aluminum	26	B	26	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246400*2	BDMW012R1	N	SW6010	SW3010	FLDFLT	Aluminum	23	B	23	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246400*1	BDMW013R1	N	SW6010	SW3010	FLDFLT	Aluminum	43	B	43	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246377*4	BDMW014R1	N	SW6010	SW3010	FLDFLT	Aluminum	22	B	22	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246377*1	BKBDMW001R1	N	SW6010	SW3010	FLDFLT	Aluminum	75	B	75	U	14	200	ug/L	BL
WG	DissMetal	JAD226	S246377*5	BKBDMW002R1	N	SW6010	SW3010	FLDFLT	Aluminum	48	B	48	U	14	200	ug/L	BL
WG	METALS	JAD225	S246329*6	BDMW001R1	N	SW6010	SW3010	NONE	Aluminum	530	N	530	J	14	200	ug/L	MS
WG	METALS	JAD225	S246329*2	BDMW002R1	N	SW6010	SW3010	NONE	Aluminum	520	N	520	J	14	200	ug/L	MS
WG	METALS	JAD225	S246329*5	BDMW003R1	N	SW6010	SW3010	NONE	Aluminum	18	BN	18	U	14	200	ug/L	BL
WG	METALS	JAD225	S246329*1	BDMW005R1	N	SW6010	SW3010	NONE	Aluminum	66	BN	66	U	14	200	ug/L	BL
WG	METALS	JAD226	S246377*3	BDMW004R1	N	SW6010	SW3010	NONE	Sodium	15000	E	15000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246377*3	BDMW004R1	N	SW6010	SW3010	NONE	Manganese	44	=	44	J	0.7	15	ug/L	TD
WG	METALS	JAD226	S246377*3	BDMW004R1	N	SW6010	SW3010	NONE	Aluminum	24	B	24	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*6	BDMW008R1	N	SW6010	SW3010	NONE	Sodium	29000	E	29000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246400*6	BDMW008R1	N	SW6010	SW3010	NONE	Aluminum	22	B	22	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*6	BDMW008R1	N	SW6010	SW3010	NONE	Manganese	120	=	120	J	0.7	15	ug/L	TD
WG	METALS	JAD226	S246377*2	BDMW009R1	N	SW6010	SW3010	NONE	Sodium	22000	E	22000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246377*2	BDMW009R1	N	SW6010	SW3010	NONE	Aluminum	60	B	60	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*5	BDMW010R1	N	SW6010	SW3010	NONE	Sodium	13000	E	13000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246400*5	BDMW010R1	N	SW6010	SW3010	NONE	Aluminum	20	B	20	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*4	BDMW011R1	N	SW6010	SW3010	NONE	Aluminum	24	B	24	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*4	BDMW011R1	N	SW6010	SW3010	NONE	Sodium	18000	E	18000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246400*3	BDMW011R1FD	FD	SW6010	SW3010	NONE	Aluminum	22	B	22	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*3	BDMW011R1FD	FD	SW6010	SW3010	NONE	Sodium	18000	E	18000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246400*2	BDMW012R1	N	SW6010	SW3010	NONE	Aluminum	22	B	22	U	14	200	ug/L	BL
WG	METALS	JAD226	S246400*2	BDMW012R1	N	SW6010	SW3010	NONE	Sodium	36000	E	36000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246400*1	BDMW013R1	N	SW6010	SW3010	NONE	Copper	0.49	B	0.49	U	0.45	25	ug/L	BL
WG	METALS	JAD226	S246400*1	BDMW013R1	N	SW6010	SW3010	NONE	Sodium	52000	E	52000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246400*1	BDMW013R1	N	SW6010	SW3010	NONE	Aluminum	73	B	73	U	14	200	ug/L	BL
WG	METALS	JAD226	S246377*4	BDMW014R1	N	SW6010	SW3010	NONE	Aluminum	43	B	43	U	14	200	ug/L	BL
WG	METALS	JAD226	S246377*4	BDMW014R1	N	SW6010	SW3010	NONE	Sodium	12000	E	12000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246377*1	BKBDMW001R1	N	SW6010	SW3010	NONE	Aluminum	110	B	110	U	14	200	ug/L	BL
WG	METALS	JAD226	S246377*1	BKBDMW001R1	N	SW6010	SW3010	NONE	Sodium	20000	E	20000	J	160	5000	ug/L	SD
WG	METALS	JAD226	S246377*5	BKBDMW002R1	N	SW6010	SW3010	NONE	Aluminum	150	B	150	U	14	200	ug/L	BL
WG	METALS	JAD226	S246377*5	BKBDMW002R1	N	SW6010	SW3010	NONE	Sodium	14000	E	14000	J	160	5000	ug/L	SD
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	Aldrin	0.05	U	0.05	UJ	0.0099	0.05	ug/L	MD

Table 2 - Changed Qualifiers

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Sample Type	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Final Result	Final Qual	Detection Limit	Reporting Limit	Units	Validation Notes
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	heptachlor	0.05	U	0.05	UJ	0.0062	0.05	ug/L	MD
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	p,p'-DDE	0.1	U	0.1	UJ	0.014	0.1	ug/L	MD
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	alpha-chlordane	0.05	U	0.05	UJ	0.0076	0.05	ug/L	MD
WG	SVOC	JAD225	S246329*6	BDMW001R1	N	SW8270	SW3520	NONE	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	SVOC	JAD225	S246329*2	BDMW002R1	N	SW8270	SW3520	NONE	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	SVOC	JAD225	S246329*5	BDMW003R1	N	SW8270	SW3520	NONE	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	SVOC	JAD225	S246329*1	BDMW005R1	N	SW8270	SW3520	NONE	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	Bromoform	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	Acetone	10	U	10	UJ	9.9	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	1,2-Dibromo-3-chloropropane	10	U	10	UJ	0.74	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	1,2-Dibromoethane (Ethylene dibromide)	10	U	10	UJ	0.5	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	1,1,2,2-Tetrachloroethane	10	U	10	UJ	0.75	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	1,2,4-Trichlorobenzene	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	NONE	2-Hexanone	10	U	10	UJ	4.4	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	1,2-Dibromoethane (Ethylene dibromide)	10	U	10	UJ	0.5	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	1,1,2,2-Tetrachloroethane	10	U	10	UJ	0.75	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	2-Hexanone	10	U	10	UJ	4.4	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	Bromoform	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	1,2,4-Trichlorobenzene	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	Acetone	10	U	10	UJ	9.9	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	NONE	1,2-Dibromo-3-chloropropane	10	U	10	UJ	0.74	10	ug/L	CC
WG	VOC	JAD226	S246377*4	BDMW014R1	N	SW8260	SW5030	NONE	Acetone	13	=	13	J	9.9	10	ug/L	CC

Table # - Total and Dissolved Metals Summary

Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T?
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Magnesium	2550	B	2550	B	55	5000	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Calcium	2570	B	2570	B	22	5000	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Sodium	2570	B	2570	B	160	5000	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Potassium	2620	B	2620	B	95	5000	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW7470	METHOD	NONE	FLDFLT	Mercury	2.58	=	2.58	=	0.072	0.2	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Cadmium	24.5	=	24.5	=	0.35	5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Beryllium	24.6	=	24.6	=	0.27	2.5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Silver	25	=	25	=	0.95	5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Chromium, total	100	=	100	=	0.85	5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Copper	127	=	127	=	0.45	12	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Antimony	240	=	240	=	2.5	30	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Lead	249	=	249	=	0.75	1.5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Vanadium	249	=	249	=	1.1	25	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Zinc	249	=	249	=	3	10	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Manganese	251	=	251	=	0.7	7.5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Nickel	251	=	251	=	2.3	40	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Cobalt	253	=	253	=	0.7	25	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Iron	502	=	502	=	9	50	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Aluminum	970	=	970	=	14	200	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Arsenic	982	=	982	=	1.6	10	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Selenium	989	=	989	=	2.1	2.5	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Thallium	1000	=	1000	=	2.4	10	ug/L	No
WQ	METALS	JAD225	S246329*8	463298BS	SW6010	SW3010	NONE	FLDFLT	Barium	1020	=	1020	=	0.6	200	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Copper	0.45	U	1.7	B	0.45	12	ug/L	Yes
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3	U	3.6	B	3	10	ug/L	Yes
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	530	N	120	BN	14	200	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Vanadium	1.6	B	1.1	U	1.1	25	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Manganese	3.6	B	3.3	B	0.7	7.5	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Barium	34	B	31	B	0.6	200	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	1200	B	1200	B	55	5000	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Sodium	1600	B	1600	B	160	5000	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Potassium	2000	B	2000	B	95	5000	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Calcium	2300	B	2200	B	22	5000	ug/L	No
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Iron	200	=	45	B	9	50	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Copper	0.45	U	1.3	B	0.45	12	ug/L	Yes
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3	U	3.2	B	3	10	ug/L	Yes
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	520	N	120	BN	14	200	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Beryllium	0.29	B	0.27	U	0.27	2.5	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Lead	0.78	B	0.75	U	0.75	1.5	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Chromium, total	1.3	B	0.85	U	0.85	5	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Barium	110	B	110	B	0.6	200	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Sodium	3700	B	3700	B	160	5000	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Manganese	34	=	32	=	0.7	7.5	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Iron	250	=	48	B	9	50	ug/L	No

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Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T??
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	8900	=	8500	=	55	5000	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Calcium	13000	=	12000	=	22	5000	ug/L	No
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Potassium	13000	=	13000	=	95	5000	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	18	BN	14	UN	14	200	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Cadmium	1.5	B	1.3	B	0.35	5	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Copper	2	B	2.1	B	0.45	12	ug/L	Yes
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Barium	180	B	180	B	0.6	200	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Zinc	110	=	100	=	3	10	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Manganese	390	=	380	=	0.7	7.5	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Potassium	5400	=	5300	=	95	5000	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	6900	=	6600	=	55	5000	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Sodium	12000	=	12000	=	160	5000	ug/L	No
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Iron	18000	=	19000	=	9	50	ug/L	Yes
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Calcium	150000	=	150000	=	22	5000	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	0.7	U	0.79	B	0.7	25	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	66	BN	14	UN	14	200	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Copper	5.6	B	4.4	B	0.45	12	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Nickel	29	B	29	B	2.3	40	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Barium	56	B	60	B	0.6	200	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Cadmium	5.3	=	4.6	B	0.35	5	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Manganese	91	=	120	=	0.7	7.5	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Zinc	1900	=	1800	=	3	10	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Iron	2000	=	1300	=	9	50	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Sodium	10000	=	11000	=	160	5000	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	13000	=	13000	=	55	5000	ug/L	No
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Potassium	15000	=	16000	=	95	5000	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Calcium	110000	=	110000	=	22	5000	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Copper	0.45	U	0.76	B	0.45	12	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Aluminum	14	BN	14	UN	14	200	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Chromium, total	1.1	B	0.85	U	0.85	5	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Barium	3.8	B	4	B	0.6	200	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Iron	11	B	9	U	9	50	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Potassium	1100	B	1200	B	95	5000	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Sodium	3200	B	3200	B	160	5000	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Magnesium	4200	B	4200	B	55	5000	ug/L	No
WQ	METALS	JAD225	S246329*3	BDWG001EB	SW6010	SW3010	NONE	FLDFLT	Calcium	26000	=	26000	=	22	5000	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Zinc	3	U	3.2	B	3	10	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Barium	3.8	B	3.8	B	0.6	200	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Iron	9.5	B	9	U	9	50	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Potassium	1100	B	1100	B	95	5000	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Sodium	3200	B	3200	B	160	5000	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Magnesium	4200	B	4200	B	55	5000	ug/L	No
WQ	METALS	JAD225	S246329*4	BDWG002AB	SW6010	SW3010	NONE	FLDFLT	Calcium	26000	=	26000	=	22	5000	ug/L	No
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Sodium	15000	E	16000	=	160	5000	ug/L	Yes

Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T?
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3.4	B	4.3	B	3	20	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	24	B	22	B	14	200	ug/L	No
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Barium	47	B	51	B	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Potassium	1600	B	2300	B	95	5000	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Manganese	44	=	65	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	9900	=	10000	=	55	5000	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Iron	11000	=	6600	=	9	100	ug/L	No
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Calcium	35000	=	37000	=	22	5000	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Copper	0.45	U	0.76	B	0.45	25	ug/L	No
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Sodium	29000	E	28000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	22	B	22	B	14	200	ug/L	No
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Barium	80	B	85	B	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Selenium	8.3	=	8.6	=	2.1	5	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Manganese	120	=	160	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Iron	1000	=	420	=	9	100	ug/L	No
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	17000	=	17000	=	55	5000	ug/L	No
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Calcium	56000	=	55000	=	22	5000	ug/L	No
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Potassium	59000	=	57000	=	95	5000	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Sodium	22000	E	22000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Beryllium	1.5	B	1.3	B	0.27	10	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	8.7	B	8.2	B	0.7	50	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Nickel	10	B	10	B	2.3	40	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	60	B	39	B	14	200	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Barium	64	B	62	B	0.6	200	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Potassium	1700	B	1600	B	95	5000	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Zinc	61	=	42	=	3	20	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Manganese	65	=	62	=	0.7	15	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Iron	2200	=	2200	=	9	100	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	5200	=	5100	=	55	5000	ug/L	No
WG	METALS	JAD226	S246377*2	BDMW009R1	SW6010	SW3010	NONE	FLDFLT	Calcium	8600	=	8400	=	22	5000	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Sodium	13000	E	13000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	20	B	21	B	14	200	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Barium	26	B	24	B	0.6	200	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Potassium	2600	B	2600	B	95	5000	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Manganese	40	=	39	=	0.7	15	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Iron	3800	=	2500	=	9	100	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	16000	=	16000	=	55	5000	ug/L	No
WG	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	FLDFLT	Calcium	64000	=	64000	=	22	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW7470	METHOD	NONE	FLDFLT	Mercury	0.997	=	0.9	=	0.072	0.2	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Cadmium	25.7	=	25.5	=	0.35	5	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Beryllium	26.1	=	25.9	=	0.27	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Silver	26.2	=	25.9	=	0.95	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Chromium, total	104	=	103	=	0.85	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Copper	135	=	134	=	0.45	25	ug/L	No

Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T?
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Zinc	252	=	251	=	3	20	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Lead	258	=	257	=	0.75	3	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Cobalt	261	=	260	=	0.7	50	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Nickel	261	=	259	=	2.3	40	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Antimony	262	=	259	=	2.5	60	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Vanadium	262	=	261	=	1.1	50	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Manganese	301	=	299	=	0.7	15	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Aluminum	992	=	991	=	14	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Arsenic	1030	=	1020	=	1.6	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Selenium	1050	=	1050	=	2.1	5	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Thallium	1070	=	1060	=	2.4	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Barium	1080	=	1080	=	0.6	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Iron	3760	=	2970	=	9	100	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Potassium	5310	=	5360	=	95	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Sodium	15400	=	15600	=	160	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Magnesium	18700	=	18800	=	55	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*4	BDMW010R1MS	SW6010	SW3010	NONE	FLDFLT	Calcium	66400	=	66900	=	22	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW7470	METHOD	NONE	FLDFLT	Mercury	0.971	=	0.902	=	0.072	0.2	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Cadmium	25.8	=	25.5	=	0.35	5	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Beryllium	26.1	=	25.9	=	0.27	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Silver	26.2	=	25.7	=	0.95	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Chromium, total	104	=	103	=	0.85	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Copper	134	=	134	=	0.45	25	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Zinc	253	=	251	=	3	20	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Lead	258	=	255	=	0.75	3	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Cobalt	261	=	259	=	0.7	50	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Antimony	262	=	257	=	2.5	60	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Nickel	262	=	258	=	2.3	40	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Vanadium	263	=	260	=	1.1	50	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Manganese	302	=	298	=	0.7	15	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Aluminum	993	=	988	=	14	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Arsenic	1030	=	1020	=	1.6	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Selenium	1050	=	1040	=	2.1	5	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Thallium	1070	=	1060	=	2.4	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Barium	1080	=	1070	=	0.6	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Iron	4290	=	2930	=	9	100	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Potassium	5360	=	5330	=	95	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Sodium	15800	=	15500	=	160	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Magnesium	19100	=	18800	=	55	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*6	BDMW010R1SD	SW6010	SW3010	NONE	FLDFLT	Calcium	68200	=	66700	=	22	5000	ug/L	No
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Sodium	18000	E	18000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	24	B	24	B	14	200	ug/L	No
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Barium	320	=	320	=	0.6	200	ug/L	No
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Manganese	420	=	420	=	0.7	15	ug/L	No

4 2 0062

Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T2a
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Potassium	7700	=	7700	=	95	5000	ug/L	No
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Iron	9200	=	9300	=	9	100	ug/L	Yes
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	14000	=	15000	=	55	5000	ug/L	Yes
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Calcium	83000	=	84000	=	22	5000	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Sodium	18000	E	19000	=	160	5000	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Aluminum	22	B	26	B	14	200	ug/L	No
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Barium	370	=	380	=	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Manganese	440	=	450	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Potassium	8100	=	8400	=	95	5000	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Iron	11000	=	11000	=	9	100	ug/L	No
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Magnesium	15000	=	15000	=	55	5000	ug/L	No
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Calcium	91000	=	94000	=	22	5000	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Sodium	36000	E	36000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	1.4	B	1.5	B	0.7	50	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3.2	B	3	U	3	20	ug/L	No
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	22	B	23	B	14	200	ug/L	No
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Barium	96	B	96	B	0.6	200	ug/L	No
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Potassium	3700	B	3800	B	95	5000	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Manganese	150	=	160	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Iron	230	=	230	=	9	100	ug/L	No
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	9900	=	10000	=	55	5000	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Calcium	35000	=	35000	=	22	5000	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Sodium	52000	E	51000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Copper	0.49	B	0.45	U	0.45	25	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Vanadium	1.4	B	1.3	B	1.1	50	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	1.5	B	0.77	B	0.7	50	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Nickel	3.2	B	2.3	U	2.3	40	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Zinc	5.6	B	3	U	3	20	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	73	B	43	B	14	200	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Barium	310	=	300	=	0.6	200	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Manganese	590	=	580	=	0.7	15	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Potassium	14000	=	14000	=	95	5000	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Iron	31000	=	29000	=	9	100	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	39000	=	38000	=	55	5000	ug/L	No
WG	METALS	JAD226	S246400*1	BDMW013R1	SW6010	SW3010	NONE	FLDFLT	Calcium	160000	=	160000	=	22	5000	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Sodium	12000	E	12000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Lead	0.92	B	0.75	U	0.75	3	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Barium	31	B	29	B	0.6	200	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	43	B	22	B	14	200	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Potassium	1600	B	1600	B	95	5000	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Manganese	120	=	74	=	0.7	15	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Iron	2100	=	1500	=	9	100	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	14000	=	14000	=	55	5000	ug/L	No
WG	METALS	JAD226	S246377*4	BDMW014R1	SW6010	SW3010	NONE	FLDFLT	Calcium	51000	=	51000	=	22	5000	ug/L	No

4 2 0063

Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T?
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Sodium	20000	E	20000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Beryllium	0.49	B	0.49	B	0.27	10	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	2	B	2	B	0.7	50	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3.4	B	4.1	B	3	20	ug/L	Yes
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	110	B	75	B	14	200	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Barium	170	B	170	B	0.6	200	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Potassium	2500	B	2400	B	95	5000	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Calcium	3500	B	3500	B	22	5000	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Manganese	26	=	26	=	0.7	15	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Iron	170	=	140	=	9	100	ug/L	No
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	5300	=	5300	=	55	5000	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Sodium	14000	E	14000	=	160	5000	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Zinc	9.9	B	9.6	B	3	20	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Barium	21	B	20	B	0.6	200	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Aluminum	150	B	48	B	14	200	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Potassium	740	B	740	B	95	5000	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	1900	B	1800	B	55	5000	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Manganese	25	=	25	=	0.7	15	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Iron	450	=	380	=	9	100	ug/L	No
WG	METALS	JAD226	S246377*5	BKBDMW002R1	SW6010	SW3010	NONE	FLDFLT	Calcium	6800	=	6800	=	22	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*1	JAD2261LB	SW6010	SW3010	NONE	FLDFLT	Aluminum	27	B	18	B	14	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Calcium	2550	B	2550	B	22	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Sodium	2550	B	2560	B	160	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Magnesium	2560	B	2560	B	55	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Potassium	2640	B	2610	B	95	5000	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW7470	METHOD	NONE	FLDFLT	Mercury	2.61	=	2.66	=	0.072	0.2	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Silver	25.6	=	25.6	=	0.95	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Cadmium	25.8	=	26.2	=	0.35	5	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Beryllium	25.9	=	25.8	=	0.27	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Chromium, total	105	=	104	=	0.85	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Copper	132	=	132	=	0.45	25	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Antimony	255	=	254	=	2.5	60	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Zinc	260	=	259	=	3	20	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Vanadium	261	=	260	=	1.1	50	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Lead	262	=	261	=	0.75	3	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Manganese	262	=	261	=	0.7	15	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Cobalt	265	=	263	=	0.7	50	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Nickel	266	=	265	=	2.3	40	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Iron	514	=	515	=	9	100	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Aluminum	975	=	973	=	14	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Arsenic	1020	=	1010	=	1.6	10	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Selenium	1040	=	1030	=	2.1	5	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Barium	1050	=	1040	=	0.6	200	ug/L	No
WQ	METALS	JAD226	S2JAD226*2	JAD2262BS	SW6010	SW3010	NONE	FLDFLT	Thallium	1070	=	1060	=	2.4	10	ug/L	No

4 2 0064

Table # - Total vs Dissolved

Matrix	Parameter Class	SDG	Total & Dissolved Lab Sample ID	Sample ID	Analytical Method	Total & Dissolved Preparation Method	Total Leach Method	Dissolved Leach Method	Parameter	Total Lab Result	Total Lab Qual	Dissolved Lab Result	Dissolved Lab Dup Lab Qual	Total & Dissolved Detection Limit	Total & Dissolved Reporting Limit	Units	D>T?
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Barium	58	B	60	B	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Barium	80	B	85	B	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Barium	370	=	380	=	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Barium	47	B	51	B	0.6	200	ug/L	Yes
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Calcium	83000	=	84000	=	22	5000	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Calcium	91000	=	94000	=	22	5000	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Calcium	35000	=	37000	=	22	5000	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	1.4	B	1.5	B	0.7	50	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Cobalt	0.7	U	0.79	B	0.7	25	ug/L	Yes
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Copper	0.45	U	1.3	B	0.45	12	ug/L	Yes
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Copper	2	B	2.1	B	0.45	12	ug/L	Yes
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Copper	0.45	U	1.7	B	0.45	12	ug/L	Yes
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Iron	9200	=	9300	=	9	100	ug/L	Yes
WG	METALS	JAD225	S246329*5	BDMW003R1	SW6010	SW3010	NONE	FLDFLT	Iron	18000	=	19000	=	9	50	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	9900	=	10000	=	55	5000	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	9900	=	10000	=	55	5000	ug/L	Yes
WG	METALS	JAD226	S246400*4	BDMW011R1	SW6010	SW3010	NONE	FLDFLT	Magnesium	14000	=	15000	=	55	5000	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Manganese	91	=	120	=	0.7	7.5	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Manganese	440	=	450	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Manganese	120	=	160	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Manganese	44	=	65	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Manganese	150	=	160	=	0.7	15	ug/L	Yes
WG	METALS	JAD226	S246400*2	BDMW012R1	SW6010	SW3010	NONE	FLDFLT	Potassium	3700	B	3800	B	95	5000	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Potassium	8100	=	8400	=	95	5000	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Potassium	1600	B	2300	B	95	5000	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Potassium	15000	=	16000	=	95	5000	ug/L	Yes
WG	METALS	JAD226	S246400*6	BDMW008R1	SW6010	SW3010	NONE	FLDFLT	Selenium	8.3	=	8.6	=	2.1	5	ug/L	Yes
WG	METALS	JAD225	S246329*1	BDMW005R1	SW6010	SW3010	NONE	FLDFLT	Sodium	10000	=	11000	=	160	5000	ug/L	Yes
WG	METALS	JAD226	S246400*3	BDMW011R1FD	SW6010	SW3010	NONE	FLDFLT	Sodium	18000	E	19000	=	160	5000	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Sodium	15000	E	16000	=	160	5000	ug/L	Yes
WG	METALS	JAD225	S246329*6	BDMW001R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3	U	3.6	B	3	10	ug/L	Yes
WG	METALS	JAD226	S246377*1	BKBDMW001R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3.4	B	4.1	B	3	20	ug/L	Yes
WG	METALS	JAD226	S246377*3	BDMW004R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3.4	B	4.3	B	3	20	ug/L	Yes
WG	METALS	JAD225	S246329*2	BDMW002R1	SW6010	SW3010	NONE	FLDFLT	Zinc	3	U	3.2	B	3	10	ug/L	Yes

Table 3 - Analysis Totals

Matrix	Analytical Method	Analytical Method Description	Preparation Method	Leach Method	AB	BS	EB	FD	LB	MS	N	SD	TB
WG	SW6010	Inductively Coupled Plasma Atomic Emission Spectroscopy	SW3010	FLDFLT				1			14		
WQ	SW6010	Inductively Coupled Plasma Atomic Emission Spectroscopy	SW3010	FLDFLT	1	2	1		2	1		1	
WG	SW6010	Inductively Coupled Plasma Atomic Emission Spectroscopy	SW3010	NONE				1			14		
WQ	SW6010	Inductively Coupled Plasma Atomic Emission Spectroscopy	SW3010	NONE	1	2	1		2	1		1	
WG	SW7470	Mercury in Liquid Waste (Manual Cold-Vapor Technique)	METHOD	FLDFLT				1			14		
WQ	SW7470	Mercury in Liquid Waste (Manual Cold-Vapor Technique)	METHOD	FLDFLT	1	2	1		2	1		1	
WG	SW7470	Mercury in Liquid Waste (Manual Cold-Vapor Technique)	METHOD	NONE				1			14		
WQ	SW7470	Mercury in Liquid Waste (Manual Cold-Vapor Technique)	METHOD	NONE	1	2	1		2	1		1	
WG	SW8081	Organochlorine Pesticides by GC - Capillary Column Technique	SW3520	NONE				1			13		
WQ	SW8081	Organochlorine Pesticides by GC - Capillary Column Technique	SW3520	NONE	1	3	1		3	1		1	
WG	SW8082	Polychlorinated Biphenyls by GC - Capillary Column Technique	SW3520	NONE				1			13		
WQ	SW8082	Polychlorinated Biphenyls by GC - Capillary Column Technique	SW3520	NONE	1	3	1		3	1		1	
WG	SW8260	GC/MS for Volatile Organics (Capillary Column Technique)	SW5030	NONE							3		
WQ	SW8260	GC/MS for Volatile Organics (Capillary Column Technique)	SW5030	NONE	1	2	1		2				1
WG	SW8270	GC/MS for Semivolatile Organics (Capillary Column Technique)	SW3520	NONE				1			13		
WQ	SW8270	GC/MS for Semivolatile Organics (Capillary Column Technique)	SW3520	NONE	1	2	1		2	1		1	
WG	SW8290	Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)	METHOD	NONE							4		
WQ	SW8290	Polychlorinated Dibenzodioxins (PCDDs) & Polychlorinated Dibenzofurans (PCDFs)	METHOD	NONE	1	2	1		2				
WG	SW9012	Total and Amendable Cyanide (Colorimetric, Automated UV)	METHOD	NONE				1			14		
WQ	SW9012	Total and Amendable Cyanide (Colorimetric, Automated UV)	METHOD	NONE	1	2	1		2	1		1	

MATRIX CODE

WG - Groundwater Samples

WQ - Water QC Samples

SAMPLE TYPE CODE

AB - Ambient Blank
BS - Blank Spike
EB - Eqipment Blank
FD - Field Duplicate
LB - Laboratory Blank
MS - Matrix Spike
N - Native Sample
SD - Spike Duplicate
TB - Trip Blank

4 2 0066

Table 4 - Calibration Flags

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Sample Type	Analytical Method	Preparation Method	Parameter	Lab Result	Lab Qual	Final Result	Final Qual	Detection Limit	Reporting Limit	Units	Validation Notes
WG	SVOC	JAD225	S246329*6	BDMW001R1	N	SW8270	SW3520	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	SVOC	JAD225	S246329*2	BDMW002R1	N	SW8270	SW3520	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	SVOC	JAD225	S246329*5	BDMW003R1	N	SW8270	SW3520	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	SVOC	JAD225	S246329*1	BDMW005R1	N	SW8270	SW3520	2,6-Dinitrotoluene	10	U	10	UJ	0.34	10	ug/L	IC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	Bromoform	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	Acetone	10	U	10	UJ	9.9	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	1,2-Dibromo-3-chloropropane	10	U	10	UJ	0.74	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	1,2-Dibromoethane (Ethylene dibromide)	10	U	10	UJ	0.5	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	1,1,2,2-Tetrachloroethane	10	U	10	UJ	0.75	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	1,2,4-Trichlorobenzene	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*2	BDMW002R1	N	SW8260	SW5030	2-Hexanone	10	U	10	UJ	4.4	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	1,2-Dibromoethane (Ethylene dibromide)	10	U	10	UJ	0.5	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	1,1,2,2-Tetrachloroethane	10	U	10	UJ	0.75	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	2-Hexanone	10	U	10	UJ	4.4	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	Bromoform	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	1,2,4-Trichlorobenzene	10	U	10	UJ	0.58	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	Acetone	10	U	10	UJ	9.9	10	ug/L	CC
WG	VOC	JAD225	S246329*1	BDMW005R1	N	SW8260	SW5030	1,2-Dibromo-3-chloropropane	10	U	10	UJ	0.74	10	ug/L	CC
WG	VOC	JAD226	S246377*4	BDMW014R1	N	SW8260	SW5030	Acetone	13	=	13	J	9.9	10	ug/L	CC

Table 5A - Blank Detections

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Sample Type	Native Sample ID	Native Sample Type	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Detection Limit	Reporting Limit	Units
WQ	DIOXIN	JAD226A	G2I200000171B	G2I200000171B	LB	G2I200000171B	LB	SW8290	METHOD	NONE	dioxin	85	= JA	25	50	pg/L
WQ	DissMetal	JAD226	S2JAD226*1	JAD2261LB	LB	JAD2261LB	LB	SW6010	SW3010	FLDFLT	Aluminum	18	B	14	200	ug/L
WQ	DissMetal	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	FLDFLT	Barium	4	B	0.6	200	ug/L
WQ	DissMetal	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	FLDFLT	Barium	3.8	B	0.6	200	ug/L
WQ	DissMetal	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	FLDFLT	Calcium	26000	=	22	5000	ug/L
WQ	DissMetal	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	FLDFLT	Calcium	26000	=	22	5000	ug/L
WQ	DissMetal	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	FLDFLT	Copper	0.76	B	0.45	12	ug/L
WQ	DissMetal	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	FLDFLT	Magnesium	4200	B	55	5000	ug/L
WQ	DissMetal	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	FLDFLT	Magnesium	4200	B	55	5000	ug/L
WQ	DissMetal	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	FLDFLT	Potassium	1200	B	95	5000	ug/L
WQ	DissMetal	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	FLDFLT	Potassium	1100	B	95	5000	ug/L
WQ	DissMetal	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	FLDFLT	Sodium	3200	B	160	5000	ug/L
WQ	DissMetal	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	FLDFLT	Sodium	3200	B	160	5000	ug/L
WQ	DissMetal	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	FLDFLT	Zinc	3.2	B	3	10	ug/L
WQ	METALS	JAD226	S2JAD226*1	JAD2261LB	LB	JAD2261LB	LB	SW6010	SW3010	NONE	Aluminum	27	B	14	200	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Aluminum	14	BN	14	200	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Barium	3.8	B	0.6	200	ug/L
WQ	METALS	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	NONE	Barium	3.8	B	0.6	200	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Calcium	26000	=	22	5000	ug/L
WQ	METALS	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	NONE	Calcium	26000	=	22	5000	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Chromium, total	1.1	B	0.85	5	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Iron	11	B	9	50	ug/L
WQ	METALS	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	NONE	Iron	9.5	B	9	50	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Magnesium	4200	B	55	5000	ug/L
WQ	METALS	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	NONE	Magnesium	4200	B	55	5000	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Potassium	1100	B	95	5000	ug/L
WQ	METALS	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	NONE	Potassium	1100	B	95	5000	ug/L
WQ	METALS	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW6010	SW3010	NONE	Sodium	3200	B	160	5000	ug/L
WQ	METALS	JAD225	S246329*4	BDWG002AB	AB	BDWG002AB	AB	SW6010	SW3010	NONE	Sodium	3200	B	160	5000	ug/L
WQ	VOC	JAD226	S2JAD226*1	JAD2261LB	LB	JAD2261LB	LB	SW8260	SW5030	NONE	1,1,2-trichloro-1,2,2-trifluoroethane	2.1	J	0.26	10	ug/L
WQ	VOC	JAD225	S246329*3	BDWG001EB	EB	BDWG001EB	EB	SW8260	SW5030	NONE	Methylene chloride	0.42	J	0.31	10	ug/L

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Table 6 - Surrogate Recovery

Matrix	SDG	Lab Sample ID	Sample ID	Sample Type	(SW8081/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene	(SW8081/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene - Lower Limit	(SW8081/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene - Upper Limit	(SW8081/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene - Qual	(SW8081/SW3520/NONE) Decachlorobiphenyl	(SW8081/SW3520/NONE) Decachlorobiphenyl - Lower Limit	(SW8081/SW3520/NONE) Decachlorobiphenyl - Upper Limit	(SW8081/SW3520/NONE) Decachlorobiphenyl - Qual	(SW8082/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene	(SW8082/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene - Lower Limit	(SW8082/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene - Upper Limit	(SW8082/SW3520/NONE) 2,4,5,6-Tetrachloro-meta-xylene - Qual	(SW8082/SW3520/NONE) Decachlorobiphenyl	(SW8082/SW3520/NONE) Decachlorobiphenyl - Lower Limit	(SW8082/SW3520/NONE) Decachlorobiphenyl - Upper Limit	(SW8082/SW3520/NONE) Decachlorobiphenyl - Qual	(SW8260/SW5030/NONE) 1-Bromo-4-fluorobenzene (4- Bromofluorobenzene)	(SW8260/SW5030/NONE) 1-Bromo-4-fluorobenzene (4- Bromofluorobenzene) - Lower Limit	(SW8260/SW5030/NONE) 1-Bromo-4-fluorobenzene (4- Bromofluorobenzene) - Upper Limit	(SW8260/SW5030/NONE) 1-Bromo-4-fluorobenzene (4- Bromofluorobenzene) - Qual	(SW8260/SW5030/NONE) Dibromofluoromethane	(SW8260/SW5030/NONE) Dibromofluoromethane - Lower Limit	(SW8260/SW5030/NONE) Dibromofluoromethane - Upper Limit	(SW8260/SW5030/NONE) Dibromofluoromethane - Qual	(SW8260/SW5030/NONE) Toluene-d8
WG	JAD225	S246329*1	BDMW005R1	N	50	30	150		52	60	155		50	30	150		52	45	134		88	62	135		96	66	130		92
WG	JAD225	S246329*2	BDMW002R1	N	46	30	150		50	60	155		46	30	150		50	45	134		92	62	135		100	66	130		92
WG	JAD225	S246329*5	BDMW003R1	N	42	30	150		40	60	155		42	30	150		40	45	134										
WG	JAD225	S246329*6	BDMW001R1	N	46	30	150		68	60	155		46	30	150		68	45	134										
WG	JAD225A	G2I050204001	BDMW005R1	N																									
WG	JAD225A	G2I050204002	BDMW002R1	N																									
WG	JAD226	S246377*1	BKBDMW001R1	N	42	30	150		48	60	155		42	30	150		48	45	134										
WG	JAD226	S246377*2	BDMW009R1	N	40	30	150		56	60	155		40	30	150		56	45	134										
WG	JAD226	S246377*3	BDMW004R1	N	53	30	150		53	60	155		53	30	150		53	45	134										
WG	JAD226	S246377*4	BDMW014R1	N	44	30	150		62	60	155		44	30	150		62	45	134		88	62	135		100	66	130		92
WG	JAD226	S246400*1	BDMW013R1	N	48	30	150		40	60	155		48	30	150		40	45	134										
WG	JAD226	S246400*2	BDMW012R1	N	31	30	150		25	60	155		31	30	150		25	45	134										
WG	JAD226	S246400*3	BDMW011R1FD	FD	48	30	150		46	60	155		48	30	150		46	45	134										
WG	JAD226	S246400*4	BDMW011R1	N	37	30	150		45	60	155		37	30	150		45	45	134										
WG	JAD226	S246400*5	BDMW010R1	N	46	30	150		56	60	155		46	30	150		56	45	134										
WG	JAD226	S246400*6	BDMW008R1	N	42	30	150		64	60	155		42	30	150		64	45	134										
WG	JAD226A	G2I060200001	BKBDMW001R1	N																									
WG	JAD226A	G2I060200002	BDMW014R1	N																									
WQ	JAD225	S246329*3	BDWG001EB	EB	56	30	150		76	60	155		56	30	150		76	45	134		92	62	135		94	66	130		92
WQ	JAD225	S246329*4	BDWG002AB	AB	44	30	150		80	60	155		44	30	150		80	45	134		90	62	135		96	66	130		92
WQ	JAD225	S246329*7	463297LB	LB	48	30	150		68	60	155		48	30	150		68	45	134		86	62	135		108	66	130		92
WQ	JAD225	S246329*8	463298BS	BS	0.28	30	150		0.31	30	150		60	30	150		56	30	150		43	74	126		45	70	130		46
WQ	JAD225A	G2I050204003	BDWG001EB	EB																									
WQ	JAD225A	G2I050204004	BDWG002AB	AB																									
WQ	JAD225A	G2I1130000441B	G2I130000441B	LB																									
WQ	JAD225A	G2I1130000441C	G2I130000441C	BS																									
WQ	JAD226	S246377*6	BDWG003TB	TB																	92	62	135		106	66	130		92
WQ	JAD226	S2JAD226*1	JAD2261LB	LB	48	30	150		68	60	155		48	30	150		68	45	134		88	62	135		100	66	130		90
WQ	JAD226	S2JAD226*10	JAD22610BD	BD	56	30	150		70	30	150		58	30	150		88	30	150										
WQ	JAD226	S2JAD226*12	JAD22612LB	LB	52	30	150		80	30	150		52	30	150		80	30	150										
WQ	JAD226	S2JAD226*13	JAD22613BS	BS	50	30	150		68	30	150		52	30	150		86	30	150										
WQ	JAD226	S2JAD226*2	JAD2262BS	BS	56	30	150		62	30	150		60	30	150		56	30	150		104	74	126		110	70	130		106
WQ	JAD226	S2JAD226*4	BDMW010R1MS	MS	52	30	150		57	30	150		56	30	150		64	30	150										

WQ	JAD226	S2JAD226*6	BDMW010R1SD	SD	42	30	150		40	30	150		54	30	150		76	30	150										
WQ	JAD226A	G2I200000171B	G2I200000171B	LB																									
WQ	JAD226A	G2I200000171C	G2I200000171C	BS																									
WQ	JAD226A	G2I200000171L	G2I200000171L	BD																									

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Table 6 - Surrogate Recovery

Matrix	SDG	Lab Sample ID	Sample ID	Sample Type	SW8260/SW5030(NONE) Toluene-d8 - Lower Limit	SW8260/SW5030(NONE) Toluene-d8 - Upper Limit	SW8260/SW5030(NONE) Toluene-d8 - Qual	SW8270/SW3510(NONE) 2,4,6-Tribromophenol - Lower Limit	SW8270/SW3510(NONE) 2,4,6-Tribromophenol - Upper Limit	SW8270/SW3510(NONE) 2,4,6-Tribromophenol - Qual	SW8270/SW3510(NONE) 2-Fluorobiphenyl - Lower Limit	SW8270/SW3510(NONE) 2-Fluorobiphenyl - Upper Limit	SW8270/SW3510(NONE) 2-Fluorobiphenyl - Qual	SW8270/SW3510(NONE) 2-Fluorophenol - Lower Limit	SW8270/SW3510(NONE) 2-Fluorophenol - Upper Limit	SW8270/SW3510(NONE) 2-Fluorophenol - Qual	SW8270/SW3510(NONE) 2-Nitrobenzene-d5 - Lower Limit	SW8270/SW3510(NONE) 2-Nitrobenzene-d5 - Upper Limit	SW8270/SW3510(NONE) 2-Nitrobenzene-d5 - Qual	SW8270/SW3510(NONE) Phenol-d5 - Lower Limit	SW8270/SW3510(NONE) Phenol-d5 - Upper Limit	SW8270/SW3510(NONE) Phenol-d5 - Qual	SW8270/SW3510(NONE) Terphenyl-d14 - Lower Limit	SW8270/SW3510(NONE) Terphenyl-d14 - Upper Limit	SW8270/SW3510(NONE) Terphenyl-d14 - Qual
WG	JAD225	S246329*1	BDMW005R1	N	60	148		110	15	144		72	26	130		78	36	124		67	14	148		75	31	138		70	25	128	
WG	JAD225	S246329*2	BDMW002R1	N	60	148		96	15	144		72	26	130		74	36	124		68	14	148		68	31	138		74	25	128	
WG	JAD225	S246329*5	BDMW003R1	N				110	15	144		68	26	130		76	36	124		70	14	148		60	31	138		34	25	128	
WG	JAD225	S246329*6	BDMW001R1	N				97	15	144		68	26	130		70	36	124		66	14	148		58	31	138		70	25	128	
WG	JAD225A	G2I050204001	BDMW005R1	N																											
WG	JAD225A	G2I050204002	BDMW002R1	N																											
WG	JAD226	S246377*1	BKBDMW001R1	N				96	15	144		58	26	130		66	36	124		60	14	148		62	31	138		38	25	128	
WG	JAD226	S246377*2	BDMW009R1	N				88	15	144		64	26	130		66	36	124		60	14	148		58	31	138		72	25	128	
WG	JAD226	S246377*3	BDMW004R1	N				55	15	144		38	26	130		40	36	124		40	14	148		41	31	138		58	25	128	
WG	JAD226	S246377*4	BDMW014R1	N	60	148		92	15	144		63	26	130		64	36	124		51	14	148		60	31	138		69	25	128	
WG	JAD226	S246400*1	BDMW013R1	N				110	15	144		65	26	130		69	36	124		63	14	148		62	31	138		27	25	128	
WG	JAD226	S246400*2	BDMW012R1	N				90	15	144		58	26	130		62	36	124		58	14	148		54	31	138		50	25	128	
WG	JAD226	S246400*3	BDMW011R1FD	FD				88	15	144		60	26	130		60	36	124		58	14	148		54	31	138		32	25	128	
WG	JAD226	S246400*4	BDMW011R1	N				98	15	144		70	26	130		77	36	124		72	14	148		67	31	138		33	25	128	
WG	JAD226	S246400*5	BDMW010R1	N				90	15	144		68	26	130		70	36	124		64	14	148		66	31	138		44	25	128	
WG	JAD226	S246400*6	BDMW008R1	N				90	15	144		62	26	130		62	36	124		56	14	148		55	31	138		60	25	128	
WG	JAD226A	G2I060200001	BKBDMW001R1	N																											
WG	JAD226A	G2I060200002	BDMW014R1	N																											
WQ	JAD225	S246329*3	BDWG001EB	EB	60	148		92	15	144		72	26	130		76	36	124		68	14	148		67	31	138		76	25	128	
WQ	JAD225	S246329*4	BDWG002AB	AB	60	148		92	15	144		74	26	130		75	36	124		72	14	148		69	31	138		84	25	128	
WQ	JAD225	S246329*7	463297LB	LB	60	148		100	15	144		76	26	130		81	36	124		74	14	148		72	31	138		76	25	128	
WQ	JAD225	S246329*8	463298BS	BS	77	122		97	29	143		80	36	124		74	29	121		84	34	130		72	25	128		84	14	148	
WQ	JAD225A	G2I050204003	BDWG001EB	EB																											
WQ	JAD225A	G2I050204004	BDWG002AB	AB																											
WQ	JAD225A	G2I130000441B	G2I130000441B	LB																											
WQ	JAD225A	G2I130000441C	G2I130000441C	BS																											
WQ	JAD226	S246377*6	BDWG003TB	TB	60	148																									
WQ	JAD226	S2JAD226*1	JAD2261LB	LB	60	148		100	15	144		76	26	130		81	36	124		74	14	148		72	31	138		76	25	128	
WQ	JAD226	S2JAD226*10	JAD22610BD	BD																											
WQ	JAD226	S2JAD226*12	JAD22612LB	LB																											
WQ	JAD226	S2JAD226*13	JAD22613BS	BS																											
WQ	JAD226	S2JAD226*2	JAD2262BS	BS	77	122		97	29	143		80	36	124		74	29	121		84	34	130		72	25	128		84	14	148	
WQ	JAD226	S2JAD226*4	BDMW010R1MS	MS				78	29	143		72	36	124		68	29	121		67	34	130		66	25	128		87	14	148	

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WQ	JAD226	S2JAD226*6	BDMW010R1SD	SD				84	29	143		72	36	124		72	29	121		68	34	130		72	25	128		81	14	148	
WQ	JAD226A	G2I200000171B	G2I200000171B	LB																											
WQ	JAD226A	G2I200000171C	G2I200000171C	BS																											
WQ	JAD226A	G2I200000171L	G2I200000171L	BD																											

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Table 6 - Surrogate Recovery

Matrix	SDG	Lab Sample ID	Sample ID	Sample Type	(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin-c13			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin-c13 Lower Limit			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin-c13 Upper Limit			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin-c13 Qual			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzofuran-c13			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzofuran-c13 Lower Limit			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzofuran-c13 Upper Limit			(SW8290METHOD/NONE) 1,2,3,4,6,7,8-heptachlorodibenzofuran-c13 Qual			(SW8290METHOD/NONE) 1,2,3,4,7,8,9-heptachlorodibenzofuran-c13			(SW8290METHOD/NONE) 1,2,3,4,7,8,9-heptachlorodibenzofuran-c13 Lower Limit			(SW8290METHOD/NONE) 1,2,3,4,7,8,9-heptachlorodibenzofuran-c13 Upper Limit			(SW8290METHOD/NONE) 1,2,3,4,7,8,9-heptachlorodibenzofuran-c13 Qual			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin-c13			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin-c13 Lower Limit			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin-c13 Upper Limit			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin-c13 Qual			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzofuran-c13			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzofuran-c13 Lower Limit			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzofuran-c13 Upper Limit			(SW8290METHOD/NONE) 1,2,3,6,7,8-hexachlorodibenzofuran-c13 Qual			(SW8290METHOD/NONE) 1,2,3,7,8-pentachlorodibenzo-p-dioxin-c13			(SW8290METHOD/NONE) 1,2,3,7,8-pentachlorodibenzo-p-dioxin-c13 Lower Limit			(SW8290METHOD/NONE) 1,2,3,7,8-pentachlorodibenzo-p-dioxin-c13 Upper Limit			(SW8290METHOD/NONE) 1,2,3,7,8-pentachlorodibenzo-p-dioxin-c13 Qual			(SW8290METHOD/NONE) 1,2,3,7,8-pentachlorodibenzofuran-c13		
WG	JAD225	S246329*1	BDMW005R1	N																																															
WG	JAD225	S246329*2	BDMW002R1	N																																															
WG	JAD225	S246329*5	BDMW003R1	N																																															
WG	JAD225	S246329*6	BDMW001R1	N																																															
WG	JAD225A	G2I050204001	BDMW005R1	N	89	40	135		87	40	135		71	40	135		72	40	135		54	40	135		49																										
WG	JAD225A	G2I050204002	BDMW002R1	N	95	40	135		93	40	135		64	40	135		74	40	135		42	40	135		29																										
WG	JAD226	S246377*1	BKBDMW001R1	N																																															
WG	JAD226	S246377*2	BDMW009R1	N																																															
WG	JAD226	S246377*3	BDMW004R1	N																																															
WG	JAD226	S246377*4	BDMW014R1	N																																															
WG	JAD226	S246400*1	BDMW013R1	N																																															
WG	JAD226	S246400*2	BDMW012R1	N																																															
WG	JAD226	S246400*3	BDMW011R1FD	FD																																															
WG	JAD226	S246400*4	BDMW011R1	N																																															
WG	JAD226	S246400*5	BDMW010R1	N																																															
WG	JAD226	S246400*6	BDMW008R1	N																																															
WG	JAD226A	G2I060200001	BKBDMW001R1	N	73	40	135		70	40	135		65	40	135		61	40	135		60	40	135		60																										
WG	JAD226A	G2I060200002	BDMW014R1	N	67	40	135		66	40	135		61	40	135		56	40	135		52	40	135		55																										
WQ	JAD225	S246329*3	BDWG001EB	EB																																															
WQ	JAD225	S246329*4	BDWG002AB	AB																																															
WQ	JAD225	S246329*7	463297LB	LB																																															
WQ	JAD225	S246329*8	463298BS	BS																																															
WQ	JAD225A	G2I050204003	BDWG001EB	EB	96	40	135		99	40	135		84	40	135		79	40	135		56	40	135		53																										
WQ	JAD225A	G2I050204004	BDWG002AB	AB	94	40	135		95	40	135		77	40	135		74	40	135		56	40	135		46																										
WQ	JAD225A	G2I130000441B	G2I130000441B	LB	92	40	135		88	40	135		86	40	135		85	40	135		56	40	135		51																										
WQ	JAD225A	G2I130000441C	G2I130000441C	BS	91	40	135		87	40	135		86	40	135		92	40	135		58	40	135		55																										
WQ	JAD226	S246377*6	BDWG003TB	TB																																															
WQ	JAD226	S2JAD226*1	JAD2261LB	LB																																															
WQ	JAD226	S2JAD226*10	JAD22610BD	BD																																															
WQ	JAD226	S2JAD226*12	JAD22612LB	LB																																															
WQ	JAD226	S2JAD226*13	JAD22613BS	BS																																															
WQ	JAD226	S2JAD226*2	JAD2262BS	BS																																															
WQ	JAD226	S2JAD226*4	BDMW010R1MS	MS																																															

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WQ	JAD226	S2JAD226*6	BDMW010R1SD	SD																					
WQ	JAD226A	G2I200000171B	G2I200000171B	LB	63	40	135		76	40	135		67	40	135		42	40	135		35	40	135	*	50
WQ	JAD226A	G2I200000171C	G2I200000171C	BS	93	40	135		102	40	135		92	40	135		62	40	135		59	40	135		74
WQ	JAD226A	G2I200000171L	G2I200000171L	BD	85	40	135		94	40	135		90	40	135		57	40	135		56	40	135		71

Table 6 - Surrogate Recovery

Matrix	SDG	Lab Sample ID	Sample ID	Sample Type	(SW8290/METHOD/NONE) 1,2,3,7,8-pentachlorodibenzofuran-c13 - Lower Limit	(SW8290/METHOD/NONE) 1,2,3,7,8-pentachlorodibenzofuran-c13 - Upper Limit	(SW8290/METHOD/NONE) 1,2,3,7,8-pentachlorodibenzofuran-c13 Qual	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzo-p-dioxin-c13 - Lower Limit	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzo-p-dioxin-c13 - Upper Limit	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzo-p-dioxin-c13 Qual	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzo-p-dioxin-c13 - Lower Limit	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzo-p-dioxin-c13 - Upper Limit	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzo-p-dioxin-c13 Qual	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzofuran-c13 - Lower Limit	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzofuran-c13 - Upper Limit	(SW8290/METHOD/NONE) 2,3,7,8-tetrachlorodibenzofuran-c13 Qual	(SW8290/METHOD/NONE) octachlorodibenzo-p-dioxin-c13 - Lower Limit	(SW8290/METHOD/NONE) octachlorodibenzo-p-dioxin-c13 - Upper Limit	(SW8290/METHOD/NONE) octachlorodibenzo-p-dioxin-c13 Qual	(SW8290/METHOD/NONE) octachlorodibenzofuran-c13 - Lower Limit	(SW8290/METHOD/NONE) octachlorodibenzofuran-c13 - Upper Limit	(SW8290/METHOD/NONE) octachlorodibenzofuran-c13 Qual
WG	JAD225	S246329*1	BDMW005R1	N																		
WG	JAD225	S246329*2	BDMW002R1	N																		
WG	JAD225	S246329*5	BDMW003R1	N																		
WG	JAD225	S246329*6	BDMW001R1	N																		
WG	JAD225A	G2I050204001	BDMW005R1	N	40	135		39	40	135	*	35	40	135	*	83	40	135				
WG	JAD225A	G2I050204002	BDMW002R1	N	40	135	*	12	40	135	*	10	40	135	*	88	40	135				
WG	JAD226	S246377*1	BKBDMW001R1	N																		
WG	JAD226	S246377*2	BDMW009R1	N																		
WG	JAD226	S246377*3	BDMW004R1	N																		
WG	JAD226	S246377*4	BDMW014R1	N																		
WG	JAD226	S246400*1	BDMW013R1	N																		
WG	JAD226	S246400*2	BDMW012R1	N																		
WG	JAD226	S246400*3	BDMW011R1FD	FD																		
WG	JAD226	S246400*4	BDMW011R1	N																		
WG	JAD226	S246400*5	BDMW010R1	N																		
WG	JAD226	S246400*6	BDMW008R1	N																		
WG	JAD226A	G2I060200001	BKBDMW001R1	N	40	135		58	40	135		50	40	135		78	40	135				
WG	JAD226A	G2I060200002	BDMW014R1	N	40	135		53	40	135		44	40	135		73	40	135				
WQ	JAD225	S246329*3	BDWG001EB	EB																		
WQ	JAD225	S246329*4	BDWG002AB	AB																		
WQ	JAD225	S246329*7	463297LB	LB																		
WQ	JAD225	S246329*8	463298BS	BS																		
WQ	JAD225A	G2I050204003	BDWG001EB	EB	40	135		39	40	135	*	38	40	135	*	89	40	135				
WQ	JAD225A	G2I050204004	BDWG002AB	AB	40	135		31	40	135	*	28	40	135	*	87	40	135				
WQ	JAD225A	G2I130000441B	G2I130000441B	LB	40	135		50	40	135		46	40	135		88	40	135				
WQ	JAD225A	G2I130000441C	G2I130000441C	BS	40	135		55	40	135		48	40	135		88	40	135				
WQ	JAD226	S246377*6	BDWG003TB	TB																		
WQ	JAD226	S2JAD226*1	JAD2261LB	LB																		
WQ	JAD226	S2JAD226*10	JAD22610BD	BD																		
WQ	JAD226	S2JAD226*12	JAD22612LB	LB																		
WQ	JAD226	S2JAD226*13	JAD22613BS	BS																		
WQ	JAD226	S2JAD226*2	JAD2262BS	BS																		
WQ	JAD226	S2JAD226*4	BDMW010R1MS	MS																		

WQ	JAD226	S2JAD226*6	BDMW010R1SD	SD															
WQ	JAD226A	G2I200000171B	G2I200000171B	LB	40	135		37	40	135	*	29	40	135	*	67	40	135	
WQ	JAD226A	G2I200000171C	G2I200000171C	BS	40	135		60	40	135		49	40	135		88	40	135	
WQ	JAD226A	G2I200000171L	G2I200000171L	BD	40	135		58	40	135		46	40	135		82	40	135	

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Units	MS Recovery	MSD Recovery	RPD (conc)	Lower Limit Accuracy (Recovery)	Upper Limit Accuracy (Recovery)	Accuracy Qual
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Thallium	10	U	ug/L	107	107	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Vanadium	1.1	U	ug/L	105	105	0.38	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Zinc	3	U	ug/L	101	101	0.40	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW7470	METHOD	NONE	Mercury	0.072	U	ug/L	100	97	2.64	75	125	
WQ	PCB	JAD226	S246400*5	BDMW010R1	SW8082	SW3520	NONE	Aroclor-1016	1	U	ug/L	74	77	3.97	45	134	
WQ	PCB	JAD226	S246400*5	BDMW010R1	SW8082	SW3520	NONE	Aroclor-1260	1	U	ug/L	82	88	7.06	41	144	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	Aldrin	0.05	U	ug/L	52	43	28.00	38	129	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	alpha bhc (alpha hexachlorocyclohexane)	0.05	U	ug/L	60	51	25.64	46	131	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	alpha endosulfan	0.05	U	ug/L	67	64	14.49	34	161	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	alpha-chlordane	0.05	U	ug/L	74	68	18.67	55	125	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	beta bhc (beta hexachlorocyclohexane)	0.05	U	ug/L	109	89	29.67	36	153	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	beta endosulfan	0.1	U	ug/L	73	70	13.33	40	162	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	delta bhc (delta hexachlorocyclohexane)	0.05	U	ug/L	78	67	24.84	53	137	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	Dieldrin	0.1	U	ug/L	77	70	19.35	34	150	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	endosulfan sulfate	0.1	U	ug/L	91	90	10.53	28	156	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	endrin	0.1	U	ug/L	82	75	18.18	41	158	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	endrin aldehyde	0.1	U	ug/L	82	75	18.18	20	146	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	endrin ketone	0.1	U	ug/L	100	105	4.65	42	122	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	gamma bhc (lindane)	0.05	U	ug/L	64	55	25.40	40	139	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	gamma-chlordane	0.05	U	ug/L	76	70	18.18	54	128	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	heptachlor	0.05	U	ug/L	61	51	27.12	37	148	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	heptachlor epoxide	0.05	U	ug/L	71	64	19.72	43	141	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	methoxychlor	0.5	U	ug/L	100	95	14.63	60	155	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	p,p'-DDD	0.1	U	ug/L	82	80	11.76	32	155	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	p,p'-DDE	0.1	U	ug/L	73	65	20.69	48	145	
WQ	PEST	JAD226	S246400*5	BDMW010R1	SW8081	SW3520	NONE	p,p'-DDT	0.1	U	ug/L	82	80	11.76	50	147	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	1-methylnaphthalene	10	U	ug/L	79	95	8.79	35	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,2'-Oxybis(1-chloro)propane	10	U	ug/L	68	79	5.19	15	144	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,4,5-Trichlorophenol	25	U	ug/L	84	93	0.00	38	127	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,4,6-Trichlorophenol	10	U	ug/L	84	94	1.07	36	126	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,4-Dichlorophenol	10	U	ug/L	85	100	6.19	25	134	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,4-Dimethylphenol	10	U	ug/L	69	76	0.00	28	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,4-Dinitrophenol	25	U	ug/L	91	110	9.52	10	209	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,4-Dinitrotoluene	10	U	ug/L	91	98	2.02	37	129	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2,6-Dinitrotoluene	10	U	ug/L	65	73	1.14	24	139	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2-Chloronaphthalene	10	U	ug/L	80	87	1.14	45	107	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2-Chlorophenol	10	U	ug/L	71	79	1.27	38	115	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2-Methylnaphthalene	10	U	ug/L	78	94	8.89	43	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2-Methylphenol (o-Cresol)	10	U	ug/L	76	87	3.51	31	119	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2-Nitroaniline	25	U	ug/L	84	95	2.13	26	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	2-Nitrophenol	10	U	ug/L	87	99	3.08	35	125	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	3,3'-Dichlorobenzidine	10	U	ug/L	51	47	17.48	10	144	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	3-Nitroaniline	25	U	ug/L	70	70	9.52	10	130	

4 2 0077

Table 7 - MS/MSD Results

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Units	MS Recovery	MSD Recovery	RPD (conc)	Lower Limit Accuracy (Recovery)	Upper Limit Accuracy (Recovery)	Accuracy Qual
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Aluminum	21	J	ug/L	97	97	0.30	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Antimony	2.5	U	ug/L	103	103	0.78	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Arsenic	10	U	ug/L	102	102	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Barium	24	J	ug/L	105	105	0.93	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Beryllium	0.27	U	ug/L	104	103	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Cadmium	0.35	U	ug/L	102	102	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Calcium	64000	=	ug/L	113	105	0.30	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Chromium, total	0.85	U	ug/L	103	103	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Cobalt	0.7	U	ug/L	104	104	0.39	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Copper	0.45	U	ug/L	107	107	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Iron	2500	=	ug/L	92	83	1.36	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Lead	0.75	U	ug/L	103	102	0.78	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Magnesium	16000	=	ug/L	107	105	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Manganese	39	=	ug/L	104	104	0.34	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Nickel	2.3	U	ug/L	104	103	0.39	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Potassium	2600	J	ug/L	111	110	0.56	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Selenium	2.1	U	ug/L	105	104	0.96	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Silver	0.95	U	ug/L	104	103	0.78	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Sodium	13000	=	ug/L	116	112	0.64	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Thallium	10	U	ug/L	106	106	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Vanadium	1.1	U	ug/L	104	104	0.38	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	FLDFLT	Zinc	3	U	ug/L	101	101	0.00	75	125	
WQ	DissMetal	JAD226	S246400*5	BDMW010R1	SW7470	METHOD	FLDFLT	Mercury	0.072	U	ug/L	90	90	0.22	75	125	
WQ	INORG	JAD226	S246400*5	BDMW010R1	SW9012	METHOD	NONE	cyanide	0.01	U	mg/L	95	91	4.50	90	110	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Aluminum	20	J	ug/L	97	97	0.10	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Antimony	2.5	U	ug/L	105	105	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Arsenic	10	U	ug/L	103	103	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Barium	26	J	ug/L	106	106	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Beryllium	0.27	U	ug/L	104	104	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Cadmium	0.35	U	ug/L	103	103	0.39	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Calcium	64000	=	ug/L	80	154	2.67	75	125	*
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Chromium, total	0.85	U	ug/L	104	104	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Cobalt	0.7	U	ug/L	104	104	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Copper	0.45	U	ug/L	108	108	0.74	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Iron	3800	=	ug/L	0	100	13.17	75	125	*
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Lead	0.75	U	ug/L	103	103	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Magnesium	16000	=	ug/L	100	118	2.12	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Manganese	40	=	ug/L	104	105	0.33	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Nickel	2.3	U	ug/L	104	105	0.38	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Potassium	2600	J	ug/L	109	111	0.94	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Selenium	2.1	U	ug/L	105	105	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Silver	0.95	U	ug/L	105	105	0.00	75	125	
WQ	METALS	JAD226	S246400*5	BDMW010R1	SW6010	SW3010	NONE	Sodium	13000	E	ug/L	106	118	2.56	75	125	

4 2 0078

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Units	MS Recovery	MSD Recovery	RPD (conc)	Lower Limit Accuracy (Recovery)	Upper Limit Accuracy (Recovery)	Accuracy Qual
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4,6-Dinitro-2-methylphenol	25	U	ug/L	84	97	5.29	10	173	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Bromophenyl phenyl ether	10	U	ug/L	71	83	6.21	36	124	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Chloro-3-methylphenol	10	U	ug/L	78	97	12.02	34	126	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Chloroaniline	10	U	ug/L	65	69	4.26	10	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Chlorophenyl phenyl ether	10	U	ug/L	84	94	2.15	22	140	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Methylphenol (p-Cresol)	10	U	ug/L	77	92	7.91	24	136	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Nitroaniline	25	U	ug/L	85	88	6.59	10	140	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	4-Nitrophenol	25	U	ug/L	91	100	0.00	12	143	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Acenaphthene	10	U	ug/L	81	92	3.31	36	121	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Acenaphthylene	10	U	ug/L	84	96	3.17	41	121	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Anthracene	10	U	ug/L	78	90	4.55	45	126	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Benzo(a)anthracene	10	U	ug/L	90	96	3.08	33	136	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Benzo(a)pyrene	10	U	ug/L	74	84	3.64	45	120	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Benzo(b)fluoranthene	10	U	ug/L	83	100	9.42	33	132	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Benzo(g,h,i)perylene	10	U	ug/L	87	95	1.05	28	146	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Benzo(k)fluoranthene	10	U	ug/L	71	74	5.26	33	150	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Benzyl butyl phthalate	10	U	ug/L	90	97	2.04	38	141	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Bis(2-Chloroethoxy) methane	10	U	ug/L	85	95	1.06	47	110	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	bis(2-Chloroethyl) ether (2-Chloroethyl ether)	10	U	ug/L	79	87	0.00	34	114	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	bis(2-Ethylhexyl) phthalate	10	U	ug/L	91	100	0.00	34	160	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Carbazole	10	U	ug/L	86	93	2.13	48	127	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Chrysene	10	U	ug/L	82	89	1.12	44	128	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Di-n-butyl phthalate	10	U	ug/L	81	92	3.31	43	145	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Di-n-octylphthalate	10	U	ug/L	91	100	0.00	24	152	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Dibenz(a,h)anthracene	10	U	ug/L	84	95	2.13	33	143	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Dibenzofuran	10	U	ug/L	87	98	2.06	50	119	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Diethyl phthalate	10	U	ug/L	91	100	0.00	46	134	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Dimethyl phthalate	10	U	ug/L	89	100	2.02	22	141	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Fluoranthene	10	U	ug/L	73	81	1.24	41	129	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Fluorene	10	U	ug/L	86	97	2.08	50	124	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Hexachlorobenzene	10	U	ug/L	72	84	6.13	49	121	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Hexachlorobutadiene	10	U	ug/L	71	83	6.21	27	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Hexachlorocyclopentadiene	10	U	ug/L	18	20	0.00	0	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Hexachloroethane	10	U	ug/L	57	68	7.63	26	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Indeno(1,2,3-c,d)pyrene	10	U	ug/L	91	100	0.00	37	140	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Isophorone	10	U	ug/L	79	91	4.49	29	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	n-Nitrosodi-n-propylamine	10	U	ug/L	78	93	7.82	31	138	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	n-Nitrosodiphenylamine	10	U	ug/L	56	66	6.25	24	146	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Naphthalene	10	U	ug/L	73	84	4.88	41	130	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Nitrobenzene	10	U	ug/L	78	88	2.30	50	111	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Pentachlorophenol	25	U	ug/L	88	100	3.05	19	148	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Phenanthrene	10	U	ug/L	88	99	2.04	50	121	
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Phenol	10	U	ug/L	73	77	3.82	33	122	

Table 7 - MS/MSD Results

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Units	MS Recovery	MSD Recovery	RPD (conc)	Lower Limit Accuracy (Recovery)	Upper Limit Accuracy (Recovery)	Accuracy Qual
WQ	SVOC	JAD226	S246400*5	BDMW010R1	SW8270	SW3520	NONE	Pyrene	10	U	ug/L	91	100	0.00	31	139	

Table 8 - MS/MSD Qualifications

Matrix	Parameter Class	SDG	Lab Sample ID	Sample ID	Sample Type	Analytical Method	Preparation Method	Leach Method	Parameter	Lab Result	Lab Qual	Final Result	Final Qual	Detection Limit	Reporting Limit	Units	Validation Notes
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	Aldrin	0.05	U	0.05	UJ	0.0099	0.05	ug/L	MD
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	heptachlor	0.05	U	0.05	UJ	0.0062	0.05	ug/L	MD
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	p,p'-DDE	0.1	U	0.1	UJ	0.014	0.1	ug/L	MD
WG	PEST	JAD226	S246400*5	BDMW010R1	N	SW8081	SW3520	NONE	alpha-chlordane	0.05	U	0.05	UJ	0.0076	0.05	ug/L	MD
WG	METALS	JAD225	S246329*6	BDMW001R1	N	SW6010	SW3010	NONE	Aluminum	530	N	530	J	14	200	ug/L	MS
WG	METALS	JAD225	S246329*2	BDMW002R1	N	SW6010	SW3010	NONE	Aluminum	520	N	520	J	14	200	ug/L	MS

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Appendix C

LABORATORY REPORTS

SEVERN TRENT SERVICES

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STL Savannah

LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
TAL Metals (SW6010)					
Aluminum, ug/l	73B	22B	22B	24B	20B
Antimony, ug/l	2.5U	2.5U	2.5U	2.5U	2.5U
Arsenic, ug/l	10U	10U	10U	10U	10U
Barium, ug/l	310	96B	370	320	26B
Beryllium, ug/l	0.27U	0.27U	0.27U	0.27U	0.27U
Cadmium, ug/l	0.35U	0.35U	0.35U	0.35U	0.35U
Calcium, ug/l	160000	35000	91000	83000	64000
Chromium, ug/l	0.85U	0.85U	0.85U	0.85U	0.85U
Cobalt, ug/l	1.5B	1.4B	0.70U	0.70U	0.70U
Copper, ug/l	0.49B	0.45U	0.45U	0.45U	0.45U
Iron, ug/l	31000	230	11000	9200	3800
Lead, ug/l	0.75U	0.75U	0.75U	0.75U	0.75U
Magnesium, ug/l	39000	9900	15000	14000	16000
Manganese, ug/l	590	150	440	420	40
Nickel, ug/l	3.2B	2.3U	2.3U	2.3U	2.3U
Potassium, ug/l	14000	3700B	8100	7700	2600B
Selenium, ug/l	2.1U	2.1U	2.1U	2.1U	2.1U
Silver, ug/l	0.95U	0.95U	0.95U	0.95U	0.95U

SEVERN TRENT SERVICES

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STL Savannah

LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
Sodium, ug/l	52000E	36000E	18000E	18000E	13000E
Thallium, ug/l	10U	10U	10U	10U	10U
Vanadium, ug/l	1.4B	1.1U	1.1U	1.1U	1.1U
Zinc, ug/l	5.6B	3.2B	3.0U	3.0U	3.0U
Dilution Factor	0.5	0.5	0.5	0.5	0.5
Prep Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Prep Time	09:30	09:30	09:30	09:30	09:30
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	09.13.02
Analysis Time	14:04	14:08	14:12	14:28	14:32
Batch ID	0912H	0912H	0912H	0912H	0912H
Clock ID	1D0913	1D0913	1D0913	1D0913	1D0913
Quantitation Factor	0.50	0.50	0.50	0.50	0.50

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
Mercury (SW7470)					
Mercury, ug/l	0.072U	0.072U	0.072U	0.072U	0.072U
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	16:20	16:20	16:20	16:20	16:20
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	09.13.02
Analysis Time	10:56	11:05	11:07	11:10	11:13
Batch ID	0910U	0910U	0910U	0910U	0910U
Clock ID	110912	110912	110912	110912	110912
Quantitation Factor	1.0	1.0	1.0	1.0	1.0
Arsenic (SW7060), mg/l	*	*	*	*	*

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
TAL Metals (Dissolved) (6010)					
Aluminum (Dissolved), ug/l	43B	23B	26B	24B	21B
Antimony (Dissolved), ug/l	2.5U	2.5U	2.5U	2.5U	2.5U
Arsenic, (Dissolved), ug/l	10U	10U	10U	10U	10U
Barium, (Dissolved), ug/l	300	96B	380	320	24B
Beryllium (Dissolved), ug/l	0.27U	0.27U	0.27U	0.27U	0.27U
Cadmium (Dissolved), ug/l	0.35U	0.35U	0.35U	0.35U	0.35U
Calcium (Dissolved), ug/l	160000	35000	94000	84000	64000
Chromium, (Dissolved), ug/l	0.85U	0.85U	0.85U	0.85U	0.85U
Cobalt (Dissolved), ug/l	0.77B	1.5B	0.70U	0.70U	0.70U
Copper, Dissolved, ug/l	0.45U	0.45U	0.45U	0.45U	0.45U
Iron (Dissolved), ug/l	29000	230	11000	9300	2500
Lead, (Dissolved), ug/l	0.75U	0.75U	0.75U	0.75U	0.75U
Magnesium (Dissolved), ug/l	38000	10000	15000	15000	16000
Manganese (Dissolved), ug/l	580	160	450	420	39
Nickel, (Dissolved), ug/l	2.3U	2.3U	2.3U	2.3U	2.3U
Potassium (Dissolved), ug/l	14000	3800B	8400	7700	2600B
Selenium (Dissolved), ug/l	2.1U	2.1U	2.1U	2.1U	2.1U
Silver (Dissolved), ug/l	0.95U	0.95U	0.95U	0.95U	0.95U

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CH2M Hill
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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
Sodium (Dissolved), ug/l	51000	36000	19000	18000	13000
Thallium (Dissolved), ug/l	10U	10U	10U	10U	10U
Vanadium (Dissolved), ug/l	1.3B	1.1U	1.1U	1.1U	1.1U
Zinc, (Dissolved), ug/l	3.0U	3.0U	3.0U	3.0U	3.0U
Dilution Factor	0.5	0.5	0.5	0.5	0.5
Prep Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Prep Time	09:25	09:25	09:25	09:25	09:25
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	09.13.02
Analysis Time	15:32	15:36	15:40	15:44	15:48
Batch ID	0912G	0912G	0912G	0912G	0912G
Clock ID	1D0913	1D0913	1D0913	1D0913	1D0913
Quantitation Factor	0.50	0.50	0.50	0.50	0.50

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46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
Mercury (Dissolved) (7470)					
Mercury (Dissolved), ug/l	0.072U	0.072U	0.072U	0.072U	0.072U
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	15:10	15:10	15:10	15:10	15:10
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	09.13.02
Analysis Time	10:02	10:04	10:07	10:10	10:13
Batch ID	0910T	0910T	0910T	0910T	0910T
Clock ID	110912	110912	110912	110912	110912
Quantitation Factor	1.0	1.0	1.0	1.0	1.0
Arsenic (Dissolved) (7060)					
Arsenic (Dissolved), ug/l	*	*	*	*	*

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
Cyanide, Total (9012A), mg/l	0.010U	0.010U	0.010U	0.010U	0.010U
Dilution Factor	1	1	1	1	1
Prep Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Prep Time	18:05	18:05	18:05	18:05	18:05
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	18:05	18:05	18:05	18:05	18:05
Batch ID	0912S	0912S	0912S	0912S	0912S
Clock ID	1CN0912	1CN0912	1CN0912	1CN0912	1CN0912
Quantitation Factor	1	1	1	1	1

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
TAL Metals (SW6010)	
Aluminum, ug/l	22B
Antimony, ug/l	2.5U
Arsenic, ug/l	10U
Barium, ug/l	80B
Beryllium, ug/l	0.27U
Cadmium, ug/l	0.35U
Calcium, ug/l	56000
Chromium, ug/l	0.85U
Cobalt, ug/l	0.70U
Copper, ug/l	0.45U
Iron, ug/l	1000
Lead, ug/l	0.75U
Magnesium, ug/l	17000
Manganese, ug/l	120
Nickel, ug/l	2.3U
Potassium, ug/l	59000
Selenium, ug/l	8.3
Silver, ug/l	0.95U
Sodium, ug/l	29000E
Thallium, ug/l	10U
Vanadium, ug/l	1.1U
Zinc, ug/l	3.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
Dilution Factor	0.5
Prep Date	09.12.02
Prep Time	09:30
Analysis Date	09.13.02
Analysis Time	14:52
Batch ID	0912H
Clock ID	1D0913
Quantitation Factor	0.50
Mercury (SW7470)	
Mercury, ug/l	0.072U
Dilution Factor	1
Prep Date	09.10.02
Prep Time	16:20
Analysis Date	09.13.02
Analysis Time	11:28
Batch ID	0910U
Clock ID	110912
Quantitation Factor	1.0
Arsenic (SW7060), mg/l	*

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
TAL Metals (Dissolved) (6010)	
Aluminum (Dissolved), ug/l	22B
Antimony (Dissolved), ug/l	2.5U
Arsenic, (Dissolved), ug/l	10U
Barium, (Dissolved), ug/l	85B
Beryllium (Dissolved), ug/l	0.27U
Cadmium (Dissolved), ug/l	0.35U
Calcium (Dissolved), ug/l	55000
Chromium, (Dissolved), ug/l	0.85U
Cobalt (Dissolved), ug/l	0.70U
Copper, Dissolved, ug/l	0.76B
Iron (Dissolved), ug/l	420
Lead, (Dissolved), ug/l	0.75U
Magnesium (Dissolved), ug/l	17000
Manganese (Dissolved), ug/l	160
Nickel, (Dissolved), ug/l	2.3U
Potassium (Dissolved), ug/l	57000
Selenium (Dissolved), ug/l	8.6
Silver (Dissolved), ug/l	0.95U
Sodium (Dissolved), ug/l	28000
Thallium (Dissolved), ug/l	10U
Vanadium (Dissolved), ug/l	1.1U
Zinc, (Dissolved), ug/l	3.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
Dilution Factor	0.5
Prep Date	09.12.02
Prep Time	09:25
Analysis Date	09.13.02
Analysis Time	16:16
Batch ID	0912G
Clock ID	1D0913
Quantitation Factor	0.50
Mercury (Dissolved) (7470)	
Mercury (Dissolved), ug/l	0.072U
Dilution Factor	1
Prep Date	09.10.02
Prep Time	15:10
Analysis Date	09.13.02
Analysis Time	10:33
Batch ID	0910T
Clock ID	110912
Quantitation Factor	1.0
Arsenic (Dissolved) (7060)	
Arsenic (Dissolved), ug/l	*

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
Cyanide, Total (9012A), mg/l	0.010U
Dilution Factor	1
Prep Date	09.12.02
Prep Time	18:18
Analysis Date	09.12.02
Analysis Time	18:18
Batch ID	0912S
Clock ID	1CN0912
Quantitation Factor	1

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LOG NO: S2-46377
Received: 06 SEP 02
Reported: 10 OCT 02

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Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
TAL Metals (SW6010)			
Aluminum, ug/l	110B	60B	24B
Antimony, ug/l	2.5U	2.5U	2.5U
Arsenic, ug/l	10U	10U	10U
Barium, ug/l	170B	64B	47B
Beryllium, ug/l	0.49B	1.5B	0.27U
Cadmium, ug/l	0.35U	0.35U	0.35U
Calcium, ug/l	3500B	8600	35000
Chromium, ug/l	0.85U	0.85U	0.85U
Cobalt, ug/l	2.0B	8.7B	0.70U
Copper, ug/l	0.45U	0.45U	0.45U
Iron, ug/l	170	2200	11000
Lead, ug/l	0.75U	0.75U	0.75U
Magnesium, ug/l	5300	5200	9900
Manganese, ug/l	26	65	44
Nickel, ug/l	2.3U	10B	2.3U
Potassium, ug/l	2500B	1700B	1600B
Selenium, ug/l	2.1U	2.1U	2.1U
Silver, ug/l	0.95U	0.95U	0.95U
Sodium, ug/l	20000E	22000E	15000E
Thallium, ug/l	10U	10U	10U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Vanadium, ug/l	1.1U	1.1U	1.1U
Zinc, ug/l	3.4B	61	3.4B
Dilution Factor	0.5	0.5	0.5
Prep Date	09.12.02	09.12.02	09.12.02
Prep Time	09:30	09:30	09:30
Analysis Date	09.13.02	09.13.02	09.13.02
Analysis Time	13:44	13:48	13:52
Batch ID	0912H	0912H	0912H
Clock ID	1D0913	1D0913	1D0913
Quantitation Factor	0.50	0.50	0.50
Mercury (SW7470)			
Mercury, ug/l	0.072U	0.072U	0.072U
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	16:20	16:20	16:20
Analysis Date	09.13.02	09.13.02	09.13.02
Analysis Time	10:42	10:45	10:47
Batch ID	0910U	0910U	0910U
Clock ID	110912	110912	110912
Quantitation Factor	1.0	1.0	1.0
Arsenic (SW7060), mg/l	*	*	*

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
TAL Metals (Dissolved) (6010)			
Aluminum (Dissolved), ug/l	75B	39B	22B
Antimony (Dissolved), ug/l	2.5U	2.5U	2.5U
Arsenic, (Dissolved), ug/l	10U	10U	10U
Barium, (Dissolved), ug/l	170B	62B	51B
Beryllium (Dissolved), ug/l	0.49B	1.3B	0.27U
Cadmium (Dissolved), ug/l	0.35U	0.35U	0.35U
Calcium (Dissolved), ug/l	3500B	8400	37000
Chromium, (Dissolved), ug/l	0.85U	0.85U	0.85U
Cobalt (Dissolved), ug/l	2.0B	8.2B	0.70U
Copper, Dissolved, ug/l	0.45U	0.45U	0.45U
Iron (Dissolved), ug/l	140	2200	6600
Lead, (Dissolved), ug/l	0.75U	0.75U	0.75U
Magnesium (Dissolved), ug/l	5300	5100	10000
Manganese (Dissolved), ug/l	26	62	65
Nickel, (Dissolved), ug/l	2.3U	10B	2.3U
Potassium (Dissolved), ug/l	2400B	1600B	2300B
Selenium (Dissolved), ug/l	2.1U	2.1U	2.1U
Silver (Dissolved), ug/l	0.95U	0.95U	0.95U
Sodium (Dissolved), ug/l	20000	22000	16000
Thallium (Dissolved), ug/l	10U	10U	10U

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LOG NO: S2-46377
Received: 06 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Vanadium (Dissolved), ug/l	1.1U	1.1U	1.1U
Zinc, (Dissolved), ug/l	4.1B	42	4.3B
Dilution Factor	0.5	0.5	0.5
Prep Date	09.12.02	09.12.02	09.12.02
Prep Time	09:25	09:25	09:25
Analysis Date	09.13.02	09.13.02	09.13.02
Analysis Time	15:04	15:16	15:20
Batch ID	0912G	0912G	0912G
Clock ID	1D0913	1D0913	1D0913
Quantitation Factor	0.50	0.50	0.50
Mercury (Dissolved) (7470)			
Mercury (Dissolved), ug/l	0.072U	0.072U	0.072U
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	15:10	15:10	15:10
Analysis Date	09.13.02	09.13.02	09.13.02
Analysis Time	09:42	09:44	09:47
Batch ID	0910T	0910T	0910T
Clock ID	110912	110912	110912
Quantitation Factor	1.0	1.0	1.0

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Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Arsenic (Dissolved) (7060)			
Arsenic (Dissolved), *	*	*	*
Quantitation Factor	---	*	---
Cyanide, Total (9012A), mg/l	0.010U	0.010U	0.010U
Dilution Factor	1	1	1
Prep Date	09.12.02	09.12.02	09.12.02
Prep Time	17:52	18:05	18:05
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	17:52	18:05	18:05
Batch ID	0912S	0912S	0912S
Clock ID	1CN0912	1CN0912	1CN0912
Quantitation Factor	1	1	1

4 2 0100

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Mr. Herb Kelly
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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
TAL Metals (SW6010)	
Aluminum, ug/l	43B
Antimony, ug/l	2.5U
Arsenic, ug/l	10U
Barium, ug/l	31B
Beryllium, ug/l	0.27U
Cadmium, ug/l	0.35U
Calcium, ug/l	51000
Chromium, ug/l	0.85U
Cobalt, ug/l	0.70U
Copper, ug/l	0.45U
Iron, ug/l	2100
Lead, ug/l	0.92B
Magnesium, ug/l	14000
Manganese, ug/l	120
Nickel, ug/l	2.3U
Potassium, ug/l	1600B
Selenium, ug/l	2.1U
Silver, ug/l	0.95U
Sodium, ug/l	12000E
Thallium, ug/l	10U
Vanadium, ug/l	1.1U
Zinc, ug/l	3.0U

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Dilution Factor	0.5
Prep Date	09.12.02
Prep Time	09:30
Analysis Date	09.13.02
Analysis Time	13:56
Batch ID	0912H
Clock ID	1D0913
Quantitation Factor	0.50
Mercury (SW7470)	
Mercury, ug/l	0.072U
Dilution Factor	1
Prep Date	09.10.02
Prep Time	16:20
Analysis Date	09.13.02
Analysis Time	10:50
Batch ID	0910U
Clock ID	110912
Quantitation Factor	1.0
Arsenic (SW7060), mg/l	*

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3011 SW Williston Road
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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
TAL Metals (Dissolved) (6010)	
Aluminum (Dissolved), ug/l	22B
Antimony (Dissolved), ug/l	2.5U
Arsenic, (Dissolved), ug/l	10U
Barium, (Dissolved), ug/l	29B
Beryllium (Dissolved), ug/l	0.27U
Cadmium (Dissolved), ug/l	0.35U
Calcium (Dissolved), ug/l	51000
Chromium, (Dissolved), ug/l	0.85U
Cobalt (Dissolved), ug/l	0.70U
Copper, Dissolved, ug/l	0.45U
Iron (Dissolved), ug/l	1500
Lead, (Dissolved), ug/l	0.75U
Magnesium (Dissolved), ug/l	14000
Manganese (Dissolved), ug/l	74
Nickel, (Dissolved), ug/l	2.3U
Potassium (Dissolved), ug/l	1600B
Selenium (Dissolved), ug/l	2.1U
Silver (Dissolved), ug/l	0.95U
Sodium (Dissolved), ug/l	12000
Thallium (Dissolved), ug/l	10U
Vanadium (Dissolved), ug/l	1.1U
Zinc, (Dissolved), ug/l	3.0U

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Client PO. No.: 53470
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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Dilution Factor	0.5
Prep Date	09.12.02
Prep Time	09:25
Analysis Date	09.13.02
Analysis Time	15:24
Batch ID	0912G
Clock ID	1D0913
Quantitation Factor	0.50
Mercury (Dissolved) (7470)	
Mercury (Dissolved), ug/l	0.072U
Dilution Factor	1
Prep Date	09.10.02
Prep Time	15:10
Analysis Date	09.13.02
Analysis Time	09:56
Batch ID	0910T
Clock ID	110912
Quantitation Factor	1.0
Arsenic (Dissolved) (7060)	
Arsenic (Dissolved), *	*

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Cyanide, Total (9012A), mg/l	0.010U
Dilution Factor	1
Prep Date	09.12.02
Prep Time	18:05
Analysis Date	09.12.02
Analysis Time	18:05
Batch ID	0912S
Clock ID	1CN0912
Quantitation Factor	1

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Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-5	BKBDMW002R1	09-04-02/08:57	JAD226

PARAMETER	46377-5
TAL Metals (SW6010)	
Aluminum, ug/l	150B
Antimony, ug/l	2.5U
Arsenic, ug/l	10U
Barium, ug/l	21B
Beryllium, ug/l	0.27U
Cadmium, ug/l	0.35U
Calcium, ug/l	6800
Chromium, ug/l	0.85U
Cobalt, ug/l	0.70U
Copper, ug/l	0.45U
Iron, ug/l	450
Lead, ug/l	0.75U
Magnesium, ug/l	1900B
Manganese, ug/l	25
Nickel, ug/l	2.3U
Potassium, ug/l	740B
Selenium, ug/l	2.1U
Silver, ug/l	0.95U
Sodium, ug/l	14000E
Thallium, ug/l	10U
Vanadium, ug/l	1.1U
Zinc, ug/l	9.9B

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Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-5	BKBDMW002R1	09-04-02/08:57	JAD226

PARAMETER	46377-5
Dilution Factor	0.5
Prep Date	09.12.02
Prep Time	09:30
Analysis Date	09.13.02
Analysis Time	14:00
Batch ID	0912H
Clock ID	1D0913
Quantitation Factor	0.50
Mercury (SW7470)	
Mercury, ug/l	0.072U
Dilution Factor	1
Prep Date	09.10.02
Prep Time	16:20
Analysis Date	09.13.02
Analysis Time	10:53
Batch ID	0910U
Clock ID	110912
Quantitation Factor	1.0
Arsenic (SW7060), mg/l	*

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-5	BKBDMW002R1	09-04-02/08:57	JAD226

PARAMETER	46377-5
TAL Metals (Dissolved) (6010)	
Aluminum (Dissolved), ug/l	48B
Antimony (Dissolved), ug/l	2.5U
Arsenic, (Dissolved), ug/l	10U
Barium, (Dissolved), ug/l	20B
Beryllium (Dissolved), ug/l	0.27U
Cadmium (Dissolved), ug/l	0.35U
Calcium (Dissolved), ug/l	6800
Chromium, (Dissolved), ug/l	0.85U
Cobalt (Dissolved), ug/l	0.70U
Copper, Dissolved, ug/l	0.45U
Iron (Dissolved), ug/l	380
Lead, (Dissolved), ug/l	0.75U
Magnesium (Dissolved), ug/l	1800B
Manganese (Dissolved), ug/l	25
Nickel, (Dissolved), ug/l	2.3U
Potassium (Dissolved), ug/l	740B
Selenium (Dissolved), ug/l	2.1U
Silver (Dissolved), ug/l	0.95U
Sodium (Dissolved), ug/l	14000
Thallium (Dissolved), ug/l	10U
Vanadium (Dissolved), ug/l	1.1U
Zinc, (Dissolved), ug/l	9.6B

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Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-5	BKBDMW002R1	09-04-02/08:57	JAD226

PARAMETER	46377-5
Dilution Factor	0.5
Prep Date	09.12.02
Prep Time	09:25
Analysis Date	09.13.02
Analysis Time	15:28
Batch ID	0912G
Clock ID	1D0913
Quantitation Factor	0.50
Mercury (Dissolved) (7470)	
Mercury (Dissolved), ug/l	0.072U
Dilution Factor	1
Prep Date	09.10.02
Prep Time	15:10
Analysis Date	09.13.02
Analysis Time	09:59
Batch ID	0910T
Clock ID	110912
Quantitation Factor	1.0
Arsenic (Dissolved) (7060)	
Arsenic (Dissolved), *	*

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-5	BKBDMW002R1	09-04-02/08:57	JAD226

PARAMETER	46377-5
Cyanide, Total (9012A), mg/l	0.010U
Dilution Factor	1
Prep Date	09.12.02
Prep Time	18:05
Analysis Date	09.12.02
Analysis Time	18:05
Batch ID	0912S
Clock ID	1CN0912
Quantitation Factor	1

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LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
TAL Metals (SW6010)				
Aluminum, ug/l	66BN	520N	14BN	14UN
Antimony, ug/l	2.5U	2.5U	2.5U	2.5U
Arsenic, ug/l	10U	10U	10U	10U
Barium, ug/l	56B	110B	3.8B	3.8B
Beryllium, ug/l	0.27U	0.29B	0.27U	0.27U
Cadmium, ug/l	5.3	0.35U	0.35U	0.35U
Calcium, ug/l	110000	13000	26000	26000
Chromium, ug/l	0.85U	1.3B	1.1B	0.85U
Cobalt, ug/l	0.70U	0.70U	0.70U	0.70U
Copper, ug/l	5.6B	0.45U	0.45U	0.45U
Iron, ug/l	2000	250	11B	9.5B
Lead, ug/l	0.75U	0.78B	0.75U	0.75U
Magnesium, ug/l	13000	8900	4200B	4200B
Manganese, ug/l	91	34	0.70U	0.70U
Nickel, ug/l	29B	2.3U	2.3U	2.3U
Potassium, ug/l	15000	13000	1100B	1100B
Selenium, ug/l	2.1U	2.1U	2.1U	2.1U
Silver, ug/l	0.95U	0.95U	0.95U	0.95U
Sodium, ug/l	10000	3700B	3200B	3200B

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LOG NO: S2-46329
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Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
Thallium, ug/l	10U	10U	10U	10U
Vanadium, ug/l	1.1U	1.1U	1.1U	1.1U
Zinc, ug/l	1900	3.0U	3.0U	3.0U
Dilution Factor	0.5	0.5	0.5	0.5
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	12:05	12:05	12:05	12:05
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	02:39	03:06	03:34	03:43
Batch ID	0910K	0910K	0910K	0910K
Clock ID	1D0911	1D0911	1D0911	1D0911
Quantitation Factor	0.50	0.50	0.50	0.50
Mercury (SW7470)				
Mercury, ug/l	0.072U	0.072U	0.072U	0.072U
Dilution Factor	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	11:00	11:00	11:00	11:00
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	17:20	17:31	17:43	17:48
Batch ID	0910R	0910R	0910R	0910R
Clock ID	110912	110912	110912	110912
Quantitation Factor	1.0	1.0	1.0	1.0

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LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
TAL Metals (Dissolved) (6010)				
Aluminum (Dissolved), ug/l	14UN	120BN	14UN	14UN
Antimony (Dissolved), ug/l	2.5U	2.5U	2.5U	2.5U
Arsenic, (Dissolved), ug/l	10U	10U	10U	10U
Barium, (Dissolved), ug/l	60B	110B	4.0B	3.8B
Beryllium (Dissolved), ug/l	0.27U	0.27U	0.27U	0.27U
Cadmium (Dissolved), ug/l	4.6B	0.35U	0.35U	0.35U
Calcium (Dissolved), ug/l	110000	12000	26000	26000
Chromium, (Dissolved), ug/l	0.85U	0.85U	0.85U	0.85U
Cobalt (Dissolved), ug/l	0.79B	0.70U	0.70U	0.70U
Copper, Dissolved, ug/l	4.4B	1.3B	0.76B	0.45U
Iron (Dissolved), ug/l	1300	48B	9.0U	9.0U
Lead, (Dissolved), ug/l	0.75U	0.75U	0.75U	0.75U
Magnesium (Dissolved), ug/l	13000	8500	4200B	4200B
Manganese (Dissolved), ug/l	120	32	0.70U	0.70U
Nickel, (Dissolved), ug/l	29B	2.3U	2.3U	2.3U
Potassium (Dissolved), ug/l	16000	13000	1200B	1100B
Selenium (Dissolved), ug/l	2.1U	2.1U	2.1U	2.1U
Silver (Dissolved), ug/l	0.95U	0.95U	0.95U	0.95U
Sodium (Dissolved), ug/l	11000	3700B	3200B	3200B

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Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
Thallium (Dissolved), ug/l	10U	10U	10U	10U
Vanadium (Dissolved), ug/l	1.1U	1.1U	1.1U	1.1U
Zinc, (Dissolved), ug/l	1800	3.2B	3.0U	3.2B
Dilution Factor	0.5	0.5	0.5	0.5
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	12:05	12:05	12:05	12:05
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	02:35	02:44	03:29	03:38
Batch ID	0910K	0910K	0910K	0910K
Clock ID	1D0911	1D0911	1D0911	1D0911
Quantitation Factor	0.50	0.5	0.5	0.5
Mercury (Dissolved) (7470)				
Mercury (Dissolved), ug/l	0.072U	0.072U	0.072U	0.072U
Dilution Factor	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	11:00	11:00	11:00	11:00
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	17:17	17:28	17:40	17:46
Batch ID	0910R	0910R	0910R	0910R
Clock ID	110912	110912	110912	110912
Quantitation Factor	0.50	0.50	0.50	0.50

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
Cyanide, Total (9012A), mg/l	0.010U	0.010U	0.010U	0.010U
Dilution Factor	1	1	1	1
Prep Date	09.11.02	09.11.02	09.11.02	09.11.02
Prep Time	15:12	15:12	15:12	15:12
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	15:12	15:12	15:12	15:12
Batch ID	0911S	0911S	0911S	0911S
Clock ID	1CN0912	1CN0912	1CN0912	1CN0912
Quantitation Factor	1.0	1.0	1.0	1.0

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Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
TAL Metals (SW6010)		
Aluminum, ug/l	18BN	530N
Antimony, ug/l	2.5U	2.5U
Arsenic, ug/l	10U	10U
Barium, ug/l	180B	34B
Beryllium, ug/l	0.27U	0.27U
Cadmium, ug/l	1.5B	0.35U
Calcium, ug/l	150000	2300B
Chromium, ug/l	0.85U	0.85U
Cobalt, ug/l	0.70U	0.70U
Copper, ug/l	2.0B	0.45U
Iron, ug/l	18000	200
Lead, ug/l	0.75U	0.75U
Magnesium, ug/l	6900	1200B
Manganese, ug/l	390	3.6B
Nickel, ug/l	2.3U	2.3U
Potassium, ug/l	5400	2000B
Selenium, ug/l	2.1U	2.1U
Silver, ug/l	0.95U	0.95U
Sodium, ug/l	12000	1600B
Thallium, ug/l	10U	10U
Vanadium, ug/l	1.1U	1.6B

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Client PO. No.: 53470
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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
Zinc, ug/l	110	3.0U
Dilution Factor	0.5	0.5
Prep Date	09.10.02	09.10.02
Prep Time	12:05	12:05
Analysis Date	09.12.02	09.12.02
Analysis Time	04:01	04:10
Batch ID	0910K	0910K
Clock ID	1D0911	1D0911
Quantitation Factor	0.50	0.50
Mercury (SW7470)		
Mercury, ug/l	0.072U	0.072U
Dilution Factor	1	1
Prep Date	09.10.02	09.10.02
Prep Time	11:00	11:00
Analysis Date	09.12.02	09.12.02
Analysis Time	17:54	18:00
Batch ID	0910R	0910R
Clock ID	110912	110912
Quantitation Factor	1.0	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
TAL Metals (Dissolved) (6010)		
Aluminum (Dissolved), ug/l	14UN	120BN
Antimony (Dissolved), ug/l	2.5U	2.5U
Arsenic, (Dissolved), ug/l	10U	10U
Barium, (Dissolved), ug/l	180B	31B
Beryllium (Dissolved), ug/l	0.27U	0.27U
Cadmium (Dissolved), ug/l	1.3B	0.35U
Calcium (Dissolved), ug/l	150000	2200B
Chromium, (Dissolved), ug/l	0.85U	0.85U
Cobalt (Dissolved), ug/l	0.70U	0.70U
Copper, Dissolved, ug/l	2.1B	1.7B
Iron (Dissolved), ug/l	19000	45B
Lead, (Dissolved), ug/l	0.75U	0.75U
Magnesium (Dissolved), ug/l	6600	1200B
Manganese (Dissolved), ug/l	380	3.3B
Nickel, (Dissolved), ug/l	2.3U	2.3U
Potassium (Dissolved), ug/l	5300	2000B
Selenium (Dissolved), ug/l	2.1U	2.1U
Silver (Dissolved), ug/l	0.95U	0.95U
Sodium (Dissolved), ug/l	12000	1600B
Thallium (Dissolved), ug/l	10U	10U
Vanadium (Dissolved), ug/l	1.1U	1.1U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
Zinc, (Dissolved), ug/l	100	3.6B
Dilution Factor	0.5	0.5
Prep Date	09.10.02	09.10.02
Prep Time	12:05	12:05
Analysis Date	09.12.02	09.12.02
Analysis Time	03:47	04:06
Batch ID	0910K	0910K
Clock ID	1D0911	1D0911
Quantitation Factor	0.5	0.5
Mercury (Dissolved) (7470)		
Mercury (Dissolved), ug/l	0.072U	0.072U
Dilution Factor	1	1
Prep Date	09.10.02	09.10.02
Prep Time	11:00	11:00
Analysis Date	09.12.02	09.12.02
Analysis Time	17:51	17:57
Batch ID	0910R	0910R
Clock ID	110912	110912
Quantitation Factor	0.50	0.50

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
Cyanide, Total (9012A), mg/l	0.010U	0.010U
Dilution Factor	1	1
Prep Date	09.11.02	09.11.02
Prep Time	15:25	15:25
Analysis Date	09.12.02	09.12.02
Analysis Time	15:25	15:25
Batch ID	0911S	0911S
Clock ID	1CN0912	1CN0912
Quantitation Factor	1.0	1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
TAL Metals (SW6010)			
Aluminum, ug/l	14U	970	97 %
Antimony, ug/l	2.5U	240	96 %
Arsenic, ug/l	10U	982	98 %
Barium, ug/l	0.60U	1020	102 %
Beryllium, ug/l	0.27U	24.6	98 %
Cadmium, ug/l	0.35U	24.5	98 %
Calcium, ug/l	22U	2570B	103 %
Chromium, ug/l	0.85U	100	100 %
Cobalt, ug/l	0.70U	253	101 %
Copper, ug/l	0.45U	127	102 %
Iron, ug/l	9.0U	502	100 %
Lead, ug/l	0.75U	249	100 %
Magnesium, ug/l	55U	2550B	102 %
Manganese, ug/l	0.70U	251	101 %
Nickel, ug/l	2.3U	251	100 %
Potassium, ug/l	95U	2620B	105 %
Selenium, ug/l	2.1U	989	99 %
Silver, ug/l	0.95U	25.0	100 %
Sodium, ug/l	160U	2570B	103 %
Thallium, ug/l	10U	1000	100 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Vanadium, ug/l	1.1U	249	100 %
Zinc, ug/l	3.0U	249	100 %
Dilution Factor	0.5	0.5	0.5
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	12:05	12:05	12:05
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	02:25	02:30	02:30
Batch ID	0910K	0910K	0910K
Clock ID	1D0911	1D0911	1D0911
Quantitation Factor	0.50	0.50	0.50
Mercury (SW7470)			
Mercury, ug/l	0.072U	2.58	103 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	11:00	11:00	11:00
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	17:05	17:08	17:08
Batch ID	0910R	0910R	0910R
Clock ID	110912	110912	110912
Quantitation Factor	1.0	1.0	1.0

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46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
TAL Metals (Dissolved) (6010)			
Aluminum (Dissolved), ug/l	14U	970	97 %
Antimony (Dissolved), ug/l	2.5U	240	96 %
Arsenic, (Dissolved), ug/l	10U	982	98 %
Barium, (Dissolved), ug/l	0.60U	1020	102 %
Beryllium (Dissolved), ug/l	0.27U	24.6	98 %
Cadmium (Dissolved), ug/l	0.35U	24.5	98 %
Calcium (Dissolved), ug/l	22U	2570B	103 %
Chromium, (Dissolved), ug/l	0.85U	100	100 %
Cobalt (Dissolved), ug/l	0.70U	253	101 %
Copper, Dissolved, ug/l	0.45U	127	102 %
Iron (Dissolved), ug/l	9.0U	502	100 %
Lead, (Dissolved), ug/l	0.75U	249	100 %
Magnesium (Dissolved), ug/l	55U	2550B	102 %
Manganese (Dissolved), ug/l	0.70U	251	101 %
Nickel, (Dissolved), ug/l	2.3U	251	100 %
Potassium (Dissolved), ug/l	95U	2620B	105 %
Selenium (Dissolved), ug/l	2.1U	989	99 %
Silver (Dissolved), ug/l	0.95U	25.0	100 %
Sodium (Dissolved), ug/l	160U	2570B	103 %
Thallium (Dissolved), ug/l	10U	1000	100 %

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REPORT OF RESULTS

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46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Vanadium (Dissolved), ug/l	1.1U	249	100 %
Zinc, (Dissolved), ug/l	3.0U	249	100 %
Dilution Factor	0.5	0.5	0.5
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	12:05	12:05	12:05
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	02:25	02:30	02:30
Batch ID	0910K	0910K	0910K
Clock ID	1D0911	1D0911	1D0911
Quantitation Factor	0.5	0.5	0.5
Mercury (Dissolved) (7470)			
Mercury (Dissolved), ug/l	0.072U	2.58	103 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	11:00	11:00	11:00
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	17:05	17:08	17:08
Batch ID	0910R	0910R	0910R
Clock ID	110912	110912	110912
Quantitation Factor	0.50	0.50	0.50

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Cyanide, Total (9012A), mg/l	0.010U	0.194	97 %
Dilution Factor	1	1	1
Prep Date	09.11.02	09.11.02	09.11.02
Prep Time	15:12	15:12	15:12
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	15:12	15:12	15:12
Batch ID	0911S	0911S	0911S
Clock ID	1CN0912	1CN0912	1CN0912
Quantitation Factor	1.0	1.0	1.0

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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
TAL Metals (SW6010)	
Aluminum, ug/l	1000
Antimony, ug/l	250
Arsenic, ug/l	1000
Barium, ug/l	1000
Beryllium, ug/l	25.0
Cadmium, ug/l	25.0
Calcium, ug/l	2500
Chromium, ug/l	100
Cobalt, ug/l	250
Copper, ug/l	125
Iron, ug/l	500
Lead, ug/l	250
Magnesium, ug/l	2500
Manganese, ug/l	250
Nickel, ug/l	250
Potassium, ug/l	2500
Selenium, ug/l	1000
Silver, ug/l	25.0
Sodium, ug/l	2500
Thallium, ug/l	1000
Vanadium, ug/l	250
Zinc, ug/l	250
Mercury (SW7470)	
Mercury, ug/l	1.00

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
Arsenic (SW7060), mg/l	*
TAL Metals (Dissolved) (6010)	
Aluminum (Dissolved), ug/l	1000
Antimony (Dissolved), ug/l	250
Arsenic, (Dissolved), ug/l	1000
Barium, (Dissolved), ug/l	1000
Beryllium (Dissolved), ug/l	25.0
Cadmium (Dissolved), ug/l	25.0
Calcium (Dissolved), ug/l	2500
Chromium, (Dissolved), ug/l	100
Cobalt (Dissolved), ug/l	250
Copper, Dissolved, ug/l	125
Iron (Dissolved), ug/l	500
Lead, (Dissolved), ug/l	250
Magnesium (Dissolved), ug/l	2500
Manganese (Dissolved), ug/l	250
Nickel, (Dissolved), ug/l	250
Potassium (Dissolved), ug/l	2500
Selenium (Dissolved), ug/l	1000
Silver (Dissolved), ug/l	25.0
Sodium (Dissolved), ug/l	2500
Thallium (Dissolved), ug/l	1000
Vanadium (Dissolved), ug/l	250
Zinc, (Dissolved), ug/l	250

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Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
Mercury (Dissolved) (7470)	
Mercury (Dissolved), ug/l	1.00
Arsenic (Dissolved) (7060)	
Arsenic (Dissolved), *	*
Cyanide, Total (9012A), mg/l	0.100

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
TAL Metals (SW6010)				---	---
Aluminum, ug/l	27B	975	98 %	---	---
Antimony, ug/l	2.5U	255	102 %	---	---
Arsenic, ug/l	10U	1020	102 %	---	---
Barium, ug/l	0.60U	1050	105 %	---	---
Beryllium, ug/l	0.27U	25.9	104 %	---	---
Cadmium, ug/l	0.35U	25.8	103 %	---	---
Calcium, ug/l	22U	2550B	102 %	---	---
Chromium, ug/l	0.85U	105	105 %	---	---
Cobalt, ug/l	0.70U	265	106 %	---	---
Copper, ug/l	0.45U	132	106 %	---	---
Iron, ug/l	9.0U	514	103 %	---	---
Lead, ug/l	0.75U	262	105 %	---	---
Magnesium, ug/l	55U	2560B	102 %	---	---
Manganese, ug/l	0.70U	262	105 %	---	---
Nickel, ug/l	2.3U	266	106 %	---	---
Potassium, ug/l	95U	2640B	106 %	---	---
Selenium, ug/l	2.1U	1040	104 %	---	---
Silver, ug/l	0.95U	25.6	102 %	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Sodium, ug/l	160U	2550B	102 %	---	---
Thallium, ug/l	10U	1070	107 %	---	---
Vanadium, ug/l	1.1U	261	104 %	---	---
Zinc, ug/l	3.0U	260	104 %	---	---
Dilution Factor	0.5	0.5	0.5	---	---
Prep Date	09.12.02	09.12.02	09.12.02	---	---
Prep Time	09:30	09:30	09:30	---	---
Analysis Date	09.13.02	09.13.02	09.13.02	---	---
Analysis Time	13:36	13:40	13:40	---	---
Batch ID	0912H	0912H	0912H	---	---
Clock ID	1D0913	1D0913	1D0913	---	---
Quantitation Factor	0.50	0.50	0.50	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Mercury (SW7470)				---	---
Mercury, ug/l	0.072U	2.61	104 %	---	---
Dilution Factor	1	1	1	---	---
Prep Date	09.10.02	09.10.02	09.10.02	---	---
Prep Time	16:20	16:20	16:20	---	---
Analysis Date	09.13.02	09.13.02	09.13.02	---	---
Analysis Time	10:36	10:39	10:39	---	---
Batch ID	0910U	0910U	0910U	---	---
Clock ID	110912	110912	110912	---	---
Quantitation Factor	1.0	1.0	1.0	---	---
Arsenic (SW7060), mg/l	*	*	*	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
TAL Metals (Dissolved) (6010)				---	---
Aluminum (Dissolved), ug/l	18B	973	97 %	---	---
Antimony (Dissolved), ug/l	2.5U	254	101 %	---	---
Arsenic, (Dissolved), ug/l	10U	1010	101 %	---	---
Barium, (Dissolved), ug/l	0.60U	1040	104 %	---	---
Beryllium (Dissolved), ug/l	0.27U	25.8	103 %	---	---
Cadmium (Dissolved), ug/l	0.35U	26.2	105 %	---	---
Calcium (Dissolved), ug/l	22U	2550B	102 %	---	---
Chromium, (Dissolved), ug/l	0.85U	104	104 %	---	---
Cobalt (Dissolved), ug/l	0.70U	263	105 %	---	---
Copper, Dissolved, ug/l	0.45U	132	105 %	---	---
Iron (Dissolved), ug/l	9.0U	515	103 %	---	---
Lead, (Dissolved), ug/l	0.75U	261	105 %	---	---
Magnesium (Dissolved), ug/l	55U	2560B	102 %	---	---
Manganese (Dissolved), ug/l	0.70U	261	104 %	---	---
Nickel, (Dissolved), ug/l	2.3U	265	106 %	---	---
Potassium (Dissolved), ug/l	95U	2610B	104 %	---	---
Selenium (Dissolved), ug/l	2.1U	1030	103 %	---	---
Silver (Dissolved), ug/l	0.95U	25.6	102 %	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Sodium (Dissolved), ug/l	160U	2560B	103 %	---	---
Thallium (Dissolved), ug/l	10U	1060	106 %	---	---
Vanadium (Dissolved), ug/l	1.1U	260	104 %	---	---
Zinc, (Dissolved), ug/l	3.0U	259	103 %	---	---
Dilution Factor	0.5	0.5	0.5	---	---
Prep Date	09.12.02	09.12.02	09.12.02	---	---
Prep Time	09:25	09:25	09:25	---	---
Analysis Date	09.13.02	09.13.02	09.13.02	---	---
Analysis Time	14:56	15:00	15:00	---	---
Batch ID	0912G	0912G	0912G	---	---
Clock ID	1D0913	1D0913	1D0913	---	---
Quantitation Factor	0.50	0.50	0.50	---	---

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Mercury (Dissolved) (7470)				---	---
Mercury (Dissolved), ug/l	0.072U	2.66	106 %	---	---
Dilution Factor	1	1	1	---	---
Prep Date	09.10.02	09.10.02	09.10.02	---	---
Prep Time	15:10	15:10	15:10	---	---
Analysis Date	09.13.02	09.13.02	09.13.02	---	---
Analysis Time	09:36	09:39	09:39	---	---
Batch ID	0910T	0910T	0910T	---	---
Clock ID	110912	110912	110912	---	---
Quantitation Factor	1.0	1.0	1.0	---	---
Arsenic (Dissolved) (7060)				---	---
Arsenic (Dissolved), *	*	*	*	---	---

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Cyanide, Total (9012A), mg/l	0.010U	0.193	96 %	---	---
Dilution Factor	1	1	1	---	---
Prep Date	09.12.02	09.12.02	09.12.02	---	---
Prep Time	17:39	17:39	17:39	---	---
Analysis Date	09.12.02	09.12.02	09.12.02	---	---
Analysis Time	17:39	17:39	17:39	---	---
Batch ID	0912S	0912S	0912S	---	---
Clock ID	1CN0912	1CN0912	1CN0912	---	---
Quantitation Factor	1	1	1	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
TAL Metals (SW6010)					
Aluminum, ug/l	992	97 %	993	97 %	1000
Antimony, ug/l	262	105 %	262	105 %	250
Arsenic, ug/l	1030	103 %	1030	103 %	1000
Barium, ug/l	1080	106 %	1080	106 %	1000
Beryllium, ug/l	26.1	104 %	26.1	104 %	25.0
Cadmium, ug/l	25.7	103 %	25.8	103 %	25.0
Calcium, ug/l	66400	80 %	68200	154 %	2500
Chromium, ug/l	104	104 %	104	104 %	100
Cobalt, ug/l	261	104 %	261	104 %	250
Copper, ug/l	135	108 %	134	108 %	125
Iron, ug/l	3760	0 %	4290	100 %	500
Lead, ug/l	258	103 %	258	103 %	250
Magnesium, ug/l	18700	100 %	19100	118 %	2500
Manganese, ug/l	301	104 %	302	105 %	250
Nickel, ug/l	261	104 %	262	105 %	250
Potassium, ug/l	5310	109 %	5360	111 %	2500
Selenium, ug/l	1050	105 %	1050	105 %	1000
Silver, ug/l	26.2	105 %	26.2	105 %	25.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
Sodium, ug/l	15400	106 %	15800	118 %	2500
Thallium, ug/l	1070	107 %	1070	107 %	1000
Vanadium, ug/l	262	105 %	263	105 %	250
Zinc, ug/l	252	101 %	253	101 %	250
Dilution Factor	0.5	0.5	0.5	0.5	---
Prep Date	09.12.02	09.12.02	09.12.02	09.12.02	---
Prep Time	09:30	09:30	09:30	09:30	---
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	---
Analysis Time	14:44	14:44	14:48	14:48	---
Batch ID	0912H	0912H	0912H	0912H	---
Clock ID	1D0913	1D0913	1D0913	1D0913	---
Quantitation Factor	0.50	0.50	0.50	0.50	---

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Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
Mercury (SW7470)					
Mercury, ug/l	0.997	100 %	0.971	97 %	1.00
Dilution Factor	1	1	1	1	---
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	---
Prep Time	16:20	16:20	16:20	16:20	---
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	---
Analysis Time	11:22	11:22	11:25	11:25	---
Batch ID	0910U	0910U	0910U	0910U	---
Clock ID	110912	110912	110912	110912	---
Quantitation Factor	1.0	1.0	1.0	1.0	---
Arsenic (SW7060), mg/l	*	*	*	*	*

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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
TAL Metals (Dissolved) (6010)					
Aluminum (Dissolved), ug/l	991	97 %	988	97 %	1000
Antimony (Dissolved), ug/l	259	103 %	257	103 %	250
Arsenic, (Dissolved), ug/l	1020	102 %	1020	102 %	1000
Barium, (Dissolved), ug/l	1080	105 %	1070	105 %	1000
Beryllium (Dissolved), ug/l	25.9	104 %	25.9	103 %	25.0
Cadmium (Dissolved), ug/l	25.5	102 %	25.5	102 %	25.0
Calcium (Dissolved), ug/l	66900	113 %	66700	105 %	2500
Chromium, (Dissolved), ug/l	103	103 %	103	103 %	100
Cobalt (Dissolved), ug/l	260	104 %	259	104 %	250
Copper, Dissolved, ug/l	134	107 %	134	107 %	125
Iron (Dissolved), ug/l	2970	92 %	2930	83 %	500
Lead, (Dissolved), ug/l	257	103 %	255	102 %	250
Magnesium (Dissolved), ug/l	18800	107 %	18800	105 %	2500
Manganese (Dissolved), ug/l	299	104 %	298	104 %	250
Nickel, (Dissolved), ug/l	259	104 %	258	103 %	250
Potassium (Dissolved), ug/l	5360	111 %	5330	110 %	2500
Selenium (Dissolved), ug/l	1050	105 %	1040	104 %	1000
Silver (Dissolved), ug/l	25.9	104 %	25.7	103 %	25.0

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Sampled By: Client
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
Sodium (Dissolved), ug/l	15600	116 %	15500	112 %	2500
Thallium (Dissolved), ug/l	1060	106 %	1060	106 %	1000
Vanadium (Dissolved), ug/l	261	104 %	260	104 %	250
Zinc, (Dissolved), ug/l	251	101 %	251	101 %	250
Dilution Factor	0.5	0.5	0.5	0.5	---
Prep Date	09.12.02	09.12.02	09.12.02	09.12.02	---
Prep Time	09:25	09:25	09:25	09:25	---
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	---
Analysis Time	16:08	16:08	16:12	16:12	---
Batch ID	0912G	0912G	0912G	0912G	---
Clock ID	1D0913	1D0913	1D0913	1D0913	---
Quantitation Factor	0.50	0.50	0.50	0.50	---

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Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
Mercury (Dissolved) (7470)					
Mercury (Dissolved), ug/l	0.900	90 %	0.902	90 %	1.00
Dilution Factor	1	1	1	1	---
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	---
Prep Time	15:10	15:10	15:10	15:10	---
Analysis Date	09.13.02	09.13.02	09.13.02	09.13.02	---
Analysis Time	10:22	10:22	10:30	10:30	---
Batch ID	0910T	0910T	0910T	0910T	---
Clock ID	110912	110912	110912	110912	---
Quantitation Factor	1.0	1.0	1.0	1.0	---
Arsenic (Dissolved) (7060)					
Arsenic (Dissolved), *	*	*	*	*	*

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Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
Cyanide, Total (9012A), mg/l	0.0955	95 %	0.0913	91 %	0.100
Dilution Factor	1	1	1	1	---
Prep Date	09.12.02	09.12.02	09.12.02	09.12.02	---
Prep Time	18:05	18:05	18:18	18:18	---
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02	---
Analysis Time	18:05	18:05	18:18	18:18	---
Batch ID	0912S	0912S	0912S	0912S	---
Clock ID	1CN0912	1CN0912S	1CN0912	1CN0912	---
Quantitation Factor	1	1	1	1	---

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LOG NO: S2-46377
Received: 06 SEP 02
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Mr. Herb Kelly
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Client PO. No.: 53470
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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
TCL Pesticides (SW8081)			
alpha-BHC, ug/l	0.011J	0.050U	0.053U
beta-BHC, ug/l	0.48	0.050U	0.053U
delta-BHC, ug/l	0.050U	0.050U	0.053U
gamma-BHC (Lindane), ug/l	0.050U	0.050U	0.053U
Heptachlor, ug/l	0.050U	0.050U	0.053U
Aldrin, ug/l	0.050U	0.050U	0.053U
Heptachlor epoxide, ug/l	0.050U	0.050U	0.053U
Endosulfan I, ug/l	0.050U	0.050U	0.053U
Dieldrin, ug/l	0.045J	0.10U	0.11U
4,4'-DDE, ug/l	0.10U	0.10U	0.11U
Endrin, ug/l	0.10U	0.10U	0.11U
Endrin aldehyde, ug/l	0.10U	0.10U	0.11U
Endosulfan II, ug/l	0.10U	0.10U	0.11U
4,4'-DDD, ug/l	0.10U	0.10U	0.11U
Endosulfan sulfate, ug/l	0.10U	0.10U	0.11U
4,4'-DDT, ug/l	0.10U	0.10U	0.11U
Endrin ketone, ug/l	0.10U	0.10U	0.11U
Methoxychlor, ug/l	0.50U	0.50U	0.53U
alpha-Chlordane, ug/l	0.050U	0.050U	0.053U
gamma-Chlordane, ug/l	0.050U	0.050U	0.053U

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Sampled By: Client
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Toxaphene, ug/l	5.0U	5.0U	5.3U
Surrogate - DCB	48 %	56 %	53 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	42 %	40 %	53 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	17:08	17:32	17:55
Batch ID	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1

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Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
PCB's (SW8082)			
Aroclor-1016, ug/l	1.0U	1.0U	1.1U
Aroclor-1221, ug/l	2.0U	2.0U	2.1U
Aroclor-1232, ug/l	1.0U	1.0U	1.1U
Aroclor-1242, ug/l	1.0U	1.0U	1.1U
Aroclor-1248, ug/l	1.0U	1.0U	1.1U
Aroclor-1254, ug/l	1.0U	1.0U	1.1U
Aroclor-1260, ug/l	1.0U	1.0U	1.1U
Surrogate - TCX	42 %	40 %	53 %
Surrogate - DCB	48 %	56 %	53 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	17:08	17:32	17:55
Batch ID	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
TCL Semivolatiles (SW8270)			
Phenol, ug/l	10U	10U	10U
bis(2-Chloroethyl)ether, ug/l	10U	10U	10U
2-Chlorophenol, ug/l	10U	10U	10U
2-Methylphenol (o-Cresol), ug/l	10U	10U	10U
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U	10U	10U
3-Methylphenol/4-Methylphenol (m&p-Cresol), ug/l	10U	10U	10U
N-Nitroso-di-n-propylamine, ug/l	10U	10U	10U
Hexachloroethane, ug/l	10U	10U	10U
Nitrobenzene, ug/l	10U	10U	10U
Isophorone, ug/l	10U	10U	10U
2-Nitrophenol, ug/l	10U	10U	10U
2,4-Dimethylphenol, ug/l	10U	10U	10U
bis(2-Chloroethoxy)methane, ug/l	10U	10U	10U
2,4-Dichlorophenol, ug/l	10U	10U	10U
Naphthalene, ug/l	10U	10U	10U
4-Chloroaniline, ug/l	10U	10U	10U
Hexachlorobutadiene, ug/l	10U	10U	10U
4-Chloro-3-methylphenol, ug/l	10U	10U	10U
2-Methylnaphthalene, ug/l	10U	10U	10U

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46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Hexachlorocyclopentadiene, ug/l	10U	10U	10U
2,4,6-Trichlorophenol, ug/l	10U	10U	10U
2,4,5-Trichlorophenol, ug/l	25U	25U	25U
2-Chloronaphthalene, ug/l	10U	10U	10U
2-Nitroaniline, ug/l	25U	25U	25U
Dimethylphthalate, ug/l	10U	10U	10U
Acenaphthylene, ug/l	10U	10U	0.51J
3-Nitroaniline, ug/l	25U	25U	25U
Acenaphthene, ug/l	10U	10U	10U
2,4-Dinitrophenol, ug/l	25U	25U	25U
4-Nitrophenol, ug/l	25U	25U	25U
Dibenzofuran, ug/l	10U	10U	10U
2,4-Dinitrotoluene, ug/l	10U	10U	10U
2,6-Dinitrotoluene, ug/l	10U	10U	10U
Diethylphthalate, ug/l	10U	10U	10U
4-Chlorophenylphenyl ether, ug/l	10U	10U	10U
Fluorene, ug/l	10U	10U	10U
4-Nitroaniline, ug/l	25U	25U	25U
4,6-Dinitro-2-methylphenol, ug/l	25U	25U	25U
N-Nitrosodiphenylamine, ug/l	10U	10U	10U
4-Bromophenylphenyl ether, ug/l	10U	10U	10U

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
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46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Hexachlorobenzene, ug/l	10U	10U	10U
Pentachlorophenol, ug/l	25U	25U	25U
Phenanthrene, ug/l	10U	10U	0.63J
Anthracene, ug/l	10U	10U	10U
Di-n-butylphthalate, ug/l	10U	10U	10U
Fluoranthene, ug/l	10U	10U	10U
Pyrene, ug/l	10U	10U	10U
Butylbenzylphthalate, ug/l	10U	10U	10U
3,3'-Dichlorobenzidine, ug/l	10U	10U	10U
Benzo(a)anthracene, ug/l	10U	10U	10U
bis(2-Ethylhexyl)phthalate, ug/l	10U	10U	10U
Chrysene, ug/l	10U	10U	10U
Di-n-octylphthalate, ug/l	10U	10U	10U
Benzo(b)fluoranthene, ug/l	10U	10U	10U
Benzo(k)fluoranthene, ug/l	10U	10U	10U
Benzo(a)pyrene, ug/l	10U	10U	10U
Indeno(1,2,3-cd)pyrene, ug/l	10U	10U	10U
Dibenzo(a,h)anthracene, ug/l	10U	10U	10U
Benzo(g,h,i)perylene, ug/l	10U	10U	10U
Carbazole, ug/l	10U	10U	10U
1-Methylnaphthalene, ug/l	10U	10U	10U

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46377-1	BKBDMW001R1	09-04-02/10:30	JAD226
46377-2	BDMW009R1	09-04-02/12:40	JAD226
46377-3	BDMW004R1	04-19-02/14:00	JAD226

PARAMETER	46377-1	46377-2	46377-3
Surrogate - Phenol-d5	62 %	58 %	41 %
Surrogate - 2-Fluorophenol	66 %	66 %	40 %
Surrogate - 2,4,6-Tribromophenol	96 %	88 %	55 %
Surrogate - Nitrobenzene - d5	60 %	60 %	40 %
Surrogate - 2-Fluorobiphenyl	58 %	64 %	38 %
Surrogate - Terphenyl-d14	38 %	72 %	58 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45
Analysis Date	09.21.02	09.21.02	09.22.02
Analysis Time	14:02	14:32	15:22
Batch ID	0910B	0910B	0910B
Clock ID	1E0921	1E0921	1E0922
Quantitation Factor	1	1	1

4 2 .0149

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
TCL Pesticides (SW8081)	
alpha-BHC, ug/l	0.050U
beta-BHC, ug/l	0.050U
delta-BHC, ug/l	0.050U
gamma-BHC (Lindane), ug/l	0.050U
Heptachlor, ug/l	0.050U
Aldrin, ug/l	0.050U
Heptachlor epoxide, ug/l	0.050U
Endosulfan I, ug/l	0.050U
Dieldrin, ug/l	0.10U
4,4'-DDE, ug/l	0.10U
Endrin, ug/l	0.10U
Endrin aldehyde, ug/l	0.10U
Endosulfan II, ug/l	0.10U
4,4'-DDD, ug/l	0.10U
Endosulfan sulfate, ug/l	0.10U
4,4'-DDT, ug/l	0.10U
Endrin ketone, ug/l	0.10U
Methoxychlor, ug/l	0.50U
alpha-Chlordane, ug/l	0.050U
gamma-Chlordane, ug/l	0.050U
Toxaphene, ug/l	5.0U
Surrogate - DCB	62 %

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LOG NO: S2-46377
Received: 06 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	44 %
Dilution Factor	1
Prep Date	09.10.02
Prep Time	14:45
Analysis Date	09.12.02
Analysis Time	18:19
Batch ID	09100
Clock ID	1I0912
Quantitation Factor	1

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Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
PCB's (SW8082)	
Aroclor-1016, ug/l	1.0U
Aroclor-1221, ug/l	2.0U
Aroclor-1232, ug/l	1.0U
Aroclor-1242, ug/l	1.0U
Aroclor-1248, ug/l	1.0U
Aroclor-1254, ug/l	1.0U
Aroclor-1260, ug/l	1.0U
Surrogate - TCX	44 %
Surrogate - DCB	62 %
Dilution Factor	1
Prep Date	09.10.02
Prep Time	14:45
Analysis Date	09.12.02
Analysis Time	18:19
Batch ID	0910O
Clock ID	1I0912
Quantitation Factor	1

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
TCL Semivolatiles (SW8270)	
Phenol, ug/l	10U
bis(2-Chloroethyl)ether, ug/l	10U
2-Chlorophenol, ug/l	10U
2-Methylphenol (o-Cresol), ug/l	10U
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U
3-Methylphenol/4-Methylphenol (m&p-Cresol), ug/l	10U
N-Nitroso-di-n-propylamine, ug/l	10U
Hexachloroethane, ug/l	10U
Nitrobenzene, ug/l	10U
Isophorone, ug/l	10U
2-Nitrophenol, ug/l	10U
2,4-Dimethylphenol, ug/l	10U
bis(2-Chloroethoxy)methane, ug/l	10U
2,4-Dichlorophenol, ug/l	10U
Naphthalene, ug/l	10U
4-Chloroaniline, ug/l	10U
Hexachlorobutadiene, ug/l	10U
4-Chloro-3-methylphenol, ug/l	10U
2-Methylnaphthalene, ug/l	10U
Hexachlorocyclopentadiene, ug/l	10U
2,4,6-Trichlorophenol, ug/l	10U

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Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4				
2,4,5-Trichlorophenol, ug/l	25U				
2-Chloronaphthalene, ug/l	10U				
2-Nitroaniline, ug/l	25U				
Dimethylphthalate, ug/l	10U				
Acenaphthylene, ug/l	10U				
3-Nitroaniline, ug/l	25U				
Acenaphthene, ug/l	10U				
2,4-Dinitrophenol, ug/l	25U				
4-Nitrophenol, ug/l	25U				
Dibenzofuran, ug/l	10U				
2,4-Dinitrotoluene, ug/l	10U				
2,6-Dinitrotoluene, ug/l	10U				
Diethylphthalate, ug/l	10U				
4-Chlorophenylphenyl ether, ug/l	10U				
Fluorene, ug/l	10U				
4-Nitroaniline, ug/l	25U				
4,6-Dinitro-2-methylphenol, ug/l	25U				
N-Nitrosodiphenylamine, ug/l	10U				
4-Bromophenylphenyl ether, ug/l	10U				
Hexachlorobenzene, ug/l	10U				
Pentachlorophenol, ug/l	25U				
Phenanthrene, ug/l	10U				
Anthracene, ug/l	10U				

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Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Di-n-butylphthalate, ug/l	10U
Fluoranthene, ug/l	10U
Pyrene, ug/l	10U
Butylbenzylphthalate, ug/l	10U
3,3'-Dichlorobenzidine, ug/l	10U
Benzo(a)anthracene, ug/l	10U
bis(2-Ethylhexyl)phthalate, ug/l	10U
Chrysene, ug/l	10U
Di-n-octylphthalate, ug/l	10U
Benzo(b)fluoranthene, ug/l	10U
Benzo(k)fluoranthene, ug/l	10U
Benzo(a)pyrene, ug/l	10U
Indeno(1,2,3-cd)pyrene, ug/l	10U
Dibenzo(a,h)anthracene, ug/l	10U
Benzo(g,h,i)perylene, ug/l	10U
Carbazole, ug/l	10U
1-Methylnaphthalene, ug/l	10U
Surrogate - Phenol-d5	60 %
Surrogate - 2-Fluorophenol	64 %
Surrogate - 2,4,6-Tribromophenol	92 %
Surrogate - Nitrobenzene - d5	51 %
Surrogate - 2-Fluorobiphenyl	63 %
Surrogate - Terphenyl-d14	69 %

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Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Dilution Factor	1
Prep Date	09.10.02
Prep Time	14:45
Analysis Date	09.21.02
Analysis Time	15:32
Batch ID	0910B
Clock ID	1E0921
Quantitation Factor	1

4 2 0156

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Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
TCL Pesticides (SW8081)				
alpha-BHC, ug/l	0.050U	0.050U	0.050U	0.050U
beta-BHC, ug/l	0.050U	0.050U	0.050U	0.050U
delta-BHC, ug/l	0.050U	0.050U	0.050U	0.050U
gamma-BHC (Lindane), ug/l	0.050U	0.050U	0.050U	0.050U
Heptachlor, ug/l	0.050U	0.050U	0.050U	0.050U
Aldrin, ug/l	0.050U	0.050U	0.050U	0.050U
Heptachlor epoxide, ug/l	0.050U	0.050U	0.050U	0.050U
Endosulfan I, ug/l	0.050U	0.050U	0.050U	0.050U
Dieldrin, ug/l	0.10U	0.10U	0.10U	0.10U
4,4'-DDE, ug/l	0.10U	0.10U	0.10U	0.10U
Endrin, ug/l	0.10U	0.10U	0.10U	0.10U
Endrin aldehyde, ug/l	0.10U	0.10U	0.10U	0.10U
Endosulfan II, ug/l	0.10U	0.10U	0.10U	0.10U
4,4'-DDD, ug/l	0.10U	0.10U	0.10U	0.10U
Endosulfan sulfate, ug/l	0.10U	0.10U	0.10U	0.10U
4,4'-DDT, ug/l	0.10U	0.10U	0.10U	0.10U
Endrin ketone, ug/l	0.10U	0.10U	0.10U	0.10U
Methoxychlor, ug/l	0.50U	0.50U	0.50U	0.50U
alpha-Chlordane, ug/l	0.050U	0.050U	0.050U	0.050U

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Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
gamma-Chlordane, ug/l	0.050U	0.050U	0.050U	0.050U
Toxaphene, ug/l	5.0U	5.0U	5.0U	5.0U
Surrogate - DCB	52 %	50 %	76 %	80 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	50 %	46 %	56 %	44 %
Dilution Factor	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	14:46	15:10	15:33	15:57
Batch ID	0910O	0910O	0910O	0910O
Clock ID	1I0912	1I0912	1I0912	1I0912
Quantitation Factor	1.0	1.0	1.0	1.0

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CC: Norm Hatch

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
PCB's (SW8082)				
Aroclor-1016, ug/l	1.0U	1.0U	1.0U	1.0U
Aroclor-1221, ug/l	2.0U	2.0U	2.0U	2.0U
Aroclor-1232, ug/l	1.0U	1.0U	1.0U	1.0U
Aroclor-1242, ug/l	1.0U	1.0U	1.0U	1.0U
Aroclor-1248, ug/l	1.0U	1.0U	1.0U	1.0U
Aroclor-1254, ug/l	1.0U	1.0U	1.0U	1.0U
Aroclor-1260, ug/l	1.0U	1.0U	1.0U	1.0U
Surrogate - TCX	50 %	46 %	56 %	44 %
Surrogate - DCB	52 %	50 %	76 %	80 %
Dilution Factor	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	14:46	15:10	15:33	15:57
Batch ID	0910O	0910O	0910O	0910O
Clock ID	1I0912	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1	1

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46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
TCL Semivolatiles (SW8270)				
Phenol, ug/l	10U	10U	10U	10U
bis(2-Chloroethyl)ether, ug/l	10U	10U	10U	10U
2-Chlorophenol, ug/l	10U	10U	10U	10U
2-Methylphenol (o-Cresol), ug/l	10U	10U	10U	10U
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U	10U	10U	10U
3-Methylphenol/4-Methylphenol (m&p-Cresol), ug/l	10U	10U	10U	10U
N-Nitroso-di-n-propylamine, ug/l	10U	10U	10U	10U
Hexachloroethane, ug/l	10U	10U	10U	10U
Nitrobenzene, ug/l	10U	10U	10U	10U
Isophorone, ug/l	10U	10U	10U	10U
2-Nitrophenol, ug/l	10U	10U	10U	10U
2,4-Dimethylphenol, ug/l	10U	10U	10U	10U
bis(2-Chloroethoxy)methane, ug/l	10U	10U	10U	10U
2,4-Dichlorophenol, ug/l	10U	10U	10U	10U
Naphthalene, ug/l	10U	10U	10U	10U
4-Chloroaniline, ug/l	10U	10U	10U	10U
Hexachlorobutadiene, ug/l	10U	10U	10U	10U

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46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
4-Chloro-3-methylphenol, ug/l	10U	10U	10U	10U
2-Methylnaphthalene, ug/l	10U	10U	10U	10U
Hexachlorocyclopentadiene, ug/l	10U	10U	10U	10U
2,4,6-Trichlorophenol, ug/l	10U	10U	10U	10U
2,4,5-Trichlorophenol, ug/l	25U	25U	25U	25U
2-Chloronaphthalene, ug/l	10U	10U	10U	10U
2-Nitroaniline, ug/l	25U	25U	25U	25U
Dimethylphthalate, ug/l	10U	10U	10U	10U
Acenaphthylene, ug/l	10U	10U	10U	10U
3-Nitroaniline, ug/l	25U	25U	25U	25U
Acenaphthene, ug/l	10U	10U	10U	10U
2,4-Dinitrophenol, ug/l	25U	25U	25U	25U
4-Nitrophenol, ug/l	25U	25U	25U	25U
Dibenzofuran, ug/l	10U	10U	10U	10U
2,4-Dinitrotoluene, ug/l	10U	10U	10U	10U
2,6-Dinitrotoluene, ug/l	10U	10U	10U	10U
Diethylphthalate, ug/l	10U	10U	10U	10U
4-Chlorophenylphenyl ether, ug/l	10U	10U	10U	10U
Fluorene, ug/l	10U	10U	10U	10U
4-Nitroaniline, ug/l	25U	25U	25U	25U

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46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
4,6-Dinitro-2-methylphenol, ug/l	25U	25U	25U	25U
N-Nitrosodiphenylamine, ug/l	10U	10U	10U	10U
4-Bromophenylphenyl ether, ug/l	10U	10U	10U	10U
Hexachlorobenzene, ug/l	10U	10U	10U	10U
Pentachlorophenol, ug/l	25U	25U	25U	25U
Phenanthrene, ug/l	10U	10U	10U	10U
Anthracene, ug/l	10U	10U	10U	10U
Di-n-butylphthalate, ug/l	10U	10U	10U	10U
Fluoranthene, ug/l	10U	10U	10U	10U
Pyrene, ug/l	10U	10U	10U	10U
Butylbenzylphthalate, ug/l	10U	10U	10U	10U
3,3'-Dichlorobenzidine, ug/l	10U	10U	10U	10U
Benzo(a)anthracene, ug/l	10U	10U	10U	10U
bis(2-Ethylhexyl)phthalate, ug/l	10U	10U	10U	10U
Chrysene, ug/l	10U	10U	10U	10U
Di-n-octylphthalate, ug/l	10U	10U	10U	10U
Benzo(b)fluoranthene, ug/l	10U	10U	10U	10U
Benzo(k)fluoranthene, ug/l	10U	10U	10U	10U
Benzo(a)pyrene, ug/l	10U	10U	10U	10U
Indeno(1,2,3-cd)pyrene, ug/l	10U	10U	10U	10U

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Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
Dibenzo(a,h)anthracene, ug/l	10U	10U	10U	10U
Benzo(g,h,i)perylene, ug/l	10U	10U	10U	10U
Carbazole, ug/l	10U	10U	10U	10U
1-Methylnaphthalene, ug/l	10U	10U	10U	10U
Surrogate - Phenol-d5	75 %	68 %	67 %	69 %
Surrogate - 2-Fluorophenol	78 %	74 %	76 %	75 %
Surrogate - 2,4,6-Tribromophenol	110 %	96 %	92 %	92 %
Surrogate - Nitrobenzene - d5	67 %	68 %	68 %	72 %
Surrogate - 2-Fluorobiphenyl	72 %	72 %	72 %	74 %
Surrogate - Terphenyl-d14	70 %	74 %	76 %	84 %
Dilution Factor	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45
Analysis Date	09.21.02	09.21.02	09.21.02	09.21.02
Analysis Time	11:04	11:34	12:04	12:33
Batch ID	0910B	0910B	0910B	0910B
Clock ID	1E0921	1E0921	1E0921	1E0921
Quantitation Factor	1	1	1	1

4 2 7163

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LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
TCL Pesticides (SW8081)		
alpha-BHC, ug/l	0.050U	0.050U
beta-BHC, ug/l	0.050U	0.050U
delta-BHC, ug/l	0.050U	0.050U
gamma-BHC (Lindane), ug/l	0.050U	0.050U
Heptachlor, ug/l	0.050U	0.050U
Aldrin, ug/l	0.050U	0.050U
Heptachlor epoxide, ug/l	0.050U	0.050U
Endosulfan I, ug/l	0.050U	0.050U
Dieldrin, ug/l	0.10U	0.10U
4,4'-DDE, ug/l	0.10U	0.10U
Endrin, ug/l	0.10U	0.10U
Endrin aldehyde, ug/l	0.10U	0.10U
Endosulfan II, ug/l	0.10U	0.10U
4,4'-DDD, ug/l	0.10U	0.10U
Endosulfan sulfate, ug/l	0.10U	0.10U
4,4'-DDT, ug/l	0.10U	0.10U
Endrin ketone, ug/l	0.10U	0.10U
Methoxychlor, ug/l	0.50U	0.50U
alpha-Chlordane, ug/l	0.050U	0.050U
gamma-Chlordane, ug/l	0.050U	0.050U
Toxaphene, ug/l	5.0U	5.0U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
Surrogate - DCB	40 %	68 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	42 %	46 %
Dilution Factor	1	1
Prep Date	09.10.02	09.10.02
Prep Time	14:45	14:45
Analysis Date	09.12.02	09.12.02
Analysis Time	16:21	16:45
Batch ID	09100	09100
Clock ID	1I0912	1I0912
Quantitation Factor	1.0	1.0

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
PCB's (SW8082)		
Aroclor-1016, ug/l	1.0U	1.0U
Aroclor-1221, ug/l	2.0U	2.0U
Aroclor-1232, ug/l	1.0U	1.0U
Aroclor-1242, ug/l	1.0U	1.0U
Aroclor-1248, ug/l	1.0U	1.0U
Aroclor-1254, ug/l	1.0U	1.0U
Aroclor-1260, ug/l	1.0U	1.0U
Surrogate - TCX	42 %	46 %
Surrogate - DCB	40 %	68 %
Dilution Factor	1	1
Prep Date	09.10.02	09.10.02
Prep Time	14:45	14:45
Analysis Date	09.12.02	09.12.02
Analysis Time	16:21	16:45
Batch ID	09100	09100
Clock ID	1I0912	1I0912
Quantitation Factor	1	1

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
TCL Semivolatiles (SW8270)		
Phenol, ug/l	10U	10U
bis(2-Chloroethyl)ether, ug/l	10U	10U
2-Chlorophenol, ug/l	10U	10U
2-Methylphenol (o-Cresol), ug/l	10U	10U
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U	10U
3-Methylphenol/4-Methylphenol (m&p-Cresol), ug/l	10U	10U
N-Nitroso-di-n-propylamine, ug/l	10U	10U
Hexachloroethane, ug/l	10U	10U
Nitrobenzene, ug/l	10U	10U
Isophorone, ug/l	10U	10U
2-Nitrophenol, ug/l	10U	10U
2,4-Dimethylphenol, ug/l	10U	10U
bis(2-Chloroethoxy)methane, ug/l	10U	10U
2,4-Dichlorophenol, ug/l	10U	10U
Naphthalene, ug/l	10U	10U
4-Chloroaniline, ug/l	10U	10U
Hexachlorobutadiene, ug/l	10U	10U
4-Chloro-3-methylphenol, ug/l	10U	10U
2-Methylnaphthalene, ug/l	10U	10U
Hexachlorocyclopentadiene, ug/l	10U	10U

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
2,4,6-Trichlorophenol, ug/l	10U	10U
2,4,5-Trichlorophenol, ug/l	25U	25U
2-Chloronaphthalene, ug/l	10U	10U
2-Nitroaniline, ug/l	25U	25U
Dimethylphthalate, ug/l	10U	10U
Acenaphthylene, ug/l	10U	10U
3-Nitroaniline, ug/l	25U	25U
Acenaphthene, ug/l	10U	10U
2,4-Dinitrophenol, ug/l	25U	25U
4-Nitrophenol, ug/l	25U	25U
Dibenzofuran, ug/l	10U	10U
2,4-Dinitrotoluene, ug/l	10U	10U
2,6-Dinitrotoluene, ug/l	10U	10U
Diethylphthalate, ug/l	10U	10U
4-Chlorophenylphenyl ether, ug/l	10U	10U
Fluorene, ug/l	10U	10U
4-Nitroaniline, ug/l	25U	25U
4,6-Dinitro-2-methylphenol, ug/l	25U	25U
N-Nitrosodiphenylamine, ug/l	10U	10U
4-Bromophenylphenyl ether, ug/l	10U	10U
Hexachlorobenzene, ug/l	10U	10U
Pentachlorophenol, ug/l	25U	25U

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
Phenanthrene, ug/l	10U	10U
Anthracene, ug/l	10U	10U
Di-n-butylphthalate, ug/l	10U	10U
Fluoranthene, ug/l	10U	10U
Pyrene, ug/l	10U	10U
Butylbenzylphthalate, ug/l	10U	10U
3,3'-Dichlorobenzidine, ug/l	10U	10U
Benzo(a)anthracene, ug/l	10U	10U
bis(2-Ethylhexyl)phthalate, ug/l	10U	10U
Chrysene, ug/l	10U	10U
Di-n-octylphthalate, ug/l	10U	10U
Benzo(b)fluoranthene, ug/l	10U	10U
Benzo(k)fluoranthene, ug/l	10U	10U
Benzo(a)pyrene, ug/l	10U	10U
Indeno(1,2,3-cd)pyrene, ug/l	10U	10U
Dibenzo(a,h)anthracene, ug/l	10U	10U
Benzo(g,h,i)perylene, ug/l	10U	10U
Carbazole, ug/l	10U	10U
1-Methylnaphthalene, ug/l	10U	10U
Surrogate - Phenol-d5	60 %	58 %
Surrogate - 2-Fluorophenol	76 %	70 %
Surrogate - 2,4,6-Tribromophenol	110 %	97 %

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LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-5	BDMW003R1	09-03-02/13:57	JAD225
46329-6	BDMW001R1	09-03-02/09:45	JAD225

PARAMETER	46329-5	46329-6
Surrogate - Nitrobenzene - d5	70 %	66 %
Surrogate - 2-Fluorobiphenyl	68 %	68 %
Surrogate - Terphenyl-d14	34 %	70 %
Dilution Factor	1	1
Prep Date	09.10.02	09.10.02
Prep Time	14:45	14:45
Analysis Date	09.21.02	09.21.02
Analysis Time	13:03	13:33
Batch ID	0910B	0910B
Clock ID	1E0921	1E0921
Quantitation Factor	1	1

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
TCL Pesticides (SW8081)			
alpha-BHC, ug/l	0.050U	0.061	61 %
beta-BHC, ug/l	0.050U	0.080	80 %
delta-BHC, ug/l	0.050U	0.095	95 %
gamma-BHC (Lindane), ug/l	0.050U	0.068	68 %
Heptachlor, ug/l	0.050U	0.077	77 %
Aldrin, ug/l	0.050U	0.062	62 %
Heptachlor epoxide, ug/l	0.050U	0.082	82 %
Endosulfan I, ug/l	0.050U	0.084	84 %
Dieldrin, ug/l	0.10U	0.18	90 %
4,4'-DDE, ug/l	0.10U	0.16	80 %
Endrin, ug/l	0.10U	0.19	95 %
Endrin aldehyde, ug/l	0.10U	0.20	100 %
Endosulfan II, ug/l	0.10U	0.20	100 %
4,4'-DDD, ug/l	0.10U	0.18	90 %
Endosulfan sulfate, ug/l	0.10U	0.22	110 %
4,4'-DDT, ug/l	0.10U	0.20	100 %
Endrin ketone, ug/l	0.10U	0.23	115 %
Methoxychlor, ug/l	0.50U	0.19	95 %
alpha-Chlordane, ug/l	0.050U	0.091	91 %
gamma-Chlordane, ug/l	0.050U	0.090	90 %

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Toxaphene, ug/l	5.0U	---	---
Surrogate - DCB	68 %	0.31	62 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	48 %	0.28	56 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	12:47	13:11	13:11
Batch ID	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912
Quantitation Factor	1.0	1.0	1.0

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46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
PCB's (SW8082)			
Aroclor-1016, ug/l	1.0U	7.3	73 %
Aroclor-1221, ug/l	2.0U	---	---
Aroclor-1232, ug/l	1.0U	---	---
Aroclor-1242, ug/l	1.0U	---	---
Aroclor-1248, ug/l	1.0U	---	---
Aroclor-1254, ug/l	1.0U	---	---
Aroclor-1260, ug/l	1.0U	8.8	88 %
Surrogate - TCX	48 %	60 %	60 %
Surrogate - DCB	68 %	56 %	56 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02
Analysis Time	12:47	13:59	13:59
Batch ID	0910O	0910O	0910O
Clock ID	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1

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46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
TCL Semivolatiles (SW8270)			
Phenol, ug/l	10U	72	72 %
bis(2-Chloroethyl)ether, ug/l	10U	86	86 %
2-Chlorophenol, ug/l	10U	76	76 %
2-Methylphenol (o-Cresol), ug/l	10U	85	85 %
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U	80	80 %
3-Methylphenol/4-Methylphenol (m&p-Cresol), ug/l	10U	84	84 %
N-Nitroso-di-n-propylamine, ug/l	10U	87	87 %
Hexachloroethane, ug/l	10U	68	68 %
Nitrobenzene, ug/l	10U	90	90 %
Isophorone, ug/l	10U	97	97 %
2-Nitrophenol, ug/l	10U	92	92 %
2,4-Dimethylphenol, ug/l	10U	86	86 %
bis(2-Chloroethoxy)methane, ug/l	10U	97	97 %
2,4-Dichlorophenol, ug/l	10U	92	92 %
Naphthalene, ug/l	10U	82	82 %
4-Chloroaniline, ug/l	10U	53	53 %
Hexachlorobutadiene, ug/l	10U	90	90 %
4-Chloro-3-methylphenol, ug/l	10U	88	88 %
2-Methylnaphthalene, ug/l	10U	87	87 %

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46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Hexachlorocyclopentadiene, ug/l	10U	43	43 %
2,4,6-Trichlorophenol, ug/l	10U	91	91 %
2,4,5-Trichlorophenol, ug/l	25U	89	89 %
2-Chloronaphthalene, ug/l	10U	86	86 %
2-Nitroaniline, ug/l	25U	94	94 %
Dimethylphthalate, ug/l	10U	97	97 %
Acenaphthylene, ug/l	10U	96	96 %
3-Nitroaniline, ug/l	25U	71	71 %
Acenaphthene, ug/l	10U	92	92 %
2,4-Dinitrophenol, ug/l	25U	78	78 %
4-Nitrophenol, ug/l	25U	85	85 %
Dibenzofuran, ug/l	10U	94	94 %
2,4-Dinitrotoluene, ug/l	10U	96	96 %
2,6-Dinitrotoluene, ug/l	10U	97	97 %
Diethylphthalate, ug/l	10U	100	100 %
4-Chlorophenylphenyl ether, ug/l	10U	94	94 %
Fluorene, ug/l	10U	95	95 %
4-Nitroaniline, ug/l	25U	81	81 %
4,6-Dinitro-2-methylphenol, ug/l	25U	73	73 %
N-Nitrosodiphenylamine, ug/l	10U	91	91 %
4-Bromophenylphenyl ether, ug/l	10U	78	78 %

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LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Hexachlorobenzene, ug/l	10U	88	88 %
Pentachlorophenol, ug/l	25U	84	84 %
Phenanthrene, ug/l	10U	100	100 %
Anthracene, ug/l	10U	96	96 %
Di-n-butylphthalate, ug/l	10U	91	91 %
Fluoranthene, ug/l	10U	85	85 %
Pyrene, ug/l	10U	90	90 %
Butylbenzylphthalate, ug/l	10U	84	84 %
3,3'-Dichlorobenzidine, ug/l	10U	66	66 %
Benzo(a)anthracene, ug/l	10U	87	87 %
bis(2-Ethylhexyl)phthalate, ug/l	10U	96	96 %
Chrysene, ug/l	10U	87	87 %
Di-n-octylphthalate, ug/l	10U	90	90 %
Benzo(b)fluoranthene, ug/l	10U	92	92 %
Benzo(k)fluoranthene, ug/l	10U	94	94 %
Benzo(a)pyrene, ug/l	10U	96	96 %
Indeno(1,2,3-cd)pyrene, ug/l	10U	92	92 %
Dibenzo(a,h)anthracene, ug/l	10U	99	99 %
Benzo(g,h,i)perylene, ug/l	10U	97	97 %
Carbazole, ug/l	10U	88	88 %
1-Methylnaphthalene, ug/l	10U	---	---

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Surrogate - Phenol-d5	72 %	72 %	72 %
Surrogate - 2-Fluorophenol	81 %	74 %	74 %
Surrogate - 2,4,6-Tribromophenol	100 %	97 %	97 %
Surrogate - Nitrobenzene - d5	74 %	84 %	84 %
Surrogate - 2-Fluorobiphenyl	76 %	80 %	80 %
Surrogate - Terphenyl-d14	76 %	84 %	84 %
Dilution Factor	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45
Analysis Date	09.21.02	09.22.02	09.22.02
Analysis Time	10:35	15:51	15:51
Batch ID	0910B	0910B	0910B
Clock ID	1E0921	1E0922	1E0922
Quantitation Factor	1	1	1

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LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
TCL Semivolatiles (SW8270)					
Phenol, ug/l	10U	10U	10U	10U	10U
bis(2-Chloroethyl)ether, ug/l	10U	10U	10U	10U	10U
2-Chlorophenol, ug/l	10U	10U	10U	10U	10U
2-Methylphenol (o-Cresol), ug/l	10U	10U	10U	10U	10U
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U	10U	10U	10U	10U
3-Methylphenol/4-Methylphen ol (m&p-Cresol), ug/l	10U	10U	10U	10U	10U
N-Nitroso-di-n-propylamine, ug/l	10U	10U	10U	10U	10U
Hexachloroethane, ug/l	10U	10U	10U	10U	10U
Nitrobenzene, ug/l	10U	10U	10U	10U	10U
Isophorone, ug/l	10U	10U	10U	10U	10U
2-Nitrophenol, ug/l	10U	10U	10U	10U	10U
2,4-Dimethylphenol, ug/l	10U	10U	10U	10U	10U
bis(2-Chloroethoxy)methane, ug/l	10U	10U	10U	10U	10U
2,4-Dichlorophenol, ug/l	10U	10U	10U	10U	10U
Naphthalene, ug/l	10U	10U	10U	10U	10U

4 2 0178

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Received: 09 SEP 02
Reported: 10 OCT 02

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CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	42 %
Dilution Factor	1
Prep Date	09.10.02
Prep Time	14:45
Analysis Date	09.12.02
Analysis Time	20:41
Batch ID	09100
Clock ID	1I0912
Quantitation Factor	1

4 2 0179

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Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
TCL Pesticides (SW8081)	
alpha-BHC, ug/l	0.050U
beta-BHC, ug/l	0.050U
delta-BHC, ug/l	0.050U
gamma-BHC (Lindane), ug/l	0.050U
Heptachlor, ug/l	0.050U
Aldrin, ug/l	0.050U
Heptachlor epoxide, ug/l	0.050U
Endosulfan I, ug/l	0.050U
Dieldrin, ug/l	0.10U
4,4'-DDE, ug/l	0.10U
Endrin, ug/l	0.10U
Endrin aldehyde, ug/l	0.10U
Endosulfan II, ug/l	0.10U
4,4'-DDD, ug/l	0.10U
Endosulfan sulfate, ug/l	0.10U
4,4'-DDT, ug/l	0.10U
Endrin ketone, ug/l	0.10U
Methoxychlor, ug/l	0.50U
alpha-Chlordane, ug/l	0.050U
gamma-Chlordane, ug/l	0.050U
Toxaphene, ug/l	5.0U
Surrogate - DCB	64 %

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
PCB's (SW8082)					
Aroclor-1016, ug/l	1.0U	1.0U	1.0U	1.0U	1.0U
Aroclor-1221, ug/l	2.0U	2.0U	2.0U	2.0U	2.0U
Aroclor-1232, ug/l	1.0U	1.0U	1.0U	1.0U	1.0U
Aroclor-1242, ug/l	1.0U	1.0U	1.0U	1.0U	1.0U
Aroclor-1248, ug/l	1.0U	1.0U	1.0U	1.0U	1.0U
Aroclor-1254, ug/l	1.0U	1.0U	1.0U	1.0U	1.0U
Aroclor-1260, ug/l	1.0U	1.0U	1.0U	1.0U	1.0U
Surrogate - TCX	48 %	31 %	48 %	37 %	46 %
Surrogate - DCB	40 %	25 %	46 %	45 %	56 %
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	18:43	19:06	19:30	19:54	20:17
Batch ID	09100	09100	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1	1	1

4 2 0181

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Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
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3011 SW Williston Road
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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
TCL Pesticides (SW8081)					
alpha-BHC, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
beta-BHC, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
delta-BHC, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
gamma-BHC (Lindane), ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
Heptachlor, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
Aldrin, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
Heptachlor epoxide, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
Endosulfan I, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
Dieldrin, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDE, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin aldehyde, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
Endosulfan II, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDD, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
Endosulfan sulfate, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDT, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin ketone, ug/l	0.10U	0.10U	0.10U	0.10U	0.10U
Methoxychlor, ug/l	0.50U	0.50U	0.50U	0.50U	0.50U

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LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
alpha-Chlordane, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
gamma-Chlordane, ug/l	0.050U	0.050U	0.050U	0.050U	0.050U
Toxaphene, ug/l	5.0U	5.0U	5.0U	5.0U	5.0U
Surrogate - DCB	40 %	25 %	46 %	45 %	56 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	48 %	31 %	48 %	37 %	46 %
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	18:43	19:06	19:30	19:54	20:17
Batch ID	09100	09100	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1	1	1

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Client PO. No.: 53470
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Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
4-Chlorophenylphenyl ether, ug/l	10U	10U	10U	10U	10U
Fluorene, ug/l	10U	10U	10U	10U	10U
4-Nitroaniline, ug/l	25U	25U	25U	25U	25U
4,6-Dinitro-2-methylphenol, ug/l	25U	25U	25U	25U	25U
N-Nitrosodiphenylamine, ug/l	10U	10U	10U	10U	10U
4-Bromophenylphenyl ether, ug/l	10U	10U	10U	10U	10U
Hexachlorobenzene, ug/l	10U	10U	10U	10U	10U
Pentachlorophenol, ug/l	25U	25U	25U	25U	25U
Phenanthrene, ug/l	10U	10U	10U	10U	10U
Anthracene, ug/l	10U	10U	10U	10U	10U
Di-n-butylphthalate, ug/l	10U	10U	10U	10U	10U
Fluoranthene, ug/l	10U	10U	10U	10U	10U
Pyrene, ug/l	10U	10U	10U	10U	10U
Butylbenzylphthalate, ug/l	10U	10U	10U	10U	10U
3,3'-Dichlorobenzidine, ug/l	10U	10U	10U	10U	10U
Benzo(a)anthracene, ug/l	10U	10U	10U	10U	10U
bis(2-Ethylhexyl)phthalate, ug/l	10U	10U	10U	10U	10U
Chrysene, ug/l	10U	10U	10U	10U	10U
Di-n-octylphthalate, ug/l	10U	10U	10U	10U	10U

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
Benzo(b)fluoranthene, ug/l	10U	10U	10U	10U	10U
Benzo(k)fluoranthene, ug/l	10U	10U	10U	10U	10U
Benzo(a)pyrene, ug/l	10U	10U	10U	10U	10U
Indeno(1,2,3-cd)pyrene, ug/l	10U	10U	10U	10U	10U
Dibenzo(a,h)anthracene, ug/l	10U	10U	10U	10U	10U
Benzo(g,h,i)perylene, ug/l	10U	10U	10U	10U	10U
Carbazole, ug/l	10U	10U	10U	10U	10U
1-Methylnaphthalene, ug/l	10U	10U	10U	10U	10U
Surrogate - Phenol-d5	62 %	54 %	54 %	67 %	66 %
Surrogate - 2-Fluorophenol	69 %	62 %	60 %	77 %	70 %
Surrogate - 2,4,6-Tribromophenol	110 %	90 %	88 %	98 %	90 %
Surrogate - Nitrobenzene - d5	63 %	58 %	58 %	72 %	64 %
Surrogate - 2-Fluorobiphenyl	65 %	58 %	60 %	70 %	68 %
Surrogate - Terphenyl-d14	27 %	50 %	32 %	33 %	44 %
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45	14:45
Analysis Date	09.21.02	09.21.02	09.21.02	09.21.02	09.21.02
Analysis Time	16:01	16:31	17:01	17:31	18:01
Batch ID	0910B	0910B	0910B	0910B	0910B
Clock ID	1E0921	1E0921	1E0921	1E0921	1E0921
Quantitation Factor	1	1	1	1	1

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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-12	Method Blank		JAD226
JAD226-13	Lab Control Standard Result		JAD226
JAD226-14	Lab Control Standard % Recovery		JAD226

PARAMETER	JAD226-12	JAD226-13	JAD226-14
TCL Pesticides (SW8081)			
alpha-BHC, ug/l	0.050U	0.056	56 %
beta-BHC, ug/l	0.050U	0.066	66 %
delta-BHC, ug/l	0.050U	0.067	67 %
gamma-BHC (Lindane), ug/l	0.050U	0.062	62 %
Heptachlor, ug/l	0.050U	0.055	55 %
Aldrin, ug/l	0.050U	0.046	46 %
Heptachlor epoxide, ug/l	0.050U	0.069	69 %
Endosulfan I, ug/l	0.050U	0.072	72 %
Dieldrin, ug/l	0.10U	0.15	75 %
4,4'-DDE, ug/l	0.10U	0.13	65 %
Endrin, ug/l	0.10U	0.15	75 %
Endrin aldehyde, ug/l	0.10U	0.15	75 %
Endosulfan II, ug/l	0.10U	0.16	80 %
4,4'-DDD, ug/l	0.10U	0.16	80 %
Endosulfan sulfate, ug/l	0.10U	0.17	85 %
4,4'-DDT, ug/l	0.10U	0.16	80 %
Endrin ketone, ug/l	0.10U	0.19	95 %
Methoxychlor, ug/l	0.50U	0.20	100 %
alpha-Chlordane, ug/l	0.050U	0.070	70 %
gamma-Chlordane, ug/l	0.050U	0.071	71 %

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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011
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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-12	Method Blank		JAD226
JAD226-13	Lab Control Standard Result		JAD226
JAD226-14	Lab Control Standard % Recovery		JAD226

PARAMETER	JAD226-12	JAD226-13	JAD226-14
PCB's (SW8082)			
Aroclor-1016, ug/l	1.0U	6.3	63 %
Aroclor-1221, ug/l	2.0U	---	---
Aroclor-1232, ug/l	1.0U	---	---
Aroclor-1242, ug/l	1.0U	---	---
Aroclor-1248, ug/l	1.0U	---	---
Aroclor-1254, ug/l	1.0U	---	---
Aroclor-1260, ug/l	1.0U	7.9	79 %
Surrogate - TCX	52 %	52 %	52 %
Surrogate - DCB	80 %	86 %	86 %
Dilution Factor	1	1	1
Prep Date	09.20.02	09.20.02	09.20.02
Prep Time	13:45	13:45	13:45
Analysis Date	09.27.02	09.27.02	09.27.02
Analysis Time	14:00	15:11	15:11
Batch ID	0920N	0920N	0920N
Clock ID	1I0927	1I0927	1I0927
Quantitation Factor	1	1	1

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
TCL Pesticides (SW8081)	
alpha-BHC, ug/l	0.10
beta-BHC, ug/l	0.10
delta-BHC, ug/l	0.10
gamma-BHC (Lindane), ug/l	0.10
Heptachlor, ug/l	0.10
Aldrin, ug/l	0.10
Heptachlor epoxide, ug/l	0.10
Endosulfan I, ug/l	0.10
Dieldrin, ug/l	0.20
4,4'-DDE, ug/l	0.20
Endrin, ug/l	0.20
Endrin aldehyde, ug/l	0.20
Endosulfan II, ug/l	0.20
4,4'-DDD, ug/l	0.20
Endosulfan sulfate, ug/l	0.20
4,4'-DDT, ug/l	0.20
Endrin ketone, ug/l	0.20
Methoxychlor, ug/l	0.20
alpha-Chlordane, ug/l	0.10
gamma-Chlordane, ug/l	0.10
PCB's (SW8082)	
Aroclor-1016, ug/l	10
Aroclor-1260, ug/l	10

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
TCL Semivolatiles (SW8270)	
Phenol, ug/l	100
bis(2-Chloroethyl)ether, ug/l	100
2-Chlorophenol, ug/l	100
2-Methylphenol (o-Cresol), ug/l	100
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	100
3-Methylphenol/4-Methylphen ol (m&p-Cresol), ug/l	100
N-Nitroso-di-n-propylamine, ug/l	100
Hexachloroethane, ug/l	100
Nitrobenzene, ug/l	100
Isophorone, ug/l	100
2-Nitrophenol, ug/l	100
2,4-Dimethylphenol, ug/l	100
bis(2-Chloroethoxy)methane, ug/l	100
2,4-Dichlorophenol, ug/l	100
Naphthalene, ug/l	100
4-Chloroaniline, ug/l	100
Hexachlorobutadiene, ug/l	100
4-Chloro-3-methylphenol, ug/l	100
2-Methylnaphthalene, ug/l	100

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
Hexachlorocyclopentadiene, ug/l	100
2,4,6-Trichlorophenol, ug/l	100
2,4,5-Trichlorophenol, ug/l	100
2-Chloronaphthalene, ug/l	100
2-Nitroaniline, ug/l	100
Dimethylphthalate, ug/l	100
Acenaphthylene, ug/l	100
3-Nitroaniline, ug/l	100
Acenaphthene, ug/l	100
2,4-Dinitrophenol, ug/l	100
4-Nitrophenol, ug/l	100
Dibenzofuran, ug/l	100
2,4-Dinitrotoluene, ug/l	100
2,6-Dinitrotoluene, ug/l	100
Diethylphthalate, ug/l	100
4-Chlorophenylphenyl ether, ug/l	100
Fluorene, ug/l	100
4-Nitroaniline, ug/l	100
4,6-Dinitro-2-methylphenol, ug/l	100
N-Nitrosodiphenylamine, ug/l	100
4-Bromophenylphenyl ether, ug/l	100
Hexachlorobenzene, ug/l	100
Pentachlorophenol, ug/l	100

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-9	Spike Amount Added, MSD		JAD226

PARAMETER	JAD226-9
Phenanthrene, ug/l	100
Anthracene, ug/l	100
Di-n-butylphthalate, ug/l	100
Fluoranthene, ug/l	100
Pyrene, ug/l	100
Butylbenzylphthalate, ug/l	100
3,3'-Dichlorobenzidine, ug/l	100
Benzo(a)anthracene, ug/l	100
bis(2-Ethylhexyl)phthalate, ug/l	100
Chrysene, ug/l	100
Di-n-octylphthalate, ug/l	100
Benzo(b)fluoranthene, ug/l	100
Benzo(k)fluoranthene, ug/l	100
Benzo(a)pyrene, ug/l	100
Indeno(1,2,3-cd)pyrene, ug/l	100
Dibenzo(a,h)anthracene, ug/l	100
Benzo(g,h,i)perylene, ug/l	100
Carbazole, ug/l	100
1-Methylnaphthalene, ug/l	100
Surrogate - Phenol-d5	100
Surrogate - 2-Fluorophenol	100
Surrogate - 2,4,6-Tribromophenol	100
Surrogate - Nitrobenzene - d5	53
Surrogate - 2-Fluorobiphenyl	53
Surrogate - Terphenyl-d14	53

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
TCL Pesticides (SW8081)					
alpha-BHC, ug/l	0.050U	0.061	61 %	0.064	64 %
beta-BHC, ug/l	0.050U	0.080	80 %	0.083	83 %
delta-BHC, ug/l	0.050U	0.095	95 %	0.092	92 %
gamma-BHC (Lindane), ug/l	0.050U	0.068	68 %	0.069	69 %
Heptachlor, ug/l	0.050U	0.077	77 %	0.079	79 %
Aldrin, ug/l	0.050U	0.062	62 %	0.061	61 %
Heptachlor epoxide, ug/l	0.050U	0.082	82 %	0.083	83 %
Endosulfan I, ug/l	0.050U	0.084	84 %	0.084	84 %
Dieldrin, ug/l	0.10U	0.18	90 %	0.17	85 %
4,4'-DDE, ug/l	0.10U	0.16	80 %	0.16	80 %
Endrin, ug/l	0.10U	0.19	95 %	0.18	90 %
Endrin aldehyde, ug/l	0.10U	0.20	100 %	0.20	100 %
Endosulfan II, ug/l	0.10U	0.20	100 %	0.20	100 %
4,4'-DDD, ug/l	0.10U	0.18	90 %	0.18	90 %
Endosulfan sulfate, ug/l	0.10U	0.22	110 %	0.22	110 %
4,4'-DDT, ug/l	0.10U	0.20	100 %	0.20	100 %
Endrin ketone, ug/l	0.10U	0.23	115 %	0.23	115 %
Methoxychlor, ug/l	0.50U	0.19	95 %	0.19	95 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
alpha-Chlordane, ug/l	0.050U	0.091	91 %	0.089	89 %
gamma-Chlordane, ug/l	0.050U	0.090	90 %	0.088	88 %
Toxaphene, ug/l	5.0U	---	---	---	---
Surrogate - DCB	68 %	62 %	62 %	70 %	70 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	48 %	56 %	56 %	56 %	56 %
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	12:47	13:11	13:11	13:35	13:35
Batch ID	09100	09100	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1	1	1

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
PCB's (SW8082)					
Aroclor-1016, ug/l	1.0U	7.3	73 %	6.8	68 %
Aroclor-1221, ug/l	2.0U	---	---	---	---
Aroclor-1232, ug/l	1.0U	---	---	---	---
Aroclor-1242, ug/l	1.0U	---	---	---	---
Aroclor-1248, ug/l	1.0U	---	---	---	---
Aroclor-1254, ug/l	1.0U	---	---	---	---
Aroclor-1260, ug/l	1.0U	8.8	88 %	8.8	88 %
Surrogate - TCX	48 %	60 %	60 %	58 %	58 %
Surrogate - DCB	68 %	56 %	56 %	88 %	88 %
Dilution Factor	1	1	1	1	1
Prep Date	09.10.02	09.10.02	09.10.02	09.10.02	09.10.02
Prep Time	14:45	14:45	14:45	14:45	14:45
Analysis Date	09.12.02	09.12.02	09.12.02	09.12.02	09.12.02
Analysis Time	12:47	13:59	13:59	14:22	14:22
Batch ID	09100	09100	09100	09100	09100
Clock ID	1I0912	1I0912	1I0912	1I0912	1I0912
Quantitation Factor	1	1	1	1	1

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JAD226-1	Method Blank		JAD226
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JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
TCL Semivolatiles (SW8270)				---	---
Phenol, ug/l	10U	72	72 %	---	---
bis(2-Chloroethyl)ether, ug/l	10U	86	86 %	---	---
2-Chlorophenol, ug/l	10U	76	76 %	---	---
2-Methylphenol (o-Cresol), ug/l	10U	85	85 %	---	---
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U	80	80 %	---	---
3-Methylphenol/4-Methylphen ol (m&p-Cresol), ug/l	10U	84	84 %	---	---
N-Nitroso-di-n-propylamine, ug/l	10U	87	87 %	---	---
Hexachloroethane, ug/l	10U	68	68 %	---	---
Nitrobenzene, ug/l	10U	90	90 %	---	---
Isophorone, ug/l	10U	97	97 %	---	---
2-Nitrophenol, ug/l	10U	92	92 %	---	---
2,4-Dimethylphenol, ug/l	10U	86	86 %	---	---
bis(2-Chloroethoxy)methane, ug/l	10U	97	97 %	---	---
2,4-Dichlorophenol, ug/l	10U	92	92 %	---	---
Naphthalene, ug/l	10U	82	82 %	---	---

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JAD226-1	Method Blank		JAD226
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JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
4-Chloroaniline, ug/l	10U	53	53 %	---	---
Hexachlorobutadiene, ug/l	10U	90	90 %	---	---
4-Chloro-3-methylphenol, ug/l	10U	88	88 %	---	---
2-Methylnaphthalene, ug/l	10U	87	87 %	---	---
Hexachlorocyclopentadiene, ug/l	10U	43	43 %	---	---
2,4,6-Trichlorophenol, ug/l	10U	91	91 %	---	---
2,4,5-Trichlorophenol, ug/l	25U	89	89 %	---	---
2-Chloronaphthalene, ug/l	10U	86	86 %	---	---
2-Nitroaniline, ug/l	25U	94	94 %	---	---
Dimethylphthalate, ug/l	10U	97	97 %	---	---
Acenaphthylene, ug/l	10U	96	96 %	---	---
3-Nitroaniline, ug/l	25U	71	71 %	---	---
Acenaphthene, ug/l	10U	92	92 %	---	---
2,4-Dinitrophenol, ug/l	25U	78	78 %	---	---
4-Nitrophenol, ug/l	25U	85	85 %	---	---
Dibenzofuran, ug/l	10U	94	94 %	---	---
2,4-Dinitrotoluene, ug/l	10U	96	96 %	---	---
2,6-Dinitrotoluene, ug/l	10U	97	97 %	---	---
Diethylphthalate, ug/l	10U	100	100 %	---	---

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JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
4-Chlorophenylphenyl ether, ug/l	10U	94	94 %	---	---
Fluorene, ug/l	10U	95	95 %	---	---
4-Nitroaniline, ug/l	25U	81	81 %	---	---
4,6-Dinitro-2-methylphenol, ug/l	25U	73	73 %	---	---
N-Nitrosodiphenylamine, ug/l	10U	91	91 %	---	---
4-Bromophenylphenyl ether, ug/l	10U	78	78 %	---	---
Hexachlorobenzene, ug/l	10U	88	88 %	---	---
Pentachlorophenol, ug/l	25U	84	84 %	---	---
Phenanthrene, ug/l	10U	100	100 %	---	---
Anthracene, ug/l	10U	96	96 %	---	---
Di-n-butylphthalate, ug/l	10U	91	91 %	---	---
Fluoranthene, ug/l	10U	85	85 %	---	---
Pyrene, ug/l	10U	90	90 %	---	---
Butylbenzylphthalate, ug/l	10U	84	84 %	---	---
3,3'-Dichlorobenzidine, ug/l	10U	66	66 %	---	---
Benzo(a)anthracene, ug/l	10U	87	87 %	---	---
bis(2-Ethylhexyl)phthalate, ug/l	10U	96	96 %	---	---
Chrysene, ug/l	10U	87	87 %	---	---
Di-n-octylphthalate, ug/l	10U	90	90 %	---	---

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CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Benzo(b)fluoranthene, ug/l	10U	92	92 %	---	---
Benzo(k)fluoranthene, ug/l	10U	94	94 %	---	---
Benzo(a)pyrene, ug/l	10U	96	96 %	---	---
Indeno(1,2,3-cd)pyrene, ug/l	10U	92	92 %	---	---
Dibenzo(a,h)anthracene, ug/l	10U	99	99 %	---	---
Benzo(g,h,i)perylene, ug/l	10U	97	97 %	---	---
Carbazole, ug/l	10U	88	88 %	---	---
1-Methylnaphthalene, ug/l	10U	90	90 %	---	---
Surrogate - Phenol-d5	72 %	72 %	72 %	---	---
Surrogate - 2-Fluorophenol	81 %	74 %	74 %	---	---
Surrogate - 2,4,6-Tribromophenol	100 %	97 %	97 %	---	---
Surrogate - Nitrobenzene - d5	74 %	84 %	84 %	---	---
Surrogate - 2-Fluorobiphenyl	76 %	80 %	80 %	---	---
Surrogate - Terphenyl-d14	76 %	84 %	84 %	---	---
Dilution Factor	1	1	1	---	---
Prep Date	09.10.02	09.10.02	09.10.02	---	---
Prep Time	14:45	14:45	14:45	---	---
Analysis Date	09.21.02	09.22.02	09.22.02	---	---
Analysis Time	10:35	15:51	15:51	---	---
Batch ID	0910B	0910B	0910B	---	---
Clock ID	1E0921	1E0922	1E0922	---	---
Quantitation Factor	1	1	1	---	---

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Received: 09 SEP 02
Reported: 10 OCT 02

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CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

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Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-12	Method Blank		JAD226
JAD226-13	Lab Control Standard Result		JAD226
JAD226-14	Lab Control Standard % Recovery		JAD226

PARAMETER	JAD226-12	JAD226-13	JAD226-14

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Client PO. No.: 53470
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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-12	Method Blank		JAD226
JAD226-13	Lab Control Standard Result		JAD226
JAD226-14	Lab Control Standard % Recovery		JAD226

PARAMETER	JAD226-12	JAD226-13	JAD226-14
Toxaphene, ug/l	5.0U	---	---
Surrogate - DCB	80 %	68 %	68 %
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	52 %	50 %	50 %
Dilution Factor	1	1	1
Prep Date	09.20.02	09.20.02	09.20.02
Prep Time	13:45	13:45	13:45
Analysis Date	09.27.02	09.27.02	09.27.02
Analysis Time	14:00	14:23	14:23
Batch ID	0920N	0920N	0920N
Clock ID	1I0927	1I0927	1I0927
Quantitation Factor	1	1	1

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LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-1	BDMW013R1	09-05-02/12:20	JAD226
46400-2	BDMW012R1	09-05-02/10:15	JAD226
46400-3	BDMW011R1FD	09-05-02/15:30	JAD226
46400-4	BDMW011R1	09-05-02/15:30	JAD226
46400-5	BDMW010R1	09-05-02/13:50	JAD226

PARAMETER	46400-1	46400-2	46400-3	46400-4	46400-5
4-Chloroaniline, ug/l	10U	10U	10U	10U	10U
Hexachlorobutadiene, ug/l	10U	10U	10U	10U	10U
4-Chloro-3-methylphenol, ug/l	10U	10U	10U	10U	10U
2-Methylnaphthalene, ug/l	10U	10U	10U	10U	10U
Hexachlorocyclopentadiene, ug/l	10U	10U	10U	10U	10U
2,4,6-Trichlorophenol, ug/l	10U	10U	10U	10U	10U
2,4,5-Trichlorophenol, ug/l	25U	25U	25U	25U	25U
2-Chloronaphthalene, ug/l	10U	10U	10U	10U	10U
2-Nitroaniline, ug/l	25U	25U	25U	25U	25U
Dimethylphthalate, ug/l	10U	10U	10U	10U	10U
Acenaphthylene, ug/l	10U	10U	10U	10U	10U
3-Nitroaniline, ug/l	25U	25U	25U	25U	25U
Acenaphthene, ug/l	10U	10U	10U	10U	10U
2,4-Dinitrophenol, ug/l	25U	25U	25U	25U	25U
4-Nitrophenol, ug/l	25U	25U	25U	25U	25U
Dibenzofuran, ug/l	10U	10U	10U	10U	10U
2,4-Dinitrotoluene, ug/l	10U	10U	10U	10U	10U
2,6-Dinitrotoluene, ug/l	10U	10U	10U	10U	10U
Diethylphthalate, ug/l	10U	10U	10U	10U	10U

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Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
TCL Pesticides (SW8081)					
alpha-BHC, ug/l	0.066	60 %	0.051	51 %	0.11
beta-BHC, ug/l	0.12	109 %	0.089	89 %	0.11
delta-BHC, ug/l	0.086	78 %	0.067	67 %	0.11
gamma-BHC (Lindane), ug/l	0.071	64 %	0.055	55 %	0.11
Heptachlor, ug/l	0.067	61 %	0.051	51 %	0.11
Aldrin, ug/l	0.057	52 %	0.043	43 %	0.11
Heptachlor epoxide, ug/l	0.078	71 %	0.064	64 %	0.11
Endosulfan I, ug/l	0.074	67 %	0.064	64 %	0.11
Dieldrin, ug/l	0.17	77 %	0.14	70 %	0.22
4,4'-DDE, ug/l	0.16	73 %	0.13	65 %	0.22
Endrin, ug/l	0.18	82 %	0.15	75 %	0.22
Endrin aldehyde, ug/l	0.18	82 %	0.15	75 %	0.22
Endosulfan II, ug/l	0.16	73 %	0.14	70 %	0.22
4,4'-DDD, ug/l	0.18	82 %	0.16	80 %	0.22
Endosulfan sulfate, ug/l	0.20	91 %	0.18	90 %	0.22
4,4'-DDT, ug/l	0.18	82 %	0.16	80 %	0.22
Endrin ketone, ug/l	0.22	100 %	0.21	105 %	0.22
Methoxychlor, ug/l	0.22	100 %	0.19	95 %	0.22

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
alpha-Chlordane, ug/l	0.082	74 %	0.068	68 %	0.11
gamma-Chlordane, ug/l	0.084	76 %	0.070	70 %	0.11
Surrogate - DCB	57 %	57 %	40 %	40 %	---
Surrogate - 2,4,5,6-Tetrachloro-m-xylene (TCMX)	52 %	52 %	42 %	42 %	---
Dilution Factor	1	1	1	1	---
Prep Date	09.20.02	09.20.02	09.20.02	09.20.02	---
Prep Time	13:45	13:45	13:45	13:45	---
Analysis Date	09.26.02	09.26.02	09.26.02	09.26.02	---
Analysis Time	17:05	17:05	17:29	17:29	---
Batch ID	0920N	0920N	0920N	0920N	---
Clock ID	1I0926	1I0926	1I0926	1I0926	---
Quantitation Factor	0.930	0.930	1	1	---

4 2 1:203

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Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
PCB's (SW8082)					
Aroclor-1016, ug/l	7.4	74 %	7.7	77 %	10
Aroclor-1260, ug/l	8.2	82 %	8.8	88 %	10
Surrogate - TCX	56 %	56 %	54 %	54 %	---
Surrogate - DCB	64 %	64 %	76 %	76 %	---
Dilution Factor	1	1	1	1	---
Prep Date	09.20.02	09.20.02	09.20.02	09.20.02	---
Prep Time	13:45	13:45	13:45	13:45	---
Analysis Date	09.26.02	09.26.02	09.26.02	09.26.02	---
Analysis Time	16:18	16:18	16:41	16:41	---
Batch ID	0920N	0920N	0920N	0920N	---
Clock ID	1I0926	1I0926	1I0926	1I0926	---
Quantitation Factor	1	1	1	1	---

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LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
JAD226-5	Matrix Spike % Recovery		JAD226
JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
TCL Semivolatiles (SW8270)					
Phenol, ug/l	80	73 %	77	77 %	110
bis(2-Chloroethyl)ether, ug/l	87	79 %	87	87 %	110
2-Chlorophenol, ug/l	78	71 %	79	79 %	110
2-Methylphenol (o-Cresol), ug/l	84	76 %	87	87 %	110
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	75	68 %	79	79 %	110
3-Methylphenol/4-Methylphen ol (m&p-Cresol), ug/l	85	77 %	92	92 %	110
N-Nitroso-di-n-propylamine, ug/l	86	78 %	93	93 %	110
Hexachloroethane, ug/l	63	57 %	68	68 %	110
Nitrobenzene, ug/l	86	78 %	88	88 %	110
Isophorone, ug/l	87	79 %	91	91 %	110
2-Nitrophenol, ug/l	96	87 %	99	99 %	110
2,4-Dimethylphenol, ug/l	76	69 %	76	76 %	110
bis(2-Chloroethoxy)methane, ug/l	94	85 %	95	95 %	110
2,4-Dichlorophenol, ug/l	94	85 %	100	100 %	110
Naphthalene, ug/l	80	73 %	84	84 %	110

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JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
4-Chloroaniline, ug/l	72	65 %	69	69 %	110
Hexachlorobutadiene, ug/l	78	71 %	83	83 %	110
4-Chloro-3-methylphenol, ug/l	86	78 %	97	97 %	110
2-Methylnaphthalene, ug/l	86	78 %	94	94 %	110
Hexachlorocyclopentadiene, ug/l	20	18 %	20	20 %	110
2,4,6-Trichlorophenol, ug/l	93	84 %	94	94 %	110
2,4,5-Trichlorophenol, ug/l	93	84 %	93	93 %	110
2-Chloronaphthalene, ug/l	88	80 %	87	87 %	110
2-Nitroaniline, ug/l	93	84 %	95	95 %	110
Dimethylphthalate, ug/l	98	89 %	100	100 %	110
Acenaphthylene, ug/l	93	84 %	96	96 %	110
3-Nitroaniline, ug/l	77	70 %	70	70 %	110
Acenaphthene, ug/l	89	81 %	92	92 %	110
2,4-Dinitrophenol, ug/l	100	91 %	110	110 %	110
4-Nitrophenol, ug/l	100	91 %	100	100 %	110
Dibenzofuran, ug/l	96	87 %	98	98 %	110
2,4-Dinitrotoluene, ug/l	100	91 %	98	98 %	110
2,6-Dinitrotoluene, ug/l	87	65 %	88	73 %	110
Diethylphthalate, ug/l	100	91 %	100	100 %	110

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JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
4-Chlorophenylphenyl ether, ug/l	92	84 %	94	94 %	110
Fluorene, ug/l	95	86 %	97	97 %	110
4-Nitroaniline, ug/l	94	85 %	88	88 %	110
4,6-Dinitro-2-methylphenol, ug/l	92	84 %	97	97 %	110
N-Nitrosodiphenylamine, ug/l	62	56 %	66	66 %	110
4-Bromophenylphenyl ether, ug/l	78	71 %	83	83 %	110
Hexachlorobenzene, ug/l	79	72 %	84	84 %	110
Pentachlorophenol, ug/l	97	88 %	100	100 %	110
Phenanthrene, ug/l	97	88 %	99	99 %	110
Anthracene, ug/l	86	78 %	90	90 %	110
Di-n-butylphthalate, ug/l	89	81 %	92	92 %	110
Fluoranthene, ug/l	80	73 %	81	81 %	110
Pyrene, ug/l	100	91 %	100	100 %	110
Butylbenzylphthalate, ug/l	99	90 %	97	97 %	110
3,3'-Dichlorobenzidine, ug/l	56	51 %	47	47 %	110
Benzo(a)anthracene, ug/l	99	90 %	96	96 %	110
bis(2-Ethylhexyl)phthalate, ug/l	100	91 %	100	100 %	110
Chrysene, ug/l	90	82 %	89	89 %	110
Di-n-octylphthalate, ug/l	100	91 %	100	100 %	110

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JAD226-4	Matrix Spike Result (BDMW010R1)		JAD226
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JAD226-6	Matrix Spike Duplicate Result		JAD226
JAD226-7	Matrix Spike Duplicate % Recovery		JAD226
JAD226-8	Spike Amount Added, MS		JAD226

PARAMETER	JAD226-4	JAD226-5	JAD226-6	JAD226-7	JAD226-8
Benzo(b)fluoranthene, ug/l	91	83 %	100	100 %	110
Benzo(k)fluoranthene, ug/l	78	71 %	74	74 %	110
Benzo(a)pyrene, ug/l	81	74 %	84	84 %	110
Indeno(1,2,3-cd)pyrene, ug/l	100	91 %	100	100 %	110
Dibenzo(a,h)anthracene, ug/l	93	84 %	95	95 %	110
Benzo(g,h,i)perylene, ug/l	96	87 %	95	95 %	110
Carbazole, ug/l	95	86 %	93	93 %	110
1-Methylnaphthalene, ug/l	87	79 %	95	95 %	110
Surrogate - Phenol-d5	66 %	66 %	72 %	72 %	110
Surrogate - 2-Fluorophenol	68 %	68 %	72 %	72 %	110
Surrogate - 2,4,6-Tribromophenol	78 %	78 %	84 %	84 %	110
Surrogate - Nitrobenzene - d5	67 %	67 %	68 %	68 %	54
Surrogate - 2-Fluorobiphenyl	72 %	72 %	72 %	72 %	54
Surrogate - Terphenyl-d14	87 %	87 %	81 %	81 %	54
Dilution Factor	1	1	1	1	---
Prep Date	09.20.02	09.20.02	09.20.02	09.20.02	---
Prep Time	14:45	14:45	14:45	14:45	---
Analysis Date	09.24.02	09.24.02	09.24.02	09.24.02	---
Analysis Time	20:29	20:29	20:59	20:59	---
Batch ID	0920C	0920C	0920C	0920C	---
Clock ID	1E0924	1E0924	1E0924	1E0924	---
Quantitation Factor	1	1	1	1	---

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Received: 09 SEP 02
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Mr. Herb Kelly
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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
2,4,5-Trichlorophenol, ug/l	25U
2-Chloronaphthalene, ug/l	10U
2-Nitroaniline, ug/l	25U
Dimethylphthalate, ug/l	10U
Acenaphthylene, ug/l	10U
3-Nitroaniline, ug/l	25U
Acenaphthene, ug/l	10U
2,4-Dinitrophenol, ug/l	25U
4-Nitrophenol, ug/l	25U
Dibenzofuran, ug/l	10U
2,4-Dinitrotoluene, ug/l	10U
2,6-Dinitrotoluene, ug/l	10U
Diethylphthalate, ug/l	10U
4-Chlorophenylphenyl ether, ug/l	10U
Fluorene, ug/l	10U
4-Nitroaniline, ug/l	25U
4,6-Dinitro-2-methylphenol, ug/l	25U
N-Nitrosodiphenylamine, ug/l	10U
4-Bromophenylphenyl ether, ug/l	10U
Hexachlorobenzene, ug/l	10U
Pentachlorophenol, ug/l	25U
Phenanthrene, ug/l	10U
Anthracene, ug/l	10U

4 2 0209

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LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
Di-n-butylphthalate, ug/l	10U
Fluoranthene, ug/l	10U
Pyrene, ug/l	10U
Butylbenzylphthalate, ug/l	10U
3,3'-Dichlorobenzidine, ug/l	10U
Benzo(a)anthracene, ug/l	10U
bis(2-Ethylhexyl)phthalate, ug/l	10U
Chrysene, ug/l	10U
Di-n-octylphthalate, ug/l	10U
Benzo(b)fluoranthene, ug/l	10U
Benzo(k)fluoranthene, ug/l	10U
Benzo(a)pyrene, ug/l	10U
Indeno(1,2,3-cd)pyrene, ug/l	10U
Dibenzo(a,h)anthracene, ug/l	10U
Benzo(g,h,i)perylene, ug/l	10U
Carbazole, ug/l	10U
1-Methylnaphthalene, ug/l	10U
Surrogate - Phenol-d5	55 %
Surrogate - 2-Fluorophenol	62 %
Surrogate - 2,4,6-Tribromophenol	90 %
Surrogate - Nitrobenzene - d5	56 %
Surrogate - 2-Fluorobiphenyl	62 %
Surrogate - Terphenyl-d14	60 %

4 2 0210

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Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
PCB's (SW8082)	
Aroclor-1016, ug/l	1.0U
Aroclor-1221, ug/l	2.0U
Aroclor-1232, ug/l	1.0U
Aroclor-1242, ug/l	1.0U
Aroclor-1248, ug/l	1.0U
Aroclor-1254, ug/l	1.0U
Aroclor-1260, ug/l	1.0U
Surrogate - TCX	42 %
Surrogate - DCB	64 %
Dilution Factor	1
Prep Date	09.10.02
Prep Time	14:45
Analysis Date	09.12.02
Analysis Time	20:41
Batch ID	09100
Clock ID	1I0912
Quantitation Factor	1

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Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
TCL Semivolatiles (SW8270)	
Phenol, ug/l	10U
bis(2-Chloroethyl)ether, ug/l	10U
2-Chlorophenol, ug/l	10U
2-Methylphenol (o-Cresol), ug/l	10U
2,2'-Oxybis(1-Chloropropane) (bis-2-chloroisopropyl ether), ug/l	10U
3-Methylphenol/4-Methylphenol (m&p-Cresol), ug/l	10U
N-Nitroso-di-n-propylamine, ug/l	10U
Hexachloroethane, ug/l	10U
Nitrobenzene, ug/l	10U
Isophorone, ug/l	10U
2-Nitrophenol, ug/l	10U
2,4-Dimethylphenol, ug/l	10U
bis(2-Chloroethoxy)methane, ug/l	10U
2,4-Dichlorophenol, ug/l	10U
Naphthalene, ug/l	10U
4-Chloroaniline, ug/l	10U
Hexachlorobutadiene, ug/l	10U
4-Chloro-3-methylphenol, ug/l	10U
2-Methylnaphthalene, ug/l	10U
Hexachlorocyclopentadiene, ug/l	10U
2,4,6-Trichlorophenol, ug/l	10U

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LOG NO: S2-46377
Received: 06 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Volatiles by GC/MS (8260)	
Chloromethane, ug/l	10U
Bromomethane (Methyl bromide), ug/l	10U
Vinyl chloride, ug/l	10U
Chloroethane, ug/l	10U
Methylene chloride (Dichloromethane), ug/l	10U
Acetone, ug/l	13
Carbon disulfide, ug/l	10U
1,1-Dichloroethene, ug/l	10U
1,1-Dichloroethane, ug/l	10U
cis-1,2-Dichloroethene, ug/l	10U
trans-1,2-Dichloroethene, ug/l	10U
Chloroform, ug/l	10U
1,2-Dichloroethane, ug/l	10U
2-Butanone (MEK), ug/l	10U
1,1,1-Trichloroethane, ug/l	10U
Carbon tetrachloride, ug/l	10U
Bromodichloromethane, ug/l	10U
1,1,2,2-Tetrachloroethane, ug/l	10U
1,2-Dichloropropane, ug/l	10U
trans-1,3-Dichloropropene, ug/l	10U
Trichloroethene, ug/l	10U
Dibromochloromethane, ug/l	10U

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
1,1,2-Trichloroethane, ug/l	10U
Benzene, ug/l	10U
cis-1,3-Dichloropropene, ug/l	10U
Bromoform, ug/l	10U
2-Hexanone, ug/l	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U
Tetrachloroethene, ug/l	10U
Toluene, ug/l	10U
Chlorobenzene, ug/l	10U
Ethylbenzene, ug/l	10U
Styrene, ug/l	10U
Xylenes, Total, ug/l	10U
Dichlorodifluoromethane, ug/l	10U
Trichlorofluoromethane, ug/l	10U
1,1,2-Trichloro-1,2,2-trifluoroethane, ug/l	10U
Methyl t-butyl ether (MTBE), ug/l	10U
Isopropylbenzene, ug/l	10U
1,3-Dichlorobenzene, ug/l	10U
1,4-Dichlorobenzene, ug/l	10U
1,2-Dichlorobenzene, ug/l	10U
1,2-Dibromo-3-chloropropane, ug/l	10U
1,2,4-Trichlorobenzene, ug/l	10U
1,2-Dibromoethane (EDB), ug/l	10U

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Received: 06 SEP 02
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Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-4	BDMW014R1	09-04-02/15:25	JAD226

PARAMETER	46377-4
Surrogate - Toluene-d8	92 %
Surrogate - 4-Bromofluorobenzene	88 %
Surrogate - Dibromofluoromethane	100 %
Dilution Factor	1
Prep Date	09.17.02
Prep Time	22:40
Analysis Date	09.17.02
Analysis Time	22:40
Batch ID	200917
Clock ID	200917
Quantitation Factor	1.00

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-6	BDWG003TB	09-04-02/16:40	JAD226

PARAMETER	46377-6
Volatiles by GC/MS (8260)	
Chloromethane, ug/l	10U
Bromomethane (Methyl bromide), ug/l	10U
Vinyl chloride, ug/l	10U
Chloroethane, ug/l	10U
Methylene chloride (Dichloromethane), ug/l	10U
Acetone, ug/l	10U
Carbon disulfide, ug/l	10U
1,1-Dichloroethene, ug/l	10U
1,1-Dichloroethane, ug/l	10U
cis-1,2-Dichloroethene, ug/l	10U
trans-1,2-Dichloroethene, ug/l	10U
Chloroform, ug/l	10U
1,2-Dichloroethane, ug/l	10U
2-Butanone (MEK), ug/l	10U
1,1,1-Trichloroethane, ug/l	10U
Carbon tetrachloride, ug/l	10U
Bromodichloromethane, ug/l	10U
1,1,2,2-Tetrachloroethane, ug/l	10U
1,2-Dichloropropane, ug/l	10U
trans-1,3-Dichloropropene, ug/l	10U
Trichloroethene, ug/l	10U
Dibromochloromethane, ug/l	10U

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CC: Norm Hatch

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Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-6	BDWG003TB	09-04-02/16:40	JAD226

PARAMETER	46377-6
1,1,2-Trichloroethane, ug/l	10U
Benzene, ug/l	10U
cis-1,3-Dichloropropene, ug/l	10U
Bromoform, ug/l	10U
2-Hexanone, ug/l	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U
Tetrachloroethene, ug/l	10U
Toluene, ug/l	10U
Chlorobenzene, ug/l	10U
Ethylbenzene, ug/l	10U
Styrene, ug/l	10U
Xylenes, Total, ug/l	10U
Dichlorodifluoromethane, ug/l	10U
Trichlorofluoromethane, ug/l	10U
1,1,2-Trichloro-1,2,2-trifluoroethane, ug/l	10U
Methyl t-butyl ether (MTBE), ug/l	10U
Isopropylbenzene, ug/l	10U
1,3-Dichlorobenzene, ug/l	10U
1,4-Dichlorobenzene, ug/l	10U
1,2-Dichlorobenzene, ug/l	10U
1,2-Dibromo-3-chloropropane, ug/l	10U
1,2,4-Trichlorobenzene, ug/l	10U
1,2-Dibromoethane (EDB), ug/l	10U

4 2 0217

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LOG NO: S2-46377
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Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 155421011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-6	BDWG003TB	09-04-02/16:40	JAD226

PARAMETER	46377-6
Surrogate - Toluene-d8	92 %
Surrogate - 4-Bromofluorobenzene	92 %
Surrogate - Dibromofluoromethane	106 %
Dilution Factor	1
Prep Date	09.17.02
Prep Time	23:02
Analysis Date	09.17.02
Analysis Time	23:02
Batch ID	200917
Clock ID	200917
Quantitation Factor	1.00

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46377-6	BDWG003TB	09-04-02/16:40	JAD226

PARAMETER	46377-6

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

U = Indicates compound was analyzed for but not detected.

J = The flag "J" indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.

B (Inorganic) = This flag indicates the reported value was obtained from a reading that was less than the Project Reporting Limits but greater than or equal to the Method Detection Limit (MDL).

E (Inorganic) = This flag indicates the reported value is estimated because of the presence of interference.

K. Michelle Owens

Michelle Owens, Project Manager

Final Page Of Report

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STL Savannah

LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
Volatiles by GC/MS (8260)				
Chloromethane, ug/l dw	10U	10U	10U	10U
Bromomethane (Methyl bromide), ug/l dw	10U	10U	10U	10U
Vinyl chloride, ug/l dw	10U	10U	10U	10U
Chloroethane, ug/l dw	10U	10U	10U	10U
Methylene chloride (Dichloromethane), ug/l dw	10U	10U	0.42J	10U
Acetone, ug/l dw	10U	10U	10U	10U
Carbon disulfide, ug/l dw	10U	10U	10U	10U
1,1-Dichloroethene, ug/l dw	10U	10U	10U	10U
1,1-Dichloroethane, ug/l dw	10U	10U	10U	10U
cis-1,2-Dichloroethene, ug/l dw	10U	10U	10U	10U
trans-1,2-Dichloroethene, ug/l dw	10U	10U	10U	10U
Chloroform, ug/l dw	10U	10U	10U	10U
1,2-Dichloroethane, ug/l dw	10U	10U	10U	10U
2-Butanone (MEK), ug/l dw	10U	10U	10U	10U
1,1,1-Trichloroethane, ug/l dw	10U	10U	10U	10U
Carbon tetrachloride, ug/l dw	10U	10U	10U	10U
Bromodichloromethane, ug/l dw	10U	10U	10U	10U
1,1,2,2-Tetrachloroethane, ug/l dw	10U	10U	10U	10U
1,2-Dichloropropane, ug/l dw	10U	10U	10U	10U

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Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
trans-1,3-Dichloropropene, ug/l dw	10U	10U	10U	10U
Trichloroethene, ug/l dw	10U	10U	10U	10U
Dibromochloromethane, ug/l dw	10U	10U	10U	10U
1,1,2-Trichloroethane, ug/l dw	10U	10U	10U	10U
Benzene, ug/l dw	10U	10U	10U	10U
cis-1,3-Dichloropropene, ug/l dw	10U	10U	10U	10U
Bromoform, ug/l dw	10U	10U	10U	10U
2-Hexanone, ug/l dw	10U	10U	10U	10U
4-Methyl-2-pentanone (MIBK), ug/l dw	10U	10U	10U	10U
Tetrachloroethene, ug/l dw	10U	17	10U	10U
Toluene, ug/l dw	10U	10U	10U	10U
Chlorobenzene, ug/l dw	10U	10U	10U	10U
Ethylbenzene, ug/l dw	10U	10U	10U	10U
Styrene, ug/l dw	10U	10U	10U	10U
Xylenes, Total, ug/l dw	10U	10U	10U	10U
Dichlorodifluoromethane, ug/l dw	10U	10U	10U	10U
Trichlorofluoromethane, ug/l dw	10U	10U	10U	10U
1,1,2-Trichloro-1,2,2-trifluoroethane, ug/l dw	10U	10U	10U	10U
Methyl t-butyl ether (MTBE), ug/l dw	10U	10U	10U	10U
Isopropylbenzene, ug/l dw	10U	10U	10U	10U

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-1	BDMW005R1	09-03-02/15:35	JAD225
46329-2	BDMW002R1	09-03-02/11:10	JAD225
46329-3	BDWG001EB	09-03-02/16:50	JAD225
46329-4	BDWG002AB	09-03-02/17:00	JAD225

PARAMETER	46329-1	46329-2	46329-3	46329-4
1,3-Dichlorobenzene, ug/l dw	10U	10U	10U	10U
1,4-Dichlorobenzene, ug/l dw	10U	10U	10U	10U
1,2-Dichlorobenzene, ug/l dw	10U	10U	10U	10U
1,2-Dibromo-3-chloropropane, ug/l dw	10U	10U	10U	10U
1,2,4-Trichlorobenzene, ug/l dw	10U	10U	10U	10U
1,2-Dibromoethane (EDB), ug/l dw	10U	10U	10U	10U
Surrogate - Toluene-d8	92 %	92 %	92 %	92 %
Surrogate - 4-Bromofluorobenzene	88 %	92 %	92 %	90 %
Surrogate - Dibromofluoromethane	96 %	100 %	94 %	96 %
Dilution Factor	1	1	1	1
Prep Date	09.17.02	09.17.02	09.17.02	09.17.02
Prep Time	11:17	11:39	08:06	08:29
Analysis Date	09.17.02	09.17.02	09.17.02	09.17.02
Analysis Time	11:17	11:39	08:06	08:29
Batch ID	100917	100917	100917	100917
Clock ID	100917	100917	100917	100917
Quantitation Factor	1	1	1	1

4 2 0222

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STL Savannah

LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Volatiles by GC/MS (8260)			
Chloromethane, ug/l	10U	45	90 %
Bromomethane (Methyl bromide), ug/l	10U	48	96 %
Vinyl chloride, ug/l	10U	43	86 %
Chloroethane, ug/l	10U	45	90 %
Methylene chloride (Dichloromethane), ug/l	10U	44	88 %
Acetone, ug/l	10U	96	96 %
Carbon disulfide, ug/l	10U	50	100 %
1,1-Dichloroethene, ug/l	10U	46	92 %
1,1-Dichloroethane, ug/l	10U	46	92 %
cis-1,2-Dichloroethene, ug/l	10U	44	88 %
trans-1,2-Dichloroethene, ug/l	10U	48	96 %
Chloroform, ug/l	10U	44	88 %
1,2-Dichloroethane, ug/l	10U	47	94 %
2-Butanone (MEK), ug/l	10U	82	82 %
1,1,1-Trichloroethane, ug/l	10U	49	98 %
Carbon tetrachloride, ug/l	10U	50	100 %
Bromodichloromethane, ug/l	10U	49	98 %
1,1,2,2-Tetrachloroethane, ug/l	10U	40	80 %
1,2-Dichloropropane, ug/l	10U	45	90 %
trans-1,3-Dichloropropene, ug/l	10U	47	94 %

4 2 0223

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Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
Trichloroethene, ug/l	10U	48	96 %
Dibromochloromethane, ug/l	10U	46	92 %
1,1,2-Trichloroethane, ug/l	10U	42	84 %
Benzene, ug/l	10U	47	94 %
cis-1,3-Dichloropropene, ug/l	10U	46	92 %
Bromoform, ug/l	10U	42	84 %
2-Hexanone, ug/l	10U	81	81 %
4-Methyl-2-pentanone (MIBK), ug/l	10U	83	83 %
Tetrachloroethene, ug/l	10U	66	132 %
Toluene, ug/l	10U	49	98 %
Chlorobenzene, ug/l	10U	44	88 %
Ethylbenzene, ug/l	10U	46	92 %
Styrene, ug/l	10U	46	92 %
Xylenes, Total, ug/l	10U	130	87 %
Dichlorodifluoromethane, ug/l	10U	51	102 %
Trichlorofluoromethane, ug/l	10U	50	100 %
1,1,2-Trichloro-1,2,2-trifluoroethane, ug/l	10U	46	92 %
Methyl t-butyl ether (MTBE), ug/l	10U	81	81 %
Isopropylbenzene, ug/l	10U	44	88 %
1,3-Dichlorobenzene, ug/l	10U	42	84 %
1,4-Dichlorobenzene, ug/l	10U	42	84 %

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9
1,2-Dichlorobenzene, ug/l	10U	41	82 %
1,2-Dibromo-3-chloropropane, ug/l	10U	36	72 %
1,2,4-Trichlorobenzene, ug/l	10U	40	80 %
1,2-Dibromoethane (EDB), ug/l	10U	40	80 %
Surrogate - Toluene-d8	92 %	46	92 %
Surrogate - 4-Bromofluorobenzene	86 %	43	86 %
Surrogate - Dibromofluoromethane	108 %	45	90 %
Dilution Factor	1	1	1
Prep Date	09.17.02	09.17.02	09.17.02
Prep Time	03:36	04:03	04:03
Analysis Date	09.17.02	09.17.02	09.17.02
Analysis Time	03:36	04:03	04:03
Batch ID	100917	100917	100917
Clock ID	100917	100917	100917
Quantitation Factor	1	1	1

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LOG NO: S2-48409
Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-1	Trip Blank	11-19-02	JAD238
48409-2	BDMW002R1A	11-19-02/11:10	JAD238
48409-3	BDMW002R1AFD	11-19-02/11:10	JAD238
48409-4	BDMW002R1AEB	11-19-02/12:00	JAD238
48409-5	BDMW002R1AAB	11-19-02/12:00	JAD238

PARAMETER	48409-1	48409-2	48409-3	48409-4	48409-5
Volatiles by GC/MS (8260)					
Chloromethane, ug/l	10U	10U	10U	10U	10U
Bromomethane (Methyl bromide), ug/l	10U	10U	10U	10U	10U
Vinyl chloride, ug/l	10U	10U	10U	10U	10U
Chloroethane, ug/l	10U	10U	10U	10U	10U
Methylene chloride (Dichloromethane), ug/l	10U	10U	10U	0.46J	1.1J
Acetone, ug/l	10U	10U	10U	10U	10U
Carbon disulfide, ug/l	10U	10U	10U	10U	10U
1,1-Dichloroethene, ug/l	10U	10U	10U	10U	10U
1,1-Dichloroethane, ug/l	10U	10U	10U	10U	10U
cis-1,2-Dichloroethene, ug/l	10U	10U	10U	10U	10U
trans-1,2-Dichloroethene, ug/l	10U	10U	10U	10U	10U
Chloroform, ug/l	10U	10U	10U	10U	10U
1,2-Dichloroethane, ug/l	10U	10U	10U	10U	10U
2-Butanone (MEK), ug/l	10U	10U	10U	10U	10U
1,1,1-Trichloroethane, ug/l	10U	10U	10U	10U	10U
Carbon tetrachloride, ug/l	10U	10U	10U	10U	10U
Bromodichloromethane, ug/l	10U	10U	10U	10U	10U

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Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-1	Trip Blank	11-19-02	JAD238
48409-2	BDMW002R1A	11-19-02/11:10	JAD238
48409-3	BDMW002R1AFD	11-19-02/11:10	JAD238
48409-4	BDMW002R1AEB	11-19-02/12:00	JAD238
48409-5	BDMW002R1AAB	11-19-02/12:00	JAD238

PARAMETER	48409-1	48409-2	48409-3	48409-4	48409-5
1,1,2,2-Tetrachloroethane, ug/l	10U	10U	10U	10U	10U
1,2-Dichloropropane, ug/l	10U	10U	10U	10U	10U
trans-1,3-Dichloropropene, ug/l	10U	10U	10U	10U	10U
Trichloroethene, ug/l	10U	10U	10U	10U	10U
Dibromochloromethane, ug/l	10U	10U	10U	10U	10U
1,1,2-Trichloroethane, ug/l	10U	10U	10U	10U	10U
Benzene, ug/l	10U	0.32J	10U	10U	10U
cis-1,3-Dichloropropene, ug/l	10U	10U	10U	10U	10U
Bromoform, ug/l	10U	10U	10U	10U	10U
2-Hexanone, ug/l	10U	10U	10U	10U	10U
4-Methyl-2-pentanone (MIBK), ug/l	10U	10U	10U	10U	10U
Tetrachloroethene, ug/l	10U	10U	10U	10U	10U
Toluene, ug/l	10U	1.2J	10U	10U	10U
Chlorobenzene, ug/l	10U	10U	10U	10U	10U
Ethylbenzene, ug/l	10U	10U	10U	10U	10U
Styrene, ug/l	10U	10U	10U	10U	10U
Xylenes, Total, ug/l	10U	10U	10U	10U	10U
Dichlorodifluoromethane, ug/l	10U	10U	10U	10U	10U
Trichlorofluoromethane, ug/l	10U	10U	10U	10U	10U

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Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-1	Trip Blank	11-19-02	JAD238
48409-2	BDMW002R1A	11-19-02/11:10	JAD238
48409-3	BDMW002R1AFD	11-19-02/11:10	JAD238
48409-4	BDMW002R1AEB	11-19-02/12:00	JAD238
48409-5	BDMW002R1AAB	11-19-02/12:00	JAD238

PARAMETER	48409-1	48409-2	48409-3	48409-4	48409-5
1,1,2-Trichloro-1,2,2-trifl uoroethane, ug/l	10U	10U	10U	10U	10U
Methyl t-butyl ether (MTBE), ug/l	10U	10U	10U	10U	10U
Isopropylbenzene, ug/l	10U	10U	10U	10U	10U
1,3-Dichlorobenzene, ug/l	10U	10U	10U	10U	10U
1,4-Dichlorobenzene, ug/l	10U	10U	10U	10U	10U
1,2-Dichlorobenzene, ug/l	10U	10U	10U	10U	10U
1,2-Dibromo-3-chloropropane, ug/l	10U	10U	10U	10U	10U
1,2,4-Trichlorobenzene, ug/l	10U	10U	10U	10U	10U
1,2-Dibromoethane (EDB), ug/l	10U	10U	10U	10U	10U
Surrogate - Toluene-d8	82 %	84 %	84 %	86 %	84 %
Surrogate - 4-Bromofluorobenzene	84 %	86 %	84 %	86 %	82 %
Surrogate - Dibromofluoromethane	92 %	90 %	90 %	94 %	88 %
Dilution Factor	1	1	1	1	1
Prep Date	12.02.02	12.02.02	12.02.02	12.02.02	12.02.02
Prep Time	16:38	17:07	17:21	20:25	17:50
Analysis Date	12.02.02	12.02.02	12.02.02	12.02.02	12.02.02
Analysis Time	16:38	17:07	17:21	20:25	17:50
Batch ID	1P1202	1P1202	1P1202	1P1202	1P1202
Clock ID	1P1202	1P1202	1P1202	1P1202	1P1202
Quantitation Factor	1.00	1.00	1.00	1.00	1.00

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LOG NO: S2-48409
Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-6	Method Blank		JAD238
48409-7	Lab Control Standard Result		JAD238
48409-8	Lab Control Standard % Recovery		JAD238

PARAMETER	48409-6	48409-7	48409-8
Volatiles by GC/MS (8260)			
Chloromethane, ug/l	10U	37	74 %
Bromomethane (Methyl bromide), ug/l	10U	100	200 %Y
Vinyl chloride, ug/l	10U	43	86 %
Chloroethane, ug/l	10U	54	108 %
Methylene chloride (Dichloromethane), ug/l	10U	48	96 %
Acetone, ug/l	10U	80	80 %
Carbon disulfide, ug/l	10U	43	86 %
1,1-Dichloroethene, ug/l	10U	47	94 %
1,1-Dichloroethane, ug/l	10U	46	92 %
cis-1,2-Dichloroethene, ug/l	10U	47	94 %
trans-1,2-Dichloroethene, ug/l	10U	47	94 %
Chloroform, ug/l	10U	46	92 %
1,2-Dichloroethane, ug/l	10U	38	76 %
2-Butanone (MEK), ug/l	10U	73	73 %
1,1,1-Trichloroethane, ug/l	10U	38	76 %
Carbon tetrachloride, ug/l	10U	39	78 %
Bromodichloromethane, ug/l	10U	37	74 %
1,1,2,2-Tetrachloroethane, ug/l	10U	38	76 %
1,2-Dichloropropane, ug/l	10U	42	84 %
trans-1,3-Dichloropropene, ug/l	10U	42	84 %

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CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-6	Method Blank		JAD238
48409-7	Lab Control Standard Result		JAD238
48409-8	Lab Control Standard % Recovery		JAD238

PARAMETER	48409-6	48409-7	48409-8
Trichloroethene, ug/l	10U	46	92 %
Dibromochloromethane, ug/l	10U	48	96 %
1,1,2-Trichloroethane, ug/l	10U	42	84 %
Benzene, ug/l	10U	43	86 %
cis-1,3-Dichloropropene, ug/l	10U	40	80 %
Bromoform, ug/l	10U	49	98 %
2-Hexanone, ug/l	10U	68	68 %
4-Methyl-2-pentanone (MIBK), ug/l	10U	69	69 %
Tetrachloroethene, ug/l	10U	80	160 %Y
Toluene, ug/l	10U	46	92 %
Chlorobenzene, ug/l	10U	46	92 %
Ethylbenzene, ug/l	10U	46	92 %
Styrene, ug/l	10U	48	96 %
Xylenes, Total, ug/l	10U	140	93 %
Dichlorodifluoromethane, ug/l	10U	51	102 %
Trichlorofluoromethane, ug/l	10U	66	132 %
1,1,2-Trichloro-1,2,2-trifluoroethane, ug/l	10U	56	112 %
Methyl t-butyl ether (MTBE), ug/l	10U	83	83 %
Isopropylbenzene, ug/l	10U	47	94 %
1,3-Dichlorobenzene, ug/l	10U	49	98 %
1,4-Dichlorobenzene, ug/l	10U	50	100 %

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CC: Norm Hatch

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Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-6	Method Blank		JAD238
48409-7	Lab Control Standard Result		JAD238
48409-8	Lab Control Standard % Recovery		JAD238

PARAMETER	48409-6	48409-7	48409-8
1,2-Dichlorobenzene, ug/l	10U	50	100 %
1,2-Dibromo-3-chloropropane, ug/l	10U	40	80 %
1,2,4-Trichlorobenzene, ug/l	10U	76	152 %Y
1,2-Dibromoethane (EDB), ug/l	10U	42	84 %
Surrogate - Toluene-d8	82 %	86 %	86 %
Surrogate - 4-Bromofluorobenzene	86 %	86 %	86 %
Surrogate - Dibromofluoromethane	94 %	92 %	92 %
Dilution Factor	1	1	1
Prep Date	12.02.02	12.02.02	12.02.02
Prep Time	12:07	11:01	11:01
Analysis Date	12.02.02	12.02.02	12.02.02
Analysis Time	12:07	11:01	11:01
Batch ID	1P1202	1P1202	1P1202
Clock ID	1P1202	1P1202	1P1202
Quantitation Factor	1.00	1.00	1.00

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CH2M Hill
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Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-9	Matrix Spike Result (BDMW002R1A)	11-19-02/11:10	JAD238
48409-10	Matrix Spike % Recovery		JAD238
48409-11	Matrix Spike Duplicate Result	11-19-02/11:10	JAD238
48409-12	Matrix Spike Duplicate % Recovery		JAD238
48409-13	Spike Amount Added, MS		JAD238

PARAMETER	48409-9	48409-10	48409-11	48409-12	48409-13
Volatiles by GC/MS (8260)					
Chloromethane, ug/l	35	70 %	33	66 %	50
Bromomethane (Methyl bromide), ug/l	120	240 %Y	93	186 %Y	50
Vinyl chloride, ug/l	43	86 %	38	76 %	50
Chloroethane, ug/l	66	132 %	45	90 %	50
Methylene chloride (Dichloromethane), ug/l	50	100 %	41	82 %	50
Acetone, ug/l	64	64 %	67	67 %	100
Carbon disulfide, ug/l	50	100 %	38	76 %	50
1,1-Dichloroethene, ug/l	48	96 %	41	82 %	50
1,1-Dichloroethane, ug/l	51	102 %	42	84 %	50
cis-1,2-Dichloroethene, ug/l	51	102 %	42	84 %	50
trans-1,2-Dichloroethene, ug/l	52	104 %	41	82 %	50
Chloroform, ug/l	51	102 %	42	84 %	50
1,2-Dichloroethane, ug/l	42	84 %	36	72 %	50
2-Butanone (MEK), ug/l	68	68 %	68	68 %	100
1,1,1-Trichloroethane, ug/l	42	84 %	35	70 %	50
Carbon tetrachloride, ug/l	44	88 %	36	72 %	50
Bromodichloromethane, ug/l	40	80 %	33	66 %	50

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CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-9	Matrix Spike Result (BDMW002R1A)	11-19-02/11:10	JAD238
48409-10	Matrix Spike % Recovery		JAD238
48409-11	Matrix Spike Duplicate Result	11-19-02/11:10	JAD238
48409-12	Matrix Spike Duplicate % Recovery		JAD238
48409-13	Spike Amount Added, MS		JAD238

PARAMETER	48409-9	48409-10	48409-11	48409-12	48409-13
1,1,2,2-Tetrachloroethane, ug/l	39	78 %	36	72 %	50
1,2-Dichloropropane, ug/l	46	92 %	39	78 %	50
trans-1,3-Dichloropropene, ug/l	45	90 %	37	74 %	50
Trichloroethene, ug/l	50	100 %	42	84 %	50
Dibromochloromethane, ug/l	50	100 %	42	84 %	50
1,1,2-Trichloroethane, ug/l	45	90 %	39	78 %	50
Benzene, ug/l	46	91 %	39	77 %	50
cis-1,3-Dichloropropene, ug/l	43	86 %	35	70 %	50
Bromoform, ug/l	50	100 %	43	86 %	50
2-Hexanone, ug/l	66	66 %	67	67 %	100
4-Methyl-2-pentanone (MIBK), ug/l	68	68 %	69	69 %	100
Tetrachloroethene, ug/l	87	174 %Y	72	144 %	50
Toluene, ug/l	50	98 %	43	84 %	50
Chlorobenzene, ug/l	50	100 %	41	82 %	50
Ethylbenzene, ug/l	50	100 %	42	84 %	50
Styrene, ug/l	50	100 %	41	82 %	50
Xylenes, Total, ug/l	150	100 %	130	87 %	150
Dichlorodifluoromethane, ug/l	57	114 %	46	92 %	50
Trichlorofluoromethane, ug/l	74	148 %Y	59	118 %	50

SEVERN TRENT SERVICES

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STL Savannah

LOG NO: S2-48409
Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-9	Matrix Spike Result (BDMW002R1A)	11-19-02/11:10	JAD238
48409-10	Matrix Spike % Recovery		JAD238
48409-11	Matrix Spike Duplicate Result	11-19-02/11:10	JAD238
48409-12	Matrix Spike Duplicate % Recovery		JAD238
48409-13	Spike Amount Added, MS		JAD238

PARAMETER	48409-9	48409-10	48409-11	48409-12	48409-13
1,1,2-Trichloro-1,2,2-trifl uoroethane, ug/l	62	124 %	54	108 %	50
Methyl t-butyl ether (MTBE), ug/l	90	90 %	73	73 %	100
Isopropylbenzene, ug/l	50	100 %	41	82 %	50
1,3-Dichlorobenzene, ug/l	52	104 %	43	86 %	50
1,4-Dichlorobenzene, ug/l	53	106 %	43	86 %	50
1,2-Dichlorobenzene, ug/l	52	104 %	44	88 %	50
1,2-Dibromo-3-chloropropane, ug/l	37	74 %	38	76 %	50
1,2,4-Trichlorobenzene, ug/l	55	110 %	43	86 %	50
1,2-Dibromoethane (EDB), ug/l	45	90 %	39	78 %	50
Surrogate - Toluene-d8	94 %	94 %	88 %	88 %	50
Surrogate - 4-Bromofluorobenzene	90 %	90 %	84 %	84 %	50
Surrogate - Dibromofluoromethane	98 %	98 %	88 %	88 %	50
Dilution Factor	1	1	1	1	---
Prep Date	12.02.02	12.02.02	12.02.02	12.02.02	---
Prep Time	20:41	20:41	18:19	18:19	---
Analysis Date	12.02.02	12.02.02	12.02.02	12.02.02	---
Analysis Time	20:41	20:41	18:19	18:19	---
Batch ID	1P1202	1P1202	1P1202	1P1202	---
Clock ID	1P1202	1P1202	1P1202	1P1202	---
Quantitation Factor	1.00	1.00	1.00	1.00	---

4 2 0234

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LOG NO: S2-48409
Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-14	Spike Amount Added, MSD		JAD238

PARAMETER	48409-14				
Volatiles by GC/MS (8260)					
Chloromethane, ug/l	50				
Bromomethane (Methyl bromide), ug/l	50				
Vinyl chloride, ug/l	50				
Chloroethane, ug/l	50				
Methylene chloride (Dichloromethane), ug/l	50				
Acetone, ug/l	100				
Carbon disulfide, ug/l	50				
1,1-Dichloroethene, ug/l	50				
1,1-Dichloroethane, ug/l	50				
cis-1,2-Dichloroethene, ug/l	50				
trans-1,2-Dichloroethene, ug/l	50				
Chloroform, ug/l	50				
1,2-Dichloroethane, ug/l	50				
2-Butanone (MEK), ug/l	100				
1,1,1-Trichloroethane, ug/l	50				
Carbon tetrachloride, ug/l	50				
Bromodichloromethane, ug/l	50				
1,1,2,2-Tetrachloroethane, ug/l	50				
1,2-Dichloropropane, ug/l	50				
trans-1,3-Dichloropropene, ug/l	50				
Trichloroethene, ug/l	50				
Dibromochloromethane, ug/l	50				

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STL Savannah

LOG NO: S2-48409
Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-14	Spike Amount Added, MSD		JAD238

PARAMETER	48409-14
1,1,2-Trichloroethane, ug/l	50
Benzene, ug/l	50
cis-1,3-Dichloropropene, ug/l	50
Bromoform, ug/l	50
2-Hexanone, ug/l	100
4-Methyl-2-pentanone (MIBK), ug/l	100
Tetrachloroethene, ug/l	50
Toluene, ug/l	50
Chlorobenzene, ug/l	50
Ethylbenzene, ug/l	50
Styrene, ug/l	50
Xylenes, Total, ug/l	150
Dichlorodifluoromethane, ug/l	50
Trichlorofluoromethane, ug/l	50
1,1,2-Trichloro-1,2,2-trifluoroethane, ug/l	50
Methyl t-butyl ether (MTBE), ug/l	100
Isopropylbenzene, ug/l	50
1,3-Dichlorobenzene, ug/l	50
1,4-Dichlorobenzene, ug/l	50
1,2-Dichlorobenzene, ug/l	50
1,2-Dibromo-3-chloropropane, ug/l	50
1,2,4-Trichlorobenzene, ug/l	50
1,2-Dibromoethane (EDB), ug/l	50
Surrogate - Toluene-d8	50
Surrogate - 4-Bromofluorobenzene	50
Surrogate - Dibromofluoromethane	50

SEVERN TRENT SERVICES
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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
Volatiles by GC/MS (8260)				---	---
Chloromethane, ug/l	10U	58	116 %	---	---
Bromomethane (Methyl bromide), ug/l	10U	52	104 %	---	---
Vinyl chloride, ug/l	10U	57	114 %	---	---
Chloroethane, ug/l	10U	56	112 %	---	---
Methylene chloride (Dichloromethane), ug/l	10U	56	112 %	---	---
Acetone, ug/l	10U	96	96 %	---	---
Carbon disulfide, ug/l	10U	64	128 %	---	---
1,1-Dichloroethene, ug/l	10U	56	112 %	---	---
1,1-Dichloroethane, ug/l	10U	54	108 %	---	---
cis-1,2-Dichloroethene, ug/l	10U	54	108 %	---	---
trans-1,2-Dichloroethene, ug/l	10U	58	116 %	---	---
Chloroform, ug/l	10U	55	110 %	---	---
1,2-Dichloroethane, ug/l	10U	54	108 %	---	---
2-Butanone (MEK), ug/l	10U	87	87 %	---	---
1,1,1-Trichloroethane, ug/l	10U	59	118 %	---	---
Carbon tetrachloride, ug/l	10U	59	118 %	---	---
Bromodichloromethane, ug/l	10U	57	114 %	---	---

4 2 237

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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
1,1,2,2-Tetrachloroethane, ug/l	10U	45	90 %	---	---
1,2-Dichloropropane, ug/l	10U	51	102 %	---	---
trans-1,3-Dichloropropene, ug/l	10U	55	110 %	---	---
Trichloroethene, ug/l	10U	57	114 %	---	---
Dibromochloromethane, ug/l	10U	53	106 %	---	---
1,1,2-Trichloroethane, ug/l	10U	49	98 %	---	---
Benzene, ug/l	10U	55	110 %	---	---
cis-1,3-Dichloropropene, ug/l	10U	55	110 %	---	---
Bromoform, ug/l	10U	47	94 %	---	---
2-Hexanone, ug/l	10U	82	82 %	---	---
4-Methyl-2-pentanone (MIBK), ug/l	10U	87	87 %	---	---
Tetrachloroethene, ug/l	10U	66	132 %	---	---
Toluene, ug/l	10U	56	112 %	---	---
Chlorobenzene, ug/l	10U	52	104 %	---	---
Ethylbenzene, ug/l	10U	54	108 %	---	---
Styrene, ug/l	10U	54	108 %	---	---
Xylenes, Total, ug/l	10U	160	107 %	---	---
Dichlorodifluoromethane, ug/l	10U	74	148 %	---	---
Trichlorofluoromethane, ug/l	10U	67	134 %	---	---

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LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
JAD226-1	Method Blank		JAD226
JAD226-2	Lab Control Standard Result		JAD226
JAD226-3	Lab Control Standard % Recovery		JAD226
JAD226-10	Lab Control Standard Duplicate Result		JAD226
JAD226-11	Lab Control Standard Duplicate % Recovery		JAD226

PARAMETER	JAD226-1	JAD226-2	JAD226-3	JAD226-10	JAD226-11
1,1,2-Trichloro-1,2,2-trifl uoroethane, ug/l	2.1J	57B	110 %	---	---
Methyl t-butyl ether (MTBE), ug/l	10U	98	98 %	---	---
Isopropylbenzene, ug/l	10U	52	104 %	---	---
1,3-Dichlorobenzene, ug/l	10U	52	104 %	---	---
1,4-Dichlorobenzene, ug/l	10U	50	100 %	---	---
1,2-Dichlorobenzene, ug/l	10U	49	98 %	---	---
1,2-Dibromo-3-chloropropane, ug/l	10U	42	84 %	---	---
1,2,4-Trichlorobenzene, ug/l	10U	50	100 %	---	---
1,2-Dibromoethane (EDB), ug/l	10U	46	92 %	---	---
Surrogate - Toluene-d8	90 %	106 %	106 %	---	---
Surrogate - 4-Bromofluorobenzene	88 %	104 %	104 %	---	---
Surrogate - Dibromofluoromethane	100 %	110 %	110 %	---	---
Dilution Factor	1	1	1	---	---
Prep Date	09.17.02	09.17.02	09.17.02	---	---
Prep Time	16:17	23:32	23:32	---	---
Analysis Date	09.17.02	09.17.02	09.17.02	---	---
Analysis Time	16:17	23:32	23:32	---	---
Batch ID	200917	200917	200917	---	---
Clock ID	200917	200917	200917	---	---
Quantitation Factor	1.00	1.00	1.00	---	---

DIOXINS/FURANS FRACTION

SDG# JAD225A

PROJECT# G2I050204

4 2 240

SEVERN TRENT SERVICES

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500

Tel: 916 373 5600
Fax: 916 371 8420
www.stl-inc.com

October 15, 2002

STL SACRAMENTO PROJECT NUMBER: G2I050204/SDG JAD225A
PO/CONTRACT: 155440.JA.30

Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32308-3928

Dear Mr. Kelly,

This report contains the analytical results for the samples received under chain of custody by STL Sacramento on September 5, 2002. These samples are associated with your Jax Ash Dump Sites Phase II project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916) 374-4414.

Sincerely,

Bonnie McNeill

Bonnie J. McNeill
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G2I050204/SDG JAD255A

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STL Sacramento Quality Assurance Program 2

Sample Description Information 3

Chain of Custody Documentation 4

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Summary Report 6

WATER, 8290, Dioxins/Furans, HRGC/HRMS 15-411
Samples: 1, 2, 3, 4
Raw Data Package
Run/Batch and CCV Data
Initial Calibration
Sample Extraction/Preparation Logs

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G2I050204/SDG JAD225A

General Comments

- Samples were received at 5 degrees Centigrade. One amber glass bottle for BDWG002AB was received broken.

WATER, 8290, Dioxins/Furans, HRGC/HRMS

Holding times

- Sample preparation and analysis holding times were met.

Calibration

- All acceptance criteria were met.

Blanks

- All acceptance criteria were met.

Surrogates

- All acceptance criteria were met.

Spikes

- The samples were processed with a laboratory control sample. All acceptance criteria were met, except as noted below.

Sample(s): 1, 2, 3, 4

- Some internal standard recoveries are lower than the method recommended goal of 40%. Data is acceptable if internal standard signal-to-noise is greater than 10:1, which is achieved for all internal standards in these samples. There is no adverse impact to reported data.

Samples results

- Sample preparation and analysis proceeded normally.

There were no other anomalies associated with this project.

STL Sacramento

Quality Control Definitions

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: STL Sacramento Laboratory Quality Manual

STL Sacramento Certifications:
Alaska (UST-055), Arizona (#AZ00616), Arkansas, California (NELAP # 01119CA) (ELAP #I-2439), Connecticut (#PH-0691), Florida (E87570), Hawaii, Louisiana (AI # 30612), New Jersey (Lab ID 44005), Nevada (#CA 044), New York (LAB ID 11666 serial # 107407), Oregon (LAB ID CA 044), South Carolina (LAB ID 87014, Cert. # 870140), Utah (E-168), Virginia (#00178), Washington (# C087), West Virginia (# 9930C), Wisconsin (Lab 998204680), USNAVY, USACE, USDA Foreign Plant (Permit # 37-82605), USDA Foreign Soil (Permit # S-46613)..

Sample Summary
G2I050204/SDG JAD225A

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
E7QEV	1	BDMW005R1	9/3/02 03:35 PM	9/5/02 09:00 AM
E7QE2	2	BDMW002R1	9/3/02 11:10 AM	9/5/02 09:00 AM
E7QE3	3	BDWG001EB	9/3/02 04:50 PM	9/5/02 09:00 AM
E7QE4	4	BDWG002AB	9/3/02 05:00 PM	9/5/02 09:00 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

G21050204

Jax Ash Dump Sites Phase II

Browns Dump Groundwater Monitoring

CH2M HILL
Chain of Custody Form

Generated on: 09/04/2002 9:08:55 AM

COC Number: 0224709SLS | Project: Browns Dump Groundwater Monitoring | Kit Request ID:
Project #: 155440.JA.30 | Laboratory Coordinator: Michelle Owens | Lab: Savannah Labs, Savannah , GA

Sample ID	Station ID	Date & Time Collected	Matrix	Number of Containers	Analysis Requested	Comments
BDMW005R1	BDMW005	9/3/02 15:35	WG	~~14~~ 2	Diox_W, ~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt, VOC_W~~	
BDMW003R1	BDMW003	9/3/02 13:57	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt	
BDMW002R1	BDMW002	9/3/02 11:10	WG	~~14~~ 2	Diox_W, ~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt, VOC_W~~	
BDMW001R1	BDMW001	9/3/02 9:45	WG	~~9~~	~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt~~	
BDWG001EB	FIELDQC	9/3/02 16:50	WH	~~14~~ 2	Diox_W, ~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt, VOC_W~~	
BDWG002AB	FIELDQC	9/3/02 17:00	WQ	~~14~~ 2	Diox_W, ~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt, VOC_W~~	

Did not receive BDMW003R1 and BDMW001R1. bjw 9/6/02

* 1 of 2 AGB received broken PP 9/5/02

Sampled By:	Date / Time: 9/4/02 0930		Custody Seal: Y / N	Relinquished By:	Date / Time 9/4/02 1000
Shipped Via: UPS FedEx Hand Other (please specify):					
Received By:	Date / Time: 9/5/02 9:15	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Received By:	Date / Time:	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Remarks:					

STL - Sacramento (916) 373 - 5600

4 2 0245

rptChainOfCustody - updated 981112

4 2 0246

SEVERN TRENT SERVICES

LOT RECEIPT CHECKLIST

STL Sacramento

CLIENT CH2M Hill PM BJM LOG # 17588

LOT# (QUANTIMS ID) G2I050204 QUOTE# 44762 LOCATION W12B

		Initials	Date
DATE RECEIVED 9/5/02 TIME RECEIVED ~~9:15~~ pp 9/5/02 9:00		pp	9/5/02
DELIVERED BY	☑ FEDEX ☐ CA OVERNIGHT ☐ CLIENT ☐ AIRBORNE ☐ GOLDENSTATE ☐ DHL ☐ UPS ☐ BAX GLOBAL ☐ GO-GETTERS ☐ STL COURIER ☐ B & B ☐ OTHER		
CUSTODY SEAL STATUS	☑ INTACT ☐ BROKEN ☐ N/A		
CUSTODY SEAL #(S) 255366			
SHIPPPING CONTAINER(S)	☐ STL ☑ CLIENT ☐ N/A		
TEMPERTURE RECORD (IN °C)	IR 1 ☐ 2 ☑ ☐ OTHER		
COC #(S) 022470951S			
TEMPERATURE BLANK 5°C			
AMBIENT TEMPERATURE 2°C			
COLLECTOR'S NAME:	☑ Verified from COC ☐ Not on COC		
pH MEASURED	☐ YES ☐ ANOMALY ☑ N/A		
LABELED BY			
LABELS CHECKED BY			
SHORT HOLD TEST NOTIFICATION	SAMPLE RECEIVING		
	WETCHEM ☑ N/A		
☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL	☑ N/A		
☐ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES	☑ N/A		
☑ Clouseau ☐ TEMPERATURE EXCEEDED (2 °-6 °C)	☐ N/A		
☐ WET ICE ☐ BLUE ICE ☐ GEL PACK			
☑ PM NOTIFIED ☐ NO COOLING AGENTS USED			

Notes: Received 1 & 2 AGB broken - Spl ID BDWG002AB

LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE. INITIAL AND DATE ALL "N/A" ENTRIES. QA185 8/00 NEK

WATER, 8290, Dioxins/Furans, HRGC/HRMS

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: BDMW005R1

Lot-Sample #...:	G2I050204 - 001	Work Order #...:	E7QEV1AA	Matrix....:	WATER
Date Sampled...:	09/03/02	Date Received..:	09/05/02	Instrument:	9D5
Prep Date.....:	09/13/02	Analysis Date..:	09/24/02	Units.....:	pg/L
Prep Batch #...:	2256441	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	10	1	0
1,2,3,7,8-PeCDD	ND	10	1	0
1,2,3,4,7,8-HxCDD	ND	25	0.1	0
1,2,3,6,7,8-HxCDD	ND	25	0.1	0
1,2,3,7,8,9-HxCDD	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDD	ND	25	0.01	0
OCDD	ND	50	0.0001	0
2,3,7,8-TCDF	ND	10	0.1	0
1,2,3,7,8-PeCDF	ND	10	0.05	0
2,3,4,7,8-PeCDF	ND	10	0.5	0
1,2,3,4,7,8-HxCDF	ND	25	0.1	0
1,2,3,6,7,8-HxCDF	ND	25	0.1	0
2,3,4,6,7,8-HxCDF	ND	25	0.1	0
1,2,3,7,8,9-HxCDF	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDF	ND	25	0.01	0
1,2,3,4,7,8,9-HpCDF	ND	25	0.01	0
OCDF	ND	50	0.0001	0
Total TEQ Concentration				0

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	39 *	40 - 135
13C-1,2,3,7,8-PeCDD	54	40 - 135
13C-1,2,3,6,7,8-HxCDD	72	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	89	40 - 135
13C-OCDD	83	40 - 135
13C-2,3,7,8-TCDF	35 *	40 - 135
13C-1,2,3,7,8-PeCDF	49	40 - 135
13C-1,2,3,4,7,8-HxCDF	71	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	87	40 - 135

Notes:

WHO TEFs for human risk assessment based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et aL, 1998).

* Surrogate recovery is outside stated control limits.

CH2M HILL

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: BDMW002R1

Lot-Sample #...:	G2I050204 - 002	Work Order #...:	E7QE21AA	Matrix....:	WATER
Date Sampled...:	09/03/02	Date Received..:	09/05/02	Instrument:	9D5
Prep Date.....:	09/13/02	Analysis Date..:	09/24/02	Units.....:	pg/L
Prep Batch #...:	2256441	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	10	1	0
1,2,3,7,8-PeCDD	ND	10	1	0
1,2,3,4,7,8-HxCDD	ND	25	0.1	0
1,2,3,6,7,8-HxCDD	ND	25	0.1	0
1,2,3,7,8,9-HxCDD	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDD	ND	25	0.01	0
OCDD	**110**	**50**	**0.0001**	**0.011**
2,3,7,8-TCDF	ND	10	0.1	0
1,2,3,7,8-PeCDF	ND	10	0.05	0
2,3,4,7,8-PeCDF	ND	10	0.5	0
1,2,3,4,7,8-HxCDF	ND	25	0.1	0
1,2,3,6,7,8-HxCDF	ND	25	0.1	0
2,3,4,6,7,8-HxCDF	ND	25	0.1	0
1,2,3,7,8,9-HxCDF	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDF	ND	25	0.01	0
1,2,3,4,7,8,9-HpCDF	ND	25	0.01	0
OCDF	ND	50	0.0001	0
Total TEQ Concentration				**0.011**

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	12 *	40 - 135
13C-1,2,3,7,8-PeCDD	42	40 - 135
13C-1,2,3,6,7,8-HxCDD	74	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	95	40 - 135
13C-OCDD	88	40 - 135
13C-2,3,7,8-TCDF	10 *	40 - 135
13C-1,2,3,7,8-PeCDF	29 *	40 - 135
13C-1,2,3,4,7,8-HxCDF	64	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	93	40 - 135

Notes:

WHO TEFs for human risk assessment based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et aL, 1998).

* Surrogate recovery is outside stated control limits.

CH2M HILL

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: BDWG001EB

Lot-Sample #...:	G2I050204 - 003	Work Order #...:	E7QE31AA	Matrix.....:	WATER
Date Sampled...:	09/03/02	Date Received..:	09/05/02	Instrument:	9D5
Prep Date.....:	09/13/02	Analysis Date..:	09/24/02	Units.....:	pg/L
Prep Batch #...:	2256441	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	10	1	0
1,2,3,7,8-PeCDD	ND	10	1	0
1,2,3,4,7,8-HxCDD	ND	25	0.1	0
1,2,3,6,7,8-HxCDD	ND	25	0.1	0
1,2,3,7,8,9-HxCDD	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDD	ND	25	0.01	0
OCDD	ND	50	0.0001	0
2,3,7,8-TCDF	ND	10	0.1	0
1,2,3,7,8-PeCDF	ND	10	0.05	0
2,3,4,7,8-PeCDF	ND	10	0.5	0
1,2,3,4,7,8-HxCDF	ND	25	0.1	0
1,2,3,6,7,8-HxCDF	ND	25	0.1	0
2,3,4,6,7,8-HxCDF	ND	25	0.1	0
1,2,3,7,8,9-HxCDF	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDF	ND	25	0.01	0
1,2,3,4,7,8,9-HpCDF	ND	25	0.01	0
OCDF	ND	50	0.0001	0
Total TEQ Concentration				0

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	39 *	40 - 135
13C-1,2,3,7,8-PeCDD	56	40 - 135
13C-1,2,3,6,7,8-HxCDD	79	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	96	40 - 135
13C-OCDD	89	40 - 135
13C-2,3,7,8-TCDF	38 *	40 - 135
13C-1,2,3,7,8-PeCDF	53	40 - 135
13C-1,2,3,4,7,8-HxCDF	84	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	99	40 - 135

Notes:

WHO TEFs for human risk assessment based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et aL, 1998).

* Surrogate recovery is outside stated control limits.

CH2M HILL

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: BDWG002AB

Lot-Sample #...:	G2I050204 - 004	Work Order #...:	E7QE41AA	Matrix....:	WATER
Date Sampled...:	09/03/02	Date Received..:	09/05/02	Instrument:	9D5
Prep Date.....:	09/13/02	Analysis Date..:	09/24/02	Units.....:	pg/L
Prep Batch #...:	2256441	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	10	1	0
1,2,3,7,8-PeCDD	ND	10	1	0
1,2,3,4,7,8-HxCDD	ND	25	0.1	0
1,2,3,6,7,8-HxCDD	ND	25	0.1	0
1,2,3,7,8,9-HxCDD	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDD	ND	25	0.01	0
OCDD	ND	50	0.0001	0
2,3,7,8-TCDF	ND	10	0.1	0
1,2,3,7,8-PeCDF	ND	10	0.05	0
2,3,4,7,8-PeCDF	ND	10	0.5	0
1,2,3,4,7,8-HxCDF	ND	25	0.1	0
1,2,3,6,7,8-HxCDF	ND	25	0.1	0
2,3,4,6,7,8-HxCDF	ND	25	0.1	0
1,2,3,7,8,9-HxCDF	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDF	ND	25	0.01	0
1,2,3,4,7,8,9-HpCDF	ND	25	0.01	0
OCDF	ND	50	0.0001	0
Total TEQ Concentration				0

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	31 *	40 - 135
13C-1,2,3,7,8-PeCDD	56	40 - 135
13C-1,2,3,6,7,8-HxCDD	74	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	94	40 - 135
13C-OCDD	87	40 - 135
13C-2,3,7,8-TCDF	28 *	40 - 135
13C-1,2,3,7,8-PeCDF	46	40 - 135
13C-1,2,3,4,7,8-HxCDF	77	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	95	40 - 135

Notes:

WHO TEFs for human risk assessment based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et aL, 1998).

* Surrogate recovery is outside stated control limits.

DIOXINS/FURANS FRACTION

SDG# JAD226A

PROJECT# G2I060200

4 2 0253

SEVERN TRENT SERVICES

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500

Tel: 916 373 5600
Fax: 916 371 8420
www.stl-inc.com

October 15, 2002

STL SACRAMENTO PROJECT NUMBER: G2I060200/SDG JAD226A
PO/CONTRACT: 155440.JA.30

Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32308-3928

Dear Mr. Kelly,

This report contains the analytical results for the samples received under chain of custody by STL Sacramento on September 6, 2002. These samples are associated with your Jax Ash Dump Sites Phase II project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916) 374-4414.

Sincerely,

Bonnie McNeill

Bonnie J. McNeill
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G2I060200/SDG JAD226A

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STL Sacramento Quality Assurance Program 3

Sample Description Information 4

Chain of Custody Documentation 5

Lot Receipt Checklist 6

Summary Report 7

WATER, 8290, Dioxins/Furans, HRGC/HRMS 16-521
Samples: 1, 2
Raw Data Package
Run/Batch and CCV Data
Initial Calibration
Sample Extraction/Preparation Logs

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G2I060200/SDG JAD226A

General Comments

- Samples were received at 2 degrees Centigrade.

WATER, 8290, Dioxins/Furans, HRGC/HRMS

Holding times

- Sample preparation and analysis holding times were met.

Calibration

- All acceptance criteria were met.

Blanks

- All acceptance criteria were met, except as noted below.
- The method blank has OCDD contamination greater than the reporting limit of 50 pg/L at 85 pg/L. OCDD is considered a ubiquitous laboratory contaminant at levels less than five times the lower calibration limit. All samples with OCDD concentrations greater than the lower calibration limit will be appropriately "B" flagged. There is no adverse impact on the data and no additional corrective action is necessary.

Surrogates

- All acceptance criteria were met.

Spikes

- The samples were processed with a laboratory control sample. All acceptance criteria were met, except as noted below.
- Some internal stanrdard recoveries are lower than the method recommended goal of 40%. Data is acceptable if internal standard signal-to-noise is greater than 10:1, which is achieved for all internal standards. There is no adverse impact to reported data.

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G2I060200/SDG JAD226A

- The LCS/LCSD pair has 1,2,3,4,7,8-HxCDD native concentrations that exceed historical limits. All associated samples have been evaluated for impact and all are ND well below the lower calibration limit, so there is no adverse impact on the data from this high bias. This is believed to have been caused by a concentrated native standard, which has since been replaced.

- The LCSD demonstrated a slightly high bias for OCDD>

Samples results

- Sample preparation and analysis proceeded normally.

There were no other anomalies associated with this project.

STL Sacramento

Quality Control Definitions

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: STL Sacramento Laboratory Quality Manual

STL Sacramento Certifications:
Alaska (UST-055), Arizona (#AZ00616), Arkansas, California (NELAP # 01119CA) (ELAP #I-2439), Connecticut (#PH-0691), Florida (E87570), Hawaii, Louisiana (AI # 30612), New Jersey (Lab ID 44005), Nevada (#CA 044), New York (LAB ID 11666 serial # 107407), Oregon (LAB ID CA 044), South Carolina (LAB ID 87014, Cert. # 870140), Utah (E-168), Virginia (#00178), Washington (# C087), West Virginia (# 9930C), Wisconsin (Lab 998204680), USNAVY, USACE, USDA Foreign Plant (Permit # 37-82605), USDA Foreign Soil (Permit # S-46613)..

Sample Summary
G2I060200/SDG JAD226A

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
E7TJF	1	BKBDMW001R1	9/4/02 10:30 AM	9/6/02 09:05 AM
E7TJL	2	BDMW014R1	9/4/02 03:25 PM	9/6/02 09:05 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

Jax Ash Dump Sites Phase II

Browns Dump Groundwater Monitoring

CH2M HILL

Chain of Custody Form

Generated on: 09/05/2002 8:59:51 AM

COC Number: 0224808SLS | Project: Browns Dump Groundwater Monitoring | Kit Request ID:

Project #: 155440.JA.30 | Laboratory Coordinator: Michelle Owens | Lab: Savannah Labs, Savannah , GA

Sample ID	Station ID	Date & Time Collected	Matrix	Number of Containers	Analysis Requested	Comments
~~BKBDMW002R1~~	~~BKBDMW002~~	~~9/4/02 8:57~~	~~WG~~	~~5~~	~~TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt~~	
BKBDMW001R1	BKBDMW001	9/4/02 10:30	WG	~~1~~ 2	Diox_~~W, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg~~, ~~TAL_HgFilt, TAL_W, TAL_WFilt~~	
BDMW014R1	BDMW014	9/4/02 15:25	WG	~~14~~ 2	Diox_~~W, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg~~, ~~TAL_HgFilt, TAL_W, TAL_WFilt, VOC_W~~	
~~BDMW009R1~~	~~BDMW009~~	~~9/4/02 12:40~~	~~WG~~	~~9~~	~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg~~, TAL_HgFilt, TAL_W, TAL_WFilt	
~~BDMW004R1~~	~~BDMW004~~	~~9/4/02 14:00~~	~~WG~~	~~9~~	~~P/PCB_W, SVOC_W, TAL_CN, TAL_Hg~~, TAL_HgFilt, TAL_W, TAL_WFilt	
~~BDWG003TB~~	~~FIELDQC~~	~~9/4/02 16:40~~	~~WQ~~	~~3~~	~~VOC_W~~	

RECEIVED IN GOOD CONDITION UNDER COC

SEP 06 2002

INI PP 9/6/02

Sampled By: [signature]	Date / Time: 9/5/02 (0930)		Custody Seal: Y / N	Relinquished By: [signature]	Date / Time: 09/05/02 1000
Shipped Via: UPS FedEx Hand Other (please specify):					
Received By: [signature]	Date / Time: 9/6/02 940	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Received By:	Date / Time:	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Remarks:					

2 0259

rptChainOfCustody - updated 981112

Page 1 of 1

STL - Sacramento (916) 373 - 5600

5 of 5

4 2 0260

SEVERN TRENT SERVICES

LOT RECEIPT CHECKLIST

STL Sacramento

CLIENT CH2M Hill PM BJH LOG # 17576

LOT# (QUANTIMS ID) G21060200 QUOTE# 44762 LOCATION W11E

		Initials	Date
DATE RECEIVED 9/6/02 TIME RECEIVED 9:05		BB	9/6/02
DELIVERED BY	☑ FEDEX ☐ CA OVERNIGHT ☐ CLIENT ☐ AIRBORNE ☐ GOLDENSTATE ☐ DHL ☐ UPS ☐ BAX GLOBAL ☐ GO-GETTERS ☐ STL COURIER ☐ B & B ☐ OTHER		
CUSTODY SEAL STATUS	☑ INTACT ☐ BROKEN ☐ N/A		
CUSTODY SEAL #(S)	TAPE		
SHIPPPING CONTAINER(S)	☐ STL ☑ CLIENT ☐ N/A		
TEMPERTURE RECORD (IN °C)	IR 1 ☐ 2 ☑ ☐ OTHER		
COC #(S)	0224808SLS		
TEMPERATURE BLANK	2°C		
AMBIENT TEMPERATURE	3°C		
COLLECTOR'S NAME:	☑ Verified from COC ☐ Not on COC		
pH MEASURED	☐ YES ☐ ANOMALY ☑ N/A		
LABELED BY			
LABELS CHECKED BY			
SHORT HOLD TEST NOTIFICATION	SAMPLE RECEIVING		
	WETCHEM ☑ N/A		
☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL	☑ N/A		
☑ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES	☐ N/A		
☐ Clouseau ☐ TEMPERATURE EXCEEDED (2 °-6 °C)	☑ N/A		
☐ WET ICE ☐ BLUE ICE ☐ GEL PACK			
☐ PM NOTIFIED ☐ NO COOLING AGENTS USED			

Notes:

LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE. INITIAL AND DATE ALL "N/A" ENTRIES. QA185 8/00 NEK

WATER, 8290, Dioxins/Furans, HRGC/HRMS

CH2M HILL

Dioxins/Furans, HRGC/HRMS (8290)

Client Sample ID: BDMW014R1

Lot-Sample #...:	G2I060200 - 002	Work Order #...:	E7TJL1AA	Matrix.....:	WATER
Date Sampled...:	09/04/02	Date Received...:	09/06/02	Instrument:	9D5
Prep Date.....:	09/19/02	Analysis Date...:	10/03/02	Units.....:	pg/L
Prep Batch #...:	2263171	Dilution Factor:	1	% Moisture:	

PARAMETER	RESULT	DETECTION LIMIT	TEF FACTOR	TEQ CONCENTRATION
2,3,7,8-TCDD	ND	10	1	0
1,2,3,7,8-PeCDD	ND	10	1	0
1,2,3,4,7,8-HxCDD	ND	25	0.1	0
1,2,3,6,7,8-HxCDD	ND	25	0.1	0
1,2,3,7,8,9-HxCDD	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDD	ND	25	0.01	0
OCDD	ND	50	0.0001	0
2,3,7,8-TCDF	ND	10	0.1	0
1,2,3,7,8-PeCDF	ND	10	0.05	0
2,3,4,7,8-PeCDF	ND	10	0.5	0
1,2,3,4,7,8-HxCDF	ND	25	0.1	0
1,2,3,6,7,8-HxCDF	ND	25	0.1	0
2,3,4,6,7,8-HxCDF	ND	25	0.1	0
1,2,3,7,8,9-HxCDF	ND	25	0.1	0
1,2,3,4,6,7,8-HpCDF	ND	25	0.01	0
1,2,3,4,7,8,9-HpCDF	ND	25	0.01	0
OCDF	ND	50	0.0001	0
Total TEQ Concentration				0

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	53	40 - 135
13C-1,2,3,7,8-PeCDD	52	40 - 135
13C-1,2,3,6,7,8-HxCDD	56	40 - 135
13C-1,2,3,4,6,7,8-HpCDD	67	40 - 135
13C-OCDD	73	40 - 135
13C-2,3,7,8-TCDF	44	40 - 135
13C-1,2,3,7,8-PeCDF	55	40 - 135
13C-1,2,3,4,7,8-HxCDF	61	40 - 135
13C-1,2,3,4,6,7,8-HpCDF	66	40 - 135

Notes:

WHO TEFs for human risk assessment based on the conclusions of the World Health Organization meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et aL, 1998).

SEVERN TRENT SERVICES

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STL Savannah

LOG NO: S2-46400
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163221011

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46400-6	BDMW008R1	09-05-02/09:00	JAD226

PARAMETER	46400-6
Dilution Factor	1
Prep Date	09.10.02
Prep Time	14:45
Analysis Date	09.21.02
Analysis Time	18:30
Batch ID	0910B
Clock ID	1E0921
Quantitation Factor	1

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

U = Indicates compound was analyzed for but not detected.

B (Inorganic) = This flag indicates the reported value was obtained from a reading that was less than the Project Reporting Limits but greater than or equal to the Method Detection Limit (MDL).

E (Inorganic) = This flag indicates the reported value is estimated because of the presence of interference.

R. Michelle Owens

Michelle Owens, Project Manager

Final Page Of Report

SEVERN TRENT SERVICES

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STL Savannah

LOG NO: S2-JAD226
Received: 09 SEP 02
Reported: 10 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD226
Sampled By: Client
Code: 163821011
Page 43

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#

PARAMETER

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

U = Indicates compound was analyzed for but not detected.

B (Inorganic) = This flag indicates the reported value was obtained from a reading that was less than the Project Reporting Limits but greater than or equal to the Method Detection Limit (MDL).

R. Michelle Owens

Michelle Owens, Project Manager

Final Page Of Report

Jax Ash Dump Sites Phase II

Browns Dump Groundwater Monitoring

Generated on: 09/06/2002 8:42:36 AM

CH2M HILL
Chain of Custody Form

COC Number: 0224908SLS | Project: Browns Dump Groundwater Monitoring | Kit Request ID:

Project #: 155440.JA.30 | Laboratory Coordinator: Michelle Owens | Lab: Savannah Labs, Savannah , GA

Sample ID	Station ID	Date & Time Collected	Matrix	Number of Containers	Analysis Requested	Comments
BDMW013R1	BDMW013	9/5/02 12:20	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	
BDMW012R1	BDMW012	9/5/02 10:15	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	
BDMW011R1FD	BDMW011	9/5/02 15:30	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	
BDMW011R1	BDMW011	9/5/02 15:30	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	
BDMW010R1	BDMW010	9/5/02 13:50	WG	27	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	Use Extra Samples for MS/MSD.
BDMW008R1	BDMW008	9/5/02 9:00	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	

4 2 0265

Sampled By: [signature]	Date / Time: 9/6/02 0930		Custody Seal: (Y) / N	Relinquished By: [signature]	Date / Time: 9/6/02 1000
Shipped Via: UPS FedEx Hand Other (please specify):					
Received By:	Date / Time:	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Received By: [signature]	Date / Time: 09/06/02 0900	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Remarks: 5246400					

SEVERN TRENT SERVICES

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STL Savannah

LOG NO: S2-48409
Received: 20 NOV 02
Reported: 10 DEC 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump/JAD238
Sampled By: Client
Code: 144021210

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
48409-14	Spike Amount Added, MSD		JAD238

PARAMETER	48409-14

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

U = Indicates compound was analyzed for but not detected.

J = The flag "J" indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.

Y = Recovery outside QC limits.

Michelle Owens, Project Manager

Final Page Of Report

Serial Number 012313

SEVERN TRENT SERVICES

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Severn Trent Laboratories, Inc.

- ☐ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
- ☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 — Fax: (850) 878-9504
- ☐ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
- ☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049

PROJECT REFERENCE: SAXASH	PROJECT NO.	PROJECT LOCATION (STATE): FL	PAGE 1 OF 1
STL (LAB) PROJECT MANAGER: Norm Hatch	P.O. NUMBER	CONTRACT NO.	STANDARD REPORT DELIVERY ☐ DATE DUE
CLIENT (SITE): Browns Dump	CLIENT PHONE: 904-733-9119	CLIENT FAX	EXPEDITED REPORT DELIVERY (SURCHARGE) ☐ DATE DUE
CLIENT NAME: CH2M Hill	CLIENT E-MAIL		
CLIENT ADDRESS: 9428 Baymeadows Rd, Suite 200, Jacksonville FL 32256			NUMBER OF COOLERS SUBMITTED PER SHIPMENT:
COMPANY CONTRACTING THIS WORK (if applicable)			

REQUIRED ANALYSIS: VOC; HCl

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	NUMBER CONTAINERS SUBMITTED (VOC)	REMARKS
11/14/02		TRIP BLANK	3	
11/19/02	1110	BKBDMW002R1A	9	MS/MSD
11/19/02	1110	BKBDMW002R1AFD	3	
11/19/02	1200	BKBDMW002R1AEB	3	Correction to COC made per Amy Jurek
11/19/02	1200	BKBDMW002R1AAB	3	
		AW 11-20-02		AW 11-20-02

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
	11/18/02	0900		11/14/02	1330		11/19/02	1730
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
				11/19/02	1730			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY USE BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL SL LOG NO.	LABORATORY REMARKS
	11-20-02	9:45	YES		2798	

0270

SEVERN TRENT SERVICES
STL Savannah
5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

LOG NO: S2-46329
Received: 05 SEP 02
Reported: 03 OCT 02

Mr. Herb Kelly
CH2M Hill
3011 SW Williston Road
Gainesville, FL 32608-3928

Client PO. No.: 53470
Cl Project No: 155440.JA.30

CC: Norm Hatch

Project: Jax-Ash/Browns Dump GW Mon/JAD225
Sampled By: Client
Code: 111521010

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#
46329-7	Method Blank		JAD225
46329-8	Lab Control Standard Result		JAD225
46329-9	Lab Control Standard % Recovery		JAD225

PARAMETER	46329-7	46329-8	46329-9

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.
SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

U = Indicates compound was analyzed for but not detected.

J = The flag "J" indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.

B (Inorganic) = This flag indicates the reported value was obtained from a reading that was less than the Project Reporting Limits but greater than or equal to the Method Detection Limit (MDL).

N (Inorganic) = This flag indicates that spiked sample recovery is not within control limits.

Michelle Owens, Project Manager

Final Page Of Report

Jax Ash Dump Sites Phase II

Browns Dump Groundwater Monitoring

CH2M HILL
Chain of Custody Form

Generated on: 09/04/2002 9:08:55 AM

COC Number: 0224709SLS | Project: Browns Dump Groundwater Monitoring | Kit Request ID:
Project #: 155440.JA.30 | Laboratory Coordinator: Michelle Owens | Lab: Savannah Labs, Savannah , GA

Sample ID	Station ID	Date & Time Collected	Matrix	Number of Containers	Analysis Requested	Comments
BDMW005R1	BDMW005	9/3/02 15:35	WG	~~14~~ 12	~~Dlox~~_W, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt, VOC_W	
BDMW003R1	BDMW003	9/3/02 13:57	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	
BDMW002R1	BDMW002	9/3/02 11:10	WG	~~14~~ 12	~~Dlox~~_W, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt, VOC_W	
BDMW001R1	BDMW001	9/3/02 9:45	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt	
BDWG001EB	FIELDQC	9/3/02 16:50	WH	~~14~~ 12	~~Dlox~~_W, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt, VOC_W	
BDWG002AB	FIELDQC	9/3/02 17:00	WQ	~~14~~ 12	~~Dlox~~_W, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFlt, TAL_W, TAL_WFlt, VOC_W	

4 2 0269

Sampled By: [signature]	Date / Time: 9/4/02 0930		Custody Seal: (Y) / N	Relinquished By: [signature]	Date / Time: 1000 9/4/02
Shipped Via: UPS FedEx Hand Other (please specify):					
Received By:	Date / Time:	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Received By:	Date / Time:	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Remarks: S246329					

rptChainOfCustody - updated 981112

Analysis Descriptions for Chain of Custody 0224709SLS

Analysis	Analysis Description	Bottles	Preservation	Preservation Description
~~Diox_W~~	~~Dioxins in water~~	~~2~~	~~CHIL~~	~~None, chill to 4C~~
P/PCB_W	Pesticides/PCBs in water	2	CHIL	None, chill to 4C
SVOC_W	Semivolatiles in water	2	CHIL	None, chill to 4C
TAL_CN	Cyanide	1	NaOH	Sodium hydroxide, pH>12
TAL_Hg	Mercury	2	HNO3	Nitric acid, pH<2
TAL_HgFilt	Mercury, Dissolved (field-filtered prior to preservation)	2	HNO3	Nitric acid, pH<2
TAL_W	TAL Metals in water	2	HNO3	Nitric acid, pH<2
TAL_WFilt	TAL Metals/Mercury, Dissolved (field-filtered prior to preservation)	2	HNO3	Nitric acid, pH<2
VOC_W	Volatiles in water	3	HCL	Hydrochloric acid, pH<2

S246322

Jax Ash Dump Sites Phase II

Browns Dump Groundwater Monitoring

CH2M HILL
Chain of Custody Form

Generated on: 09/05/2002 8:59:51 AM

COC Number: 0224808SLS | Project: Browns Dump Groundwater Monitoring | Kit Request ID:
Project #: 155440.JA.30 | Laboratory Coordinator: Michelle Owens | Lab: Savannah Labs, Savannah , GA

Sample ID	Station ID	Date & Time Collected	Matrix	Number of Containers	Analysis Requested	Comments
BKBDMW002R1	BKBDMW002	9/4/02 8:57	WG	5	TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt	
BKBDMW001R1	BKBDMW001	9/4/02 10:30	WG	~~11~~ 9	~~Dlox_W~~, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt	
BDMW014R1	BDMW014	9/4/02 15:25	WG	~~14~~ 12	~~Dlox_W~~, P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt, VOC_W	
BDMW009R1	BDMW009	9/4/02 12:40	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt	
BDMW004R1	BDMW004	9/4/02 14:00	WG	9	P/PCB_W, SVOC_W, TAL_CN, TAL_Hg, TAL_HgFilt, TAL_W, TAL_WFilt	
BDWG003TB	FIELDQC	9/4/02 16:40	WQ	3	VOC_W	

4 2 0271

Sampled By: [signature]	Date / Time: 9/5/02 0930		Custody Seal (Y) / N	Relinquished By: [signature]	Date / Time: 9/5/02 1000
Shipped Via: UPS FedEx Hand Other (please specify):					
Received By: [signature]	Date / Time: 9.6.02 / 940	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:
Received By:	Date / Time: /	Cooler Temp: °	Custody Seal: Y / N	Relinquished By:	Date / Time:

Remarks:

S246377

rptChainOfCustody - updated 981112

Analysis Descriptions for Chain of Custody 0224808SLS

Analysis	Analysis Description	Bottles	Preservation	Preservation Description
~~Diox_W~~	~~Dioxins in water~~	~~2~~	~~CHIL~~	~~None, chill to 4C~~
P/PCB_W	Pesticides/PCBs in water	2	CHIL	None, chill to 4C
SVOC_W	Semivolatiles in water	2	CHIL	None, chill to 4C
TAL_CN	Cyanide	1	NaOH	Sodium hydroxide, pH>12
TAL_Hg	Mercury	2	HNO3	Nitric acid, pH<2
TAL_HgFilt	Mercury, Dissolved (field-filtered prior to preservation)	2	HNO3	Nitric acid, pH<2
TAL_W	TAL Metals in water	2	HNO3	Nitric acid, pH<2
TAL_WFilt	TAL Metals/Mercury, Dissolved (field-filtered prior to preservation)	2	HNO3	Nitric acid, pH<2
VOC_W	Volatiles in water	3	HCL	Hydrochloric acid, pH<2

Brown's Dump
4.9

4 9

Brown's Dump Site Feasibility Study Revision B

CH2MHILL
9428 Baymeadows Road
Suite 200
Jacksonville, FL 32256

May 2005

E042005008JAX

10224240

BROWN'S DUMP SITE FEASIBILITY STUDY REVISION NO. 3

BROWN'S DUMP SITE JACKSONVILLE, FLORIDA

Prepared For:

CITY OF JACKSONVILLE

Prepared By

CH2M HILL
April 2005

This document describes the Feasibility Studies conducted for the Brown's Dump Site, Jacksonville, Florida and has been prepared under the direct supervision of a Florida-registered engineer. The work and professional opinions rendered in this report were conducted or developed in accordance with commonly accepted procedures consistent with applicable standards of practice. The data and information contained herein are, to the best of my knowledge, accurate and correct. This certification is made pursuant to Chapter 61G15-18.011(4), Florida Administrative Code, and is not a guaranty or warranty, either expressed or implied.

James L. Edens, P.E.,
FL Registration Number 61667
April 29, 2005

4/29, 2005

RESPONSE TO EPA COMMENTS ON THE FEASIBILITY STUDY
DATED FEBRUARY 28, 2005
BROWN'S DUMP SITE
EPA I.D. NUMBER: FLD 980 847 016
May 2005

Comment:

1. As discussed previously, it is likely that the school property will be placed back into re-use at some point in the future. With completion of the Record of Decision in sight, please look into any future development plans for the school property to see if any additional remedial designs can be taken into account now to better coordinate remediation with planned uses of the property.

   Response:

   According to City of Jacksonville planning personnel, there are no future development plans or change in zoning for the school property. Currently, the school property is zoned as Public Buildings and Facilities.

Comment:

2. Response to Comment Received via E-mail on February 4, 2005: The response states that "[s]ections 2.3 and 2.5 have been revised to include ecological receptor protection based RGOs discussions." Sections 2.3 and 2.5 do not appear to have been changed to discuss ecological protection. Please review and revise accordingly.

   Page 1-8, first bullet: The FS states that "[e]cological risks from exposure to COPECs in sediment and surface water were found to be acceptable." Actually, the ecological risk assessment found that, in sediment, there were no contaminants observed that were direct or food chain exposure COPECs. In surface water, there were no contaminants observed that were direct exposure COPECs. Surface water was not evaluated as a substrate media for food chain exposures because it represents a minor exposure pathway to wildlife. Please revise the FS to more accurately reflect the ecological risk conclusions.

   Page 1-8: EPA believes there are more than 34 parcels with COPEC concentrations above ecological preliminary RGOs (see EPA's draft comments on Phase 3 Work Plan Addendum).

   More importantly, the FS revisions do not address the main point of the original comment which is to "provide an analysis in the FS which outlines how successful (or unsuccessful) clean up to address human health concerns is in addressing ecological concerns." The ecological analysis included in the Work Plan for the RI/FS - Addendum (March 2005) (or similar analysis) should also be included in the FS. If the analysis supports the expectation that removal or covering of soil identified for remediation on Figures 4-1 and 4-2 to satisfy cleanup for human health protection will also address most of the ecological risk associated with direct exposure and food chain ecological risk, then any remaining direct exposure and food chain ecological risk can be considered insignificant for the following reasons:

The preliminary ecological RGOs for the COPECs identified in Step 3a of the Ecological Risk Assessment (ERA) are very conservative.

The ecological setting at Brown's Dump is not of high ecological value (i.e., it is an urban residential setting).

Response:

At the time of responding to the comment, Sections 2.3 and 2.5 were planned to include ecological analysis. However, upon review of the sections of the FS, ecological protection analysis was best suited to be included in Sections 1.7.2 and 2.10.

The text on Page 1-8 is edited to read more like what is suggested in the comment and the ERA report.

The samples where ecological COPECs were identified were listed at the end of the ERA, which are included in the revised Section 1.0 of the FS. These samples represent 35 parcels, as included in Table 1 below. This table was also included in the Phase III work plan addendum. This table will be included in the revised FS Section 2.0 as Table 2-3A. The sample location ID column represents the soil sample locations identified in the ERA.

The suggested remarks on ecological protection are included in the revised Section 2.0.

TABLE 1
Ecological RGO Exceedance Samples, Parcels, and Status at the End of FS Implementation

Sample Location ID	Location of the Sample in a Parcel	Color Coding	Status
BDSB009	From the intersection of Rita & Nash go northeast to the 2nd parcel on the southeast side of street (adjacent to Moncrief Creek).	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB012	From the intersection of Rita & Nash go northeast to the 6th parcel on the southeast side of street (adjacent to Moncrief Creek).	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB014	In Parcel 006.	Pink	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB016	In Parcel 010.	Pink	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB045	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB046	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB054	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)

4 9 0005

TABLE 1
Ecological RGO Exceedance Samples, Parcels, and Status at the End of FS Implementation

Sample Location ID	Location of the Sample in a Parcel	Color Coding	Status
BDSB055	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB058	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB124	In Parcel 133.	Brown	Soils Proposed for Remediation
BDSB130	From the intersection of Connie and 33rd go southeast to the 6th parcel on the west side of Connie.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB134	It is located on the southwest corner of Etta and 33rd.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB136	In Parcel 177.	Brown	Soils Proposed for Remediation
BDSB097	From Parcel 228, it is west across the street from the north portion of parcel 228 (northwest corner of that intersection - Bessie Circle East and Bessie Circle South).	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB101	From the intersection of Bessie & 33rd, go north to the 5th parcel on west side of Bessie Circle.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB180	In Parcel 154.	White	No remediation
BDSB182	In Parcel 150.	Brown	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB039	In Parcel 003.	Pink	Soils Proposed for Remediation (Lead Exceeds)
BDSB040	In Parcel 004.	Pink	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB041	In Parcel 003.	Pink	Soils Proposed for Remediation (Lead Exceeds)
BDSB042	In Parcel 016.	Green	Additional Sampling for COCs
BDSB043	In Parcel 022.	Green	Additional Sampling for COCs
BDSB149	In Parcel 160.	Brown	Soils Proposed for Remediation (Lead Exceeds)
BDSB189	In Parcel 078.	Green	Additional Sampling for COCs
BDSB307	In Parcel 233.	Green	Additional Sampling for COCs
BDSB066	In Parcel 032.	Green	Additional Sampling for COCs
BDSB108	In Parcel 232.	Brown	Soils Proposed for Remediation

4 9 0006

TABLE 1
Ecological RGO Exceedance Samples, Parcels, and Status at the End of FS Implementation

Sample Location ID	Location of the Sample in a Parcel	Color Coding	Status
BDSB304	From the intersection of Spires & 33rd go west to 1st road on left (Leonard) and turn south to the 3rd parcel on the west side of Leonard.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB345	In Parcel 265.	Green	Additional Sampling for COCs
BDSB111	In Parcel 289.	Green	Additional Sampling for COCs
BDSB078	In Parcel 047.	Green	Additional Sampling for COCs
BDSB085	In Parcel 700.	Pink	Soils Proposed for Remediation (In Mary McCleod Bethune Elementary School Property)
BDSB110	In Parcel 293.	Green	Additional Sampling for COCs
BDSB170	In Parcel 206.	Brown	Soils Proposed for Remediation
BDSB311	In Parcel 317.	Brown	Soils Proposed for Remediation (Ash and Lead Exceeds)

Color Coding in Section 4.0 Figures of the Feasibility Study (Sept. 2004)

Comment:

3. **Section 4.2.4, page 4-5 and 5-6, Figure 4-2**: Figure 4-2 indicates that minimal excavation with covering would occur on certain properties (e.g., the school property). However, the text on pages 4-5 and 4-6 speaks of deep excavation and does not mention the covering aspect shown on Figure 4-2. Based on the text's emphasis on excavation, it appears that Figure 4-2 needs to remove the "pink" identification of parcels to undergo covering. If the intent of Alternative 4 is to actually cover the "pink" area in Figure 4-2, then the text should be revised to clearly state that the deep excavation envisioned for the residential areas does not extent to certain areas of the Site and revised to explain the character of the cover.

Response:

It is agreed that the emphasis of Alternative 4 is placed on the removal of COCs through excavation. The excavation of COCs would be to the depth necessary to remove site COCs or to a maximum depth corresponding to the top of the water table. Excavation of soil below existing structures, roadways, driveways, and sidewalks would not be considered for removal. Figure 4-2 incorrectly suggests that cover would be included in Alternative 4. The figure and the legend have been revised to indicate that excavation of COCs is the goal of this alternative. The "pink" areas have been revised to match the remainder of the remediation area. In addition, the word "residential" in the legend for the "brown" parcels has been deleted since not all areas proposed for excavation are residential in Alternative 4.

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Comment:

4. **Section 4.2.3, page 4-4:** The study states for Alternative 3 that "[t]he areas identified in Figure 4-1 would be remediated as necessary to provide a minimum of 2 feet of soil meeting RGOs. In general this would be accomplished through excavation of 2 feet of soil meeting RGOs." This quote emphases excavation, which EPA considers an accurate emphasis for Alternative 3. However, later in this section, the FS states that "[a]s in Alternative 2, areas of soil contamination exceeding RGOs would be excavated as necessary to allow placement of the soil cover without creating storm water drainage problems or surface grade problems." In addition, the key on Figure 4-1 identifies the "brown" parcels as "residential parcels to be covered with excavation as needed [emphasis added]." The general thrust given by these two citations of Alternative 3 in relation to residential parcels emphasizes covering first.

   The emphasis on covering versus excavation was not picked up during the initial and subsequent reviews of the FS. Actually, EPA's emphasis for residential properties under Alternative 3 is excavation (i.e., excavation with backfill of soil cover). The study needs to be revised to stress 'excavation with backfill of soil cover' for Alternative 3. Please confirm, but it is believed that this reorder of Alternative 3 to place excavation in residential areas as the primary remedial action can be accomplished by the following changes:

   - Figure 4-1: Change the "brown" key to "Parcel to be Excavated with Backfill of Soil Cover."
   - Section 4.2.3, page 4-5, second paragraph, first full sentence: Change the sentence beginning with "As in Alternative 2..." to read in full as follows:

     > "Areas of soil contamination exceeding RGOs in the upper 2 feet would be excavated and the excavation backfilled with soil cover. The end result of excavation and associated backfill would be to provide at least 2 feet of soil meeting RGOs in residential areas."

   - Table 4-1, Alternative 3, Excavation of Soil/ash: Change "As needed to provide cover" to "Excavated with Backfill of Soil Cover in Residential Areas, as needed to provide soil cover in non-residential areas (e.g., former school)."

   Response:

   The intent of the wording was to allow a soil cover of residential parcels with either minimal or no excavation in some cases where it makes sense. For instance, in a first example a residential parcel has soil exceeding RGOs beginning at 1 foot below land surface and continuing several feet down (upper 1 foot meets RGOs), and most of the yard could accommodate an additional 1 foot. In this case it does not make sense to excavate 2 feet of soil because the result will be the same in either case (2 feet of clean soil over contaminated soil). In a second example, a whole series of parcels along the creek have more than 5 feet of ash in the backyards. If the backyards can accommodate 2 feet of clean soil rather than excavate 2 feet of ash, it would have less short-term impacts

and the end result is the same (2 feet of clean cover over contaminated soil/ash). On the other hand most residential parcels cannot accommodate new soil without excavation, and cover would not be considered in those cases. In addition it is preferable to remove the contamination when it is 2 feet or less in thickness (the majority of parcels). We believe the current wording allows some flexibility for the more unusual conditions described above in the design.

Comment:

5. **Figures 4-1 and 4-2:** Why is parcel 010 identified as a residential parcel to be covered with excavation as needed while surrounding parcels are identified as areas to be covered with minimal excavation? Is parcel 010 actually occupied? If so, then covering of adjacent properties without any excavation is probably infeasible given surface drainage impacts which would occur to parcel 010.

   Response:

   The area north of the railroad and south of Moncrief Creek is largely open, vacant land. As such, this area would receive cover to eliminate exposure to contaminated soil as described in the alternative description. Parcel 010 would receive cover similar to other contaminated parcels in this area. Parcel 010 should have been identified as an "Area to be Covered with Minimal Excavation" (pink). Figure 4-1 has been revised to reflect the remedial actions described in Alternatives 2 and 3. The change to Figure 4-2, as described in Response 3, will adequately address this issue.

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Acronyms and Abbreviations

ARARs	applicable or relevant and appropriate requirements
bgs	below ground surface
CAR	Contamination Assessment Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
City	City of Jacksonville
CO	Consent Order
COC	contaminants of concern
COEJ	Citizens Organized for Environmental Justice
COPC	chemical of potential concern
COPEC	contaminant of potential ecological concern
cy or cys	cubic yards
DCSB	Duval County School Board
EIS	Environmental Impact Statement
ELCR	excess lifetime cancer risk
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FR	Federal Register
FS	feasibility study
HEDTA	hydroxyethyl-ethylene-dinitrilo-triacatic acid
HI	hazard index
HRS	Hazardous Ranking System
µg/kg	micrograms per kilogram
LDR	land disposal restriction
NCP	National Contingency Plan
mg/kg	milligrams per kilogram

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mg/L	milligrams per liter
NFA	no further action
ng/kg	nanograms per kilogram
O&M	operation and maintenance
OSWER	Office of Solid Waste and Emergency Response
PAH	polynuclear aromatic hydrocarbon
PCBs	polychlorinated biphenyl
ppm	parts per million
PRG	preliminary remediation goal
RAO	remedial action objective
RBCA	Risk-Based Corrective Action
RCRA	Resource Conservation and Recovery Act
RGO	remedial goal option
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SCTL	soil cleanup target level
TAL	target analyte list
TBC	to be considered
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TEQ	toxicity equivalent
TMV	toxicity, mobility, and volume
USEPA	U.S. Environmental Protection Agency
UTS	universal treatment standard
XRF	x-ray fluorescence

Section 1.0

1.0 Introduction

1.1 Purpose and Organization of Report

Remedial investigations/feasibility studies (RI/FSs) for four sites are being conducted simultaneously under two consent orders (COs) between the City of Jacksonville (City) and the U.S. Environmental Protection Agency (EPA):

- Brown's Dump Site
- Jacksonville Ash Site, consisting of:
  - Forest Street Incinerator Site
  - 5th & Cleveland Incinerator Site
  - Lonnie C. Miller, Sr. Park Site.

All four sites are being studied as part of an agreement between the City and EPA Region IV. One agreement (CO) addresses Brown's Dump Site and the other three Jacksonville Ash Sites. Two separate (companion) FS reports are being developed, one for each CO. This FS report addresses the development and evaluation of remedial alternatives for the Brown's Dump Site.

This FS Report was prepared following the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, October 1988, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-.01. Section 1 of this report includes summary information from the RI report (CH2M HILL, April 2003, *Brown's Dump Site Remedial Investigation Report, Revision No. 2*) and the Baseline Risk Assessment for the Brown's Dump Site (Black and Veatch Special Projects Corporation, May 2002, *Draft Revision 2 Baseline Risk Assessment Brown's Dump Site*). The RI report includes results from 2 phases of investigation conducted between March 2000 and October 2002. Section 2 presents the development of remedial action objectives and remedial goal options (RGOs). Section 3 presents the identification and screening of technology types and process options. Sections 4 and 5 present the development and screening of remedial alternatives and the detailed evaluation of alternatives, respectively.

1.2 Site Description

Brown's Dump Site is located in northeastern Duval County, Florida, in the city of Jacksonville. The site is located generally north of West 33rd Street, west of Pearce Street, and south and east of Moncrief Creek. The site consists of the Mary McLeod Bethune Elementary School, a JEA electrical substation, and surrounding single- and multiple-family residential homes. The northern edge of the site extends just north of Moncrief Creek and a CSXT Railroad line, while the remaining boundary is surrounded by residential areas. The site location is shown on Figure 1-1.

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1.3 History

1.3.1 Site History

From 1949 to 1953, the site was an operating landfill that was used to deposit ash from the City of Jacksonville's municipal solid waste incinerator (former 5th & Cleveland Incinerator). The former owner has stated that unburned municipal solid waste was also disposed at the site when the incinerator was under repair. Previous investigations indicate that ash is present within the site at depths varying from the surface to 22 feet below ground surface (bgs). The landfill may have extended north of Moncrief Creek. Approximately 14 acres of the site were obtained by the Duval County School Board (DCSB) through condemnation procedures in 1955 for construction of the Mary McLeod Bethune Elementary School.

1.3.2 Investigation and Remediation History

EPA first assessed the Brown's Dump Site in 1985 and found elevated concentrations of lead in some of the soil/ash samples; however, results did not indicate significant organic material contamination of the site. A preliminary Hazard Ranking System (HRS) score of lower than 28.5 resulted in the site's designation as a low priority site. In 1994, the site was re-evaluated with the revised HRS, resulting in a score of greater than 28.5 for groundwater and soil exposure pathways. The site was then designated as high in priority. In 1995, EPA collected additional samples, which confirmed lead contamination. A meeting was held between EPA and the Florida Department of Environmental Protection (FDEP), which resulted in the decision that FDEP would lead activities for this site.

FDEP contracted for further site investigations, and in 1995 a *Contamination Assessment Report* (CAR) was submitted to FDEP. The CAR recommended several Interim Remedial Actions, including placing fill material to cover the ash. In December 1995, a sandy soil material capable of sustaining a grass cover was installed in the area of the playground and basketball courts. Additionally, 6 inches of soil was spread over the area where exposed glass was observed. Between January and April 1996, 353 soil borings were advanced to further assess the extent of ash in the neighborhood surrounding the site. Additional soil samples were collected for laboratory analyses of total lead. A health risk evaluation was performed in June 1996, which concluded that the hazard posed by the Brown's Dump Site was not sufficiently significant to warrant soil removal. In 1998, an *Expanded Site Inspection* was performed for EPA. Surface soil, surface water, sediment, and groundwater samples were collected. Based on the results of the information obtained, further action was recommended at the site.

Phase 1 remedial investigations were conducted from March through September 2000. Media investigated included soil and ash, groundwater, surface water, and sediment. The specific intent of the soil sampling effort at the site was to delineate the ash source areas and the perimeter of the source areas through soil sampling including visual observation, x-ray fluorescence (XRF) screening (tier 1 samples), and laboratory analysis for target analyte list (TAL) inorganics (tier 2 samples). On a subset of tier 2 samples, target compound list (TCL) and dioxin analysis were also performed. During the RI, 312 soil borings were advanced to characterize and delineate the extent of soil and ash contamination. In addition, 15 background locations were sampled to allow statistical evaluation of urban background contamination unrelated to the site. Ten new site and two new background groundwater

monitoring wells were installed and sampled. Eight downstream and five background surface water and sediment samples were collected and analyzed to evaluate whether the Brown's Dump Site affects the quality of Moncrief Creek, the surface water body adjacent to the site.

Phase 2 remedial investigations included parcel-by-parcel soil sampling conducted from October 2001 to October 2002. This consisted of a total of 418 parcels of property. Since some of the property owners did not provide access agreements, only 260 or 62% of the planned 418 parcels were sampled. In addition to parcel-by-parcel sampling, nine additional Tier 2 samples and one additional characterization sample were collected in Phase 2. The Phase 1 results are presented in the Brown's Dump Site Remedial Investigation Report, Revision 3, dated July 2003. The Phase 2 results are presented in Appendix C of this report.

1.4 Physical Characteristics

In Phase 1, the physical characteristics of the site, the nature and extent of contamination, and the fate and transport of the identified contamination were evaluated based on the results of the site investigations. The most significant aspects of each evaluation are presented in the text that follows.

The predominant soil type observed at the Brown's Dump Site is silty sand. Silty, clayey sand and silty clay also occur below the silty sand in some locations. Groundwater beneath the site flows toward Moncrief Creek in a north-northwesterly direction. The groundwater table in the area under investigation is typically encountered between approximately 5 to 15 feet bgs.

Surface drainage flows north–northwesterly in drainage ways along streets, in stormwater collection systems, and in swales and discharges into the creek. Moncrief Creek flows northeastward into the Trout River, located approximately 2.5 miles northeast of the site, and eventually into the St. Johns River.

The Brown's Dump Site is mostly disturbed habitat and of little ecological value. Undisturbed vegetative communities do not exist on the site, and potentially existing wildlife species would be limited to urban-adapted small mammals and birds. The areas of greatest ecological value are associated with Moncrief Creek (a Class III surface water body) and its vegetated corridor. This habitat is less disturbed and is suitable for a larger variety of mammals and birds in the forested area, and various aquatic plants, fish, and invertebrate species in the creek.

Based on general habitat requirements, three listed protected species could potentially exist on or near the site: American alligator; little blue heron; and snowy egret.

1.5 Nature and Extent of Contamination

1.5.1 Ash

To the extent practical, ash and ash/soil mixtures was delineated within the EPA investigation boundary, as shown on Figure 1-2. It includes the school property area and areas to the north, northeast; south, southwest, and west of the school property. Generally,

areas containing ash are confined to an area within about 3 blocks of the school property. The thickest ash deposits are present on the school property, ranging up to 22 feet thick. The ash in the southern neighborhoods is typically about 1 to 3 feet thick. The ash in the west neighborhood is thicker in some areas, ranging from about 1 to 4.5 feet thick. North of the site, along Moncrief Creek, the ash thickness is up to 11.5 feet.

Ash is typically encountered between 0.5 to 2 ft bgs. In the playground area of the school property, ash is not present at the surface as a result of past remedial actions by the City. Ash is present in the upper 0.5 feet of soil over a combined area of 13 acres north of the fence on the school property and in sub-areas south, west, and north of the school property.

1.5.2 Soil

Surficial soil (0 to 0.5 ft bgs) contamination in excess of the 400 mg/kg (ppm) lead residential screening level (EPA, FDEP) was delineated and is present on the northern portion of the school property, in areas north, northeast, and west of the school, and in isolated areas south of the school property. Subsurface soil (>0.5 ft bgs) contamination exceeding the 400 mg/kg screening level was delineated and currently is mostly in areas where ash is visibly present in the subsurface, characterized as 25 percent or greater (see Figure 1-3). Soil samples with only a few pieces of glass or minimal ash material (samples visibly characterized as less than 25 percent ash) most often did not exceed the lead screening level. Twelve other metals also exceed residential screening criteria in samples containing ash.

The results of the remedial investigation indicated that of 24 soil samples with lead exceeding 400 mg/kg that were also analyzed for metals, over 90 percent of the samples (22 of 24) reported concentrations of at least one metal that exceeded the residential screening level. It was then concluded that metal concentrations can be considered to be strongly correlated to lead concentrations, such that lead serves as an indicator of ash contamination.

Organic compounds exceeding residential screening criteria is soil containing ash include five polynuclear aromatic hydrocarbons (PAH) compounds, two polychlorinated biphenyls (PCBs), and two pesticides. As presented in the RI Report, the percentage of soil samples containing ash with organics exceeding residential screening criteria (44 percent) is much lower that the percentage of soil samples containing ash with inorganics exceeding residential screening criteria (92 percent).

The locations where organics exceed residential screening criteria are typically associated with the area of visible ash and are most often within the area where lead exceeds 400 mg/kg. The 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxicity equivalency (TEQ) values do not exceed the action level of 1 μg/kg in any soil sample analyzed.

Lead did not exceed the residential screening level in samples collected from below ash and was nondetectable in most samples below ash. Other metals and organics were not found at concentrations which indicate significant leaching from soil.

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1.5.3 Groundwater

Lead is below the residential screening (EPA, FDEP) criteria in all monitoring well groundwater samples. Other metals and organics are also below human health-based screening criteria in the most recent monitoring well samples.

1.5.4 Surface Water and Sediment

Cyanide was the only inorganic to exceed threshold criteria applicable to the site protective of aquatic life in surface water samples (source is US EPA Region 4 Ecological Risk Assessment Bulletins) downstream of the site. However, it is not believed to be related to the site, based on previous EPA sampling results, RI background samples, and groundwater monitoring results. Organics were not detected in surface water.

Lead was elevated above background levels in downstream sediment samples. However the ecological risk assessment found that lead did not exceed ecological screening criteria (*EPA Region 4 Ecological Screening Value*). No other inorganic or organic compounds exceeded ecological criteria for sediment.

1.5.5 Phase 2 Soil Results

In Phase 2, parcel-by-parcel sampling was conducted for parcels within the delineation area that were not identified for remediation from the Phase 1 sampling effort.

Seventy-two lots, or 28 percent of the parcels sampled, had ash greater than 25% in at least one sample. Eighty-seven lots, or 33 percent of the parcels sampled, had lead greater than 400 mg/kg in at least one sample. In most cases, lots with ash greater than 25% in at least one sample also had lead greater than 400 mg/kg in at least one sample. These results are illustrated on Figure 1-3.

Of the 54 parcels analyzed for TAL metals, a total of 9 parcels exceeded screening criteria for at least 1 metal. Eight of these nine parcels also had lead greater than 400 mg/kg. Only 1 parcel had a metal exceedance (copper) that did not have an associated lead value greater than 400 mg/kg.

Of the 28 parcels analyzed for PAHs, a total of nine exceeded screening criteria for at least one PAH. However, only four of the nine parcels exceeded background.

Of the 28 parcels analyzed for dioxins/furans, none exceeded screening criteria.

None of the additional nine Phase 2, Tier 2 samples had ash greater than 25%. None of the additional Tier 2 samples exceeded screening criteria for TAL metals, TCL organics and dioxins/furans.

The additional Phase 2 characterization sample was taken from the unrestricted access portion of the school property (in the grassy area about 100 feet north of 33 rd Street). It did not have ash greater than 25%, and did not exceed screening criteria for TAL metals, TCL organics and dioxins/furans.

1.6 Contaminant Fate and Transport

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Metals such as antimony and lead that are present in site ash and ash-soil mixtures are elements and do not degrade; they would be expected to persist at present concentrations for decades. The mechanisms that could result in diminishing concentrations for these inorganics, such as leaching or erosional transport, are not significant at this site.

Organic compounds in ash and ash-soil mixtures exceeding criteria, such as the PAHs, PCBs, and pesticides, are biologically degradable and are expected to slowly decline in concentration over time in soil.

Leaching of contaminants found in ash and ash-soil mixtures is not occurring in significant concentrations, based on analysis of soil samples collected below ash and results of groundwater sampling. Contaminants in ash and ash-soil mixtures are not migrating in groundwater at concentrations exceeding health-based drinking water standards or other screening criteria.

Site groundwater discharging to Moncrief Creek is not affecting the creek at concentrations of concern to human health or aquatic life. Some erosional transport of surficial soil containing elevated levels of lead may be occurring, based on the elevated lead present in Moncrief Creek sediments. However, the Moncrief Creek sediment lead exceeding threshold criteria is likely related to direct erosion of ash and ash-soil mixtures present in the stream bank. Surface soil or stream bank erosion is not a significant transport mechanism for other inorganics and organic contaminants in soil, based on stream sediment sampling results.

1.7 Summary of Human Health and Ecological Risks

1.7.1 Human Health Baseline Risk Assessment

US EPA's contractor Black and Veatch Special Projects Corporation performed the Baseline Risk Assessment for the Brown's Dump Site (Black and Veatch Special Projects Corporation, September 2002, *Final Baseline Risk Assessment Brown's Dump Site*). The main conclusions for the school property and the fenced area north of the property were:

- Current residents exposed to surface soil at the former school property and surface water of Moncrief Creek have a risk that did not exceed the acceptable threshold of a hazard index (HI) greater than 1 and an excess lifetime cancer risk (ELCR) of 1×10^{-4}.
- Current residents exposed to surface soil at the restricted area north of the school and surface water of Moncrief Creek have a risk that exceeded the acceptable threshold of HI greater than 1 and exceeded an ELCR of 1×10^{-4}.
- Future residents exposed to surface soil, groundwater and Moncrief Creek have a risk that exceeded the acceptable threshold of HI greater than 1 and exceeded an ELCR of 1×10^{-4}.
- Future residents exposed to subsurface soil, groundwater and Moncrief Creek in the restricted area have a risk that exceeded the acceptable threshold of HI greater than 1 (HI = 25) and exceeded an ELCR of 1×10^{-4} (ELCR of 4×10^{-4}).

- Generally when a soil sample exceeded an RGO, ash is visible or lead is present at concentrations exceeding the 400 mg/kg residential cleanup goal for lead.

The quantitative risk characterization procedure for the residential properties surrounding the former school property focused on ten highly contaminated surface soil samples representing the "worst case scenario". This was done because it is not feasible to calculate risks individually for all 306 surface soil locations. Using these 10 locations, RGOs were developed and the remainder of the sample locations was compared against the RGOs. The main conclusions for the residences surrounding the former school property were:

- Concentrations of chemicals of potential concern (COPCs) in 266 of 296 soil samples were below RGOs.
- Thirty soil samples had at least one COPC that exceeded an RGO. In 26 of these 30, lead was the only COPC that exceeded an RGO.
- Soil lead concentrations greater than 400 mg/kg in residential areas should be considered a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. The bioavailability of lead is considered low at Brown's Dump site based on available blood lead data for children attending the school.

The risk assessment identified two COCs for groundwater, the PCB Aroclor 1016 and manganese and recommended additional groundwater samples to determine whether the PCB is present. The RI (CH2M Hill, October 2000) had found that lead was below screening criteria in all monitoring well samples and that other inorganic and organic parameters were below human health-based screening criteria in the most recent sampling round. Earlier results that exceeded screening levels did not appear to be site-related. Additional groundwater sampling results (CH2M Hill, March 2003) confirm that groundwater is not a medium of concern.

1.7.2 Ecological Risk Assessment

U.S. EPA's contractor Black and Veatch Special Projects Corporation performed the Ecological Risk Assessment (ERA) for the Brown's Dump Site (Black and Veatch Special Products Corporation, May 2002, *Final Draft Ecological Risk Assessment Revision 1Brown's Dump Site*). Based on the refinement of chemicals of potential ecological concern (COPECs) in the ERA, conclusions were presented on a media-by-media basis for soil, sediment, and surface water at the Brown's Dump Site. The main conclusions are the following:

- The concentrations of COPECs in surface soil present a risk to terrestrial and aquatic communities in the site vicinity. The risks are well defined, and there are no additional ecological evaluations required to develop remedial goals for soils.
- Sediments and surface water do not contain ecologically significant concentrations of contaminants, and therefore are not considered to be of ecological concern at the site.

The soil refinement process in the ERA identified several contaminants distributed across the site generally coincident with occurrence of ash. Based on the refinement in the ERA the following contaminants were identified as COPECs in soil:

- Surface soil had aluminum, antimony, copper, iron, lead, zinc and mercury identified as COPECs. Nearly all surface soil samples had aluminum and iron identified as COPECs.
- The food chain accumulation pathway indicated lead, zinc and mercury levels in surface soil could be the COPECs.
- The zinc occurrence appear to be correlated with all other COPCs, which include aluminum, antimony, copper, iron, lead and mercury, as has been discussed in the ERA report.

A statistical correlation evaluation was conducted for the above identified inorganic chemicals in soils, and the results are presented in Appendix A of this revision document.

The soil sample locations were identified to contain the above described COPECs at the end ERA for Brown's Dump Site. They are listed below:

- The area of soil samples BDSB009, BDSB012, BDSB014, and BDSB016.
- The area of soil samples BDSB045, BDSB046, BDSB054, BDSB055, and BDSB058.
- The area of soil samples BDSB124, BDSB130, BDSB134, and BDSB136.
- The area of soil samples BDSB097, and BDSB101.
- The area of soil samples BDSB180, and BDSB182.
- The area of soil samples BDSB039, BDSB040, BDSB041, BDSB042, and BDSB043.

Additionally, some isolated locations (BDSB149, BDSB189, and BDSB307) contained multiple COPECs. Mercury was a COPEC in BDSB066, BDSB108, BDSB304, and BDSB345. Copper was a COPEC in BDSB111. Zinc was a COPEC in BDSB078, BDSB085, BDSB110, BDSB170, and BDSB311. The corrective actions planned for this site addresses most of these parcels as discussed in Section 2.0.

As previously stated, no surface water and sediment COPECs were identified. Groundwater is not considered an exposure medium of interest for ecological receptors.

Section 2.0

2.0 Remedial Action Objectives

2.1 Introduction

This section presents the remedial action objectives (RAOs) for the Brown's Dump Site. The RAOs are used in the development and evaluation of remedial alternatives. The primary considerations in deriving the RAOs were:

- Results of the human health and ecological risk assessment
- Applicable or relevant and appropriate requirements (ARARs)

RAOs incorporate chemical-specific preliminary remedial goals (PRGs). Within US EPA Region 4 PRGs are referred to as RGOs at this stage of the RIFS process.

ARARs can affect site-specific remedial action objectives. ARARs for the Brown's Dump site are summarized below. The RAOs are then presented followed by the chemical-specific RGOs.

2.2 Development of Remedial Action Objectives

2.2.1 Identification of ARARs

2.2.1.1 Background

Remedial actions at CERCLA sites must attain, or justify the waiver of, any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be ARARs.

The procedures for identification and evaluation of ARARs, PRGs and, in USEPA Region 4, RGOs, are presented in several important sources, particularly the following:

- The National Contingency Plan (NCP), specifically 55 FR 8741-8766 for a description of ARARs, and 55 FR 8712-8715 for using ARARs as PRGs; also 53 FR 51394
- CERCLA Compliance with Other Laws Manuals (EPA 1988 and 1989)
- Current Drinking Water Standards, U.S. Environmental Protection Agency, EPA 816-F-02-013, July 2002.
- *Risk Assessment Guidance for Superfund: Volume 1–Human Health Evaluation Manual.* Part B, Development of Risk-Based Preliminary Remediation Goals. EPA, 1991, (RAGS Part B)
- EPA Region IX Preliminary Remediation Goals Table (http://www.epa.gov/region09/waste/sfund/prg/index.htm)
- EPA Region IV Human Health Risk Assessment Bulletins (http://www.epa.gov/region4/waste/ots/healtbul.htm#hhrisk)

- EPA Region IV Ecological Risk Assessment, December 1998
- Florida Administrative Code Chapter 62-777 Contaminant Cleanup Target Levels Table II Soil Cleanup Target Levels

A requirement under other environmental laws may be either "applicable" or "relevant and appropriate," but not both. Identification of ARARs must be completed on a site-specific basis and involve a two-part analysis: first, a determination as to whether a given requirement is applicable; then, if not applicable, a determination as to whether it is both relevant *and* appropriate.

"Applicable" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that *specifically address* a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.

"Relevant and appropriate" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations *sufficiently similar* to those encountered at the CERCLA site that their use is well suited to the particular site.

CERCLA actions may have to comply with several different types of ARARs. They are:

- **Chemical-specific ARARs**–Health- or risk-based numbers or methodologies that result in the establishment of numerical values for a given medium that would meet the NCP "threshold criteria" of overall protection of human health and the environment and compliance with ARARs.
- **Action-specific ARARs**–Technology- or activity-based requirements or limitations on remedial actions.
- **Location-specific ARARs**–Restrictions placed on the concentration of hazardous substances in soils or other media or the conduct of activities solely because they occur in special locations.

Appendix B contains an evaluation of ARARs that are important in establishing remedial objectives or in developing remedial action alternatives. The main findings of the ARARs analysis are summarized below.

2.3 Chemical-Specific ARARs

Chemical-specific requirements are usually health- or risk-based numerical values or standards that establish the acceptable concentration of a chemical in the ambient environment. The chemical-specific ARARs can be classified into two categories for the Brown's Dump site:

- Residual concentrations of hazardous substances that can remain at the site without presenting a threat to human health and the environment

- Land disposal restriction (LDR) concentrations that must be achieved if the contaminated medium is excavated or extracted and later land disposed

2.4 Residual Concentrations

US EPA has listed chemical-specific ARARs for two soil COCs as follows (Black and Veatch Special Projects Corporation, October 2002, Final *Baseline Risk Assessment Brown's Dump Site*):

- Lead- 400 mg/kg
- 2,3,7,8-TCDD- 0.001 mg/kg

US EPA does not specify other chemical-specific ARARs for soil, rather methodologies for development of remediation goals are presented in guidance previously listed. Remedial goal options are presented later in this section.

Florida also does not specify chemical-specific ARARs for soil. It does however specify risk levels, methodologies and provides guidelines for development of contaminant cleanup target levels in the Florida Administrative Code Chapter 62-785 Brownfield's Cleanup Criteria. These are not ARARs but are in the classification of "to be considered" (TBCs). Soil cleanup target levels for human exposure are based on an ELCR of 10^{-6}, a hazard quotient of 1 or less and naturally occurring background concentrations. The guidelines for soil are presented in Chapter 62-777 Table II Soil Cleanup Target Levels. These are discussed further under RGOs.

2.5 LDR Concentrations

The Resource Conservation and Recovery Act (RCRA) LDRs would apply to remedial actions performed at the site if waste generated by the remedial action (e.g., contaminated soil or incinerator ash) contains a RCRA hazardous waste. Listed hazardous wastes are not known to have been disposed at Brown's Dump. As a result excavated soils would not be required to be managed as listed hazardous waste. If excavated and removed from the area of contamination (i.e., the soil is "generated"), the soil may be a D008 toxicity characteristic hazardous waste. As part of the RI, soil samples were analyzed for toxicity characteristic using the toxicity characteristic leaching procedure (TCLP). Some samples of soil containing ash have exceeded the TCLP limit of 5 mg/L for lead.

Generated soils that exceed the TCLP limit must be managed as a hazardous waste and must meet the LDR Treatment Standards for contaminated soil (40CFR 268.49). The treatment standard for contaminated soil is the higher of a 90% reduction in constituent concentrations or 10 times the Universal Treatment Standards (UTS). Treatment is required for the constituent (such as lead) for which the soil is a characteristic hazardous waste as well as other "underlying hazardous constituents". Generators of contaminated soil can apply reasonable knowledge of the likely contaminants present to select constituents for monitoring (US EPA, October 1998. *Management of Remediation Waste Under RCRA*, EPA530-F-98-026). Table 2-1 presents the 10 x the UTS and the maximum measured concentration in soil for each site COC. Based on the comparison of maximum measured concentration and 10 times the UTS, it appears that treatment will be necessary only for lead exceeding the

TCLP limit of 5 mg/L. It is also possible that zinc could exceed the 10 x UTS TCLP limit of 43 mg/L, although TCLP data is not available for zinc.

2.6 Action-Specific ARARs

Action-specific ARARs regulate the specific type of action or technology under consideration, or the management of regulated materials. Several of the more important action-specific ARARs or TBCs that may affect the RAOs and the development of remedial action alternatives include:

- RCRA regulations governing the identification, management, treatment, storage, and disposal of solid and hazardous waste would be ARARs for alternatives that generate waste that would be moved to a location outside the area of contamination. Such alternatives could include excavation of materials (e.g., soil or incinerator ash). Requirements include waste accumulation, recordkeeping, container storage, disposal, manifesting, and transportation and disposal. As discussed above, portions of the soil containing ash may be required to be managed as a D0008 toxicity characteristic hazardous waste (i.e., soils exceeding the TCLP limit of 5 mg/L for lead). If the soil is characteristic hazardous waste, RCRA LDRs would apply and treatment would be required in accordance with RCRA prior to disposal. This includes treatment of other underlying hazardous constituents as required by 40 CFR 268.9(a). The primary LDR that would have to be met is the soil would have to be treated to the higher of 7.5 mg/L in the TCLP extract (i.e. 10 x the UTS of 0.75 mg/L) or a 90% reduction in hazardous constituent concentration prior to disposal in a RCRA Subtitle C Landfill. Alternatively the soil could be treated to below the TCLP limit of 5 mg/L, rendering it nonhazardous and disposed in a subtitle D Landfill. As discussed above the soils have no other chemicals of concern (COCs) that would be required to be treated based on LDRs. Non-hazardous soil would be disposed in accordance with RCRA solid waste disposal requirements.

- Regulations controlling erosion and particulate air emissions would be ARARs for remedial action alternatives that involve earthmoving activities and handling of bulk soils. Occupational Safety and Health Administration regulations governing worker health and safety must also be followed during remediation work.

- Florida Administrative Code Chapter 62-785 Brownfield's Cleanup Criteria, although not ARARs because they do not apply to sites such as Brown's Dump, are TBCs. This chapter specifies the methodology for evaluation and remediation of site contamination exceeding cleanup criteria. Alternatives that leave soil contamination onsite in excess of residential cleanup levels are allowed provided institutional controls are enacted and the soil exceeding residential criteria is at least 2 feet below land surface (FAC 62-785.680 (2) 2). Alternatives that include implementation of engineering controls, such as a permanent cover material, in conjunction with institutional controls may leave soil that exceeds residential cleanup levels onsite (FAC 62-785.680 (2) 4). Other sections of this code specify requirements for active remediation (FAC 62-785.700) and post active remediation monitoring (FAC 62-785.700).

2.7 Location-Specific ARARs

A site's location is a fundamental determinant of its potential effect on human health and the environment. Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of remedial activities solely because they are in special locations. The Brown's Dump Site is mostly disturbed urban residential habitat and of little ecological value. Undisturbed vegetative communities do not exist on the site, and potentially existing terrestrial wildlife species would be limited to urban-adapted small mammals and birds. The most important location-specific ARARs for Brown's Dump all relate to the development of remedial actions for control of the erosion of ash along the banks of Moncrief Creek. The main location-specific ARARs that will be considered during development of RAOs and alternatives are:

- **Fish and Wildlife Coordination Act**–Enacted to protect fish and wildlife when actions result in the control or structural modification of a natural stream or body of water. The statute requires that any actions take into consideration the effect that water-related projects would have on fish and wildlife, and then take action to prevent loss or damage to these resources.
- **CFR § 6 Appendix A**–Sets forth EPA policy for carrying out the provisions of Executive Orders (EOs) 11988 (Floodplain Management) and 11990 (Protection of Wetlands). Executive Order 11990 requires that actions at the site be conducted in ways that minimize the destruction, loss, or degradation of wetlands.
- **Clean Water Act**–Section 404 prohibits discharge of dredged or fill material into navigable waters without a permit. Section 401 also prohibits degradation of water quality from fill material.
- **River and Harbors Act**–Section 10 prohibits the creation of obstructions to the capacity of, or excavation or fill within the limits of, the navigable waters of the U. S.
- **National Environmental Policy Act (NEPA) and Protection of Wetlands EO (40 CFR Part 6)** – Requires an Environmental Impact Statement (EIS) or a 'functional equivalent' for Federal actions that may impact the human environment. It also requires that Federal agencies minimize degradation, loss or destruction of wetlands.

2.8 Remedial Action Objectives

RAOs are medium- or site-specific goals for protecting human health and the environment established on the basis of the nature and extent of the contamination, resources that are currently and potentially threatened, and the potential for human and environmental exposure. The RAOs specify the COCs, potential exposure routes and receptors and an acceptable range of contaminant concentrations. RAOs must be broad enough to permit a range of treatment and containment alternatives to be developed. They address the risks documented in the risk assessment and the ARARs identified for the site.

The following RAOs have been identified for the Brown's Dump site:

- Prevent human exposure to site COCs through contact, ingestion, or inhalation of soil or surface water of Moncrief Creek contaminated from incinerator ash or other wastes

disposed of at the Brown's Dump Site that presents an ELCR risk greater than 1×10^{-4} to 1×10^{-6}, a hazard index greater than 1, lead in excess of 400 mg/kg and 2,3,7,8 TCDD toxicity equivalent in excess of 0.001 mg/kg.

- Prevent impacts to terrestrial biota from exposure to surface soils contaminated from incinerator ash or other wastes disposed at the Brown's Dump Site and containing COPECs in excess of ecological PRGs.
- Control erosion and transport of soils containing visible ash, lead in excess of 400 mg/kg or COPECs in excess of ecological PRGs along the banks of Moncrief Creek to prevent unacceptable risks to human health or ecological impacts.

The first remedial objective includes protection from exposure to the surface water of Moncrief Creek based on the results of the risk assessment. However, the risk assessment did not develop surface water RGOs for protection of human health because the creek is a pathway rather than a source of contamination. Remediation of site soils will prevent risks related to surface water.

A remedial objective addressing leaching of contaminants from soil to groundwater is not included at this time because groundwater is not a media of concern as discussed in Section 1.7.

The NCP and CERCLA require the full risk range of 1 × 10-4 to 1 × 10-6 ELCR to be considered during development of remedial alternatives. Florida administrative code however specifies remediation to 1 × 10-6 ELCR (Chapter 62-785 Brownfield's Cleanup Criteria). To address these conflicting remedial goals, alternatives will be developed that address remediation to RGOs representing the full risk range (i.e., both NCP and Florida requirements) to allow stakeholders to weigh the advantages and disadvantages of remediating to differing risk levels. However if there are not substantial differences in the area and volume of soil exceeding the differing risk levels, multiple alternatives will not be developed.

2.9 Remedial Goal Options

The RGOs were developed by US EPA as part of the Brown's Dump Risk Assessment (Black and Veatch Special Projects Corporation, October 2002, Final *Baseline Risk Assessment Brown's Dump Site*) and are based on ARARs and on risk-based action levels. The RGOs replace the preliminary remedial goals (PRGs) that were developed and presented in the Work Plan for the Remedial Investigation/ Feasibility Study (CH2M Hill, March, 2000). The RGOs are used in the FS to define the areas to which the remedial objectives apply (i.e., the areas to be remediated). By providing a range of remedial goal options US EPA expects that remedial alternatives will be developed for a range of risk levels, all meeting the maximum risk level of 1 x 10-4 ELCR and HI = 1. US EPA specifies the final remedial levels for the selected remedy in the Record of Decision (ROD).

RGOs for constituents of concern selected based on human health and ecological risk assessment results for soils at the Brown's Dump Site are listed in Table 2-2. These RGOs were provided by US EPA in the Brown's Dump Risk Assessment (Black and Veatch Special Projects Corporation, October 2002, Final *Baseline Risk Assessment Brown's Dump Site*) with the exception of the background values and the Florida Soil Cleanup Target Levels (SCTLs).

The background levels are based on background sampling results presented in the RI and represent 2 times the background mean concentration. Where a risk-based or ARAR-based RGO is below the background value, the background concentration is used as the RGO. The Florida SCTLs are based on an ELCR of 1×10^{-6} and a HI = 1. The ecological RGOs were calculated for the site using direct exposure and food-chain modeling methods. The SCTL values presented in Table 2-2 are those presented in Florida Administrative Code (FAC) 62-777 Table II. These are TBCs only.

2.10 Areas Exceeding Remedial Goal Options

The areas of soil exceeding the RGOs are identified in Figure 2-1. This figure includes the parcels identified for remediation based on Phase 1 results and the additional parcels identified during Phase 2. Any parcel having either ash greater than 25% or lead greater than 400 mg/kg has been included in the areas requiring remediation. Other COCs exceeding RGOs are contained within these parcels in nearly all cases. Table 2-3 lists samples that have other COCs exceeding RGOs that are outside parcels with ash >25% or lead > 400 mg/kg, documents the exceedance, and identifies whether the area represented by the sample is included in the remediation area. It should be noted that, since the FDEP SCTL for arsenic is anticipated to become an ARAR in the future, parcels with ash less than 25% and lead less than 400 mg/kg that have arsenic greater than 2.1 mg/kg and dioxin concentrations above its background concentration (8.82 ng/kg) are also identified in Figure 2-1.

The ecological end-point based RGO exceedances are identified with parcels that are currently occupied by residences, thus offer very little or no ecological habitat for protection. Additionally, the RGOs identified for ecological protection are exceeded in parcels that also exceed human health protection based RGOs (see Table 2-2, 2-3a and Figure 2-1). Since the area is an urban environment with no significant ecological habitat, the action described below focus on the health protection based RGOs, which coincidentally protect the terrestrial receptors as well. Thus a special emphasis for protection of ecological terrestrial receptors is not placed during the following discussions. Table 2-3a presents the samples identified as exceeding ecological RGOs, previously presented in Section 1.0. As can be noted from the table, a total of 35 parcels have been identified to have ecological COPECs. Of these, 24 parcels are slated for remediation, 9 parcels are proposed for additional sampling, only two areas, railroad track right of way and one residential parcel are not being remediated, as presented below in Section 4.0. Thus proposed actions largely address terrestrial ecological exposure pathways as well.

Parcels that have not been sampled because of lack of access are tentatively assigned to either the remediation area or no remediation area based on the results of surrounding parcels. This is necessary at this time to allow development of cost estimates for remedial alternatives. Additional efforts to sample these parcels will be undertaken during design and construction of the selected remedial action. A summary of the areas and volumes of soil exceeding RGOs is presented in Table 2-4.

Based on the results of the identification of areas exceeding RGOs, there is no significant difference in areas exceeding RGOs for differing risk levels. This occurred because the area is essentially defined by soils having either ash >25% or lead > 400 mg/kg, neither of which vary by risk level.

Section 3.0

3.0 Identification and Screening of Technology Types and Process Options

This section describes the identification and screening of remedial technologies and process options based on the remedial objectives identified in Section 2.0. The first step in this process is to identify general response actions (GRAs) that can meet the remedial objectives. Within each GRA, remedial technologies and their associated process options are identified. These are then screened in a two-step process. Those retained are subsequently used in the development of remedial alternatives.

3.1 General Response Actions (GRAs)

GRAs are basic actions that can be undertaken to address remedial objectives. The GRAs applicable to soil contaminated with COCs above RGOs are:

- No Further Action (NFA)
- Monitoring
- Institutional Controls
- Containment
- Removal
- In situ Treatment
- Ex situ Treatment
- Disposal

Table 3-1 lists the GRAs for each medium and provides a brief evaluation of each. The following subsections describe GRAs that may be applicable to the Brown's Dump Site.

Each GRA is discussed below along with an overview of some associated remedial technologies and process options that are representative of the response action.

3.1.1 No Further Action (NFA)

The NFA response includes no action for soil. The NCP requires that the NFA alternative continue through the FS process as a basis of comparison.

3.1.2 Monitoring

Monitoring can be implemented in combination with other GRAs such as containment or treatment to monitor the effectiveness of the chosen remedial action over the course of time. Monitoring may include inspections as well as sampling and analysis of soil.

3.1.3 Institutional Controls

Institutional controls for contaminated soil consist of restricting access through land use restrictions. These controls would be used primarily to limit human contact with subsurface soil that remains following excavation or containment of contaminated surface soil at the

site. They include measures such as local ordinances, building permits, restrictive covenants on property deeds, state registries of contaminated sites, and deed notices. They would specify the nature of the subsurface contamination and limit excavation of subsurface soils. Where subsurface soil excavation is unavoidable adherence to a proper health and safety plan during excavation and disposal of excavated subsurface soils in accordance with RCRA requirements would be specified.

3.1.4 Containment

Containment is used to minimize the risk of contaminant migration as well as prevent direct contact exposures. Surface controls such as grading and revegetating can reduce windblown or water erosion of contaminated soil due to surface water runoff. Covers could also be used to prevent erosion of contaminated soil in addition to preventing direct contact with contaminated soil.

3.1.5 Removal

Excavation and removal of soil prevents direct contact with or ingestion or inhalation of contaminated soil at the site. It also eliminates the potential release of contaminants via windblown or surface water runoff erosion. Excavation of contaminated soil can be executed using small excavation equipment such as mini-excavators, bobcats and hand excavation. Larger open areas would be excavated with ordinary construction equipment such as backhoes, bulldozers, and front-end loaders.

3.1.6 In-situ Treatment

In-situ treatment methods can be used to reduce contaminant concentrations in soil without excavation. In-situ methods are limited because the main contaminant, lead, is not amenable to destruction. Insitu removal technologies are also limited because lead is not volatile and because it has limited mobility. Physical and chemical treatments to further immobilize lead are possible.

3.1.7 Ex-situ Treatment

Physical/chemical technologies can be used for treating soil once it is excavated. During soil fixation or stabilization, contaminants are immobilized by physically binding them, enclosing them within a stabilized mass, or chemically treating them to become immobile. Soil washing separates contaminants sorbed onto fine particles from bulk soil in an aqueous-based system. The washing phase may be augmented by leaching agents, surfactants, pH adjustments, or chelating agents to remove organics or heavy metals. Fixation and soil washing require that separated residuals containing contaminants above RGOs be disposed of offsite.

3.1.8 Disposal

Based on the concentration of total lead and the results of TCLP analysis of soil samples for the leachability of lead, it is possible that some of the excavated soil will be a D008 characteristic hazardous waste. As a result, treatment of principal constituents would be required before disposal to meet land disposal restriction standards for contaminated soil. The excavated soil can be treated onsite as necessary to meet RCRA requirements for

disposal and then transferred to an approved offsite disposal area. If the soil were treated to levels below the TCLP limits and the soil met the LDRs for contaminated soil, the soil could be disposed in a Subtitle D Landfill such as the city owned Trail Ridge Landfill located southwest of Jacksonville.

3.2 Identification and Screening of Technology Types and Process Options

The technology types and process options available for remediation of soil were screened. The purpose of this step is to identify the technologies that may be applicable for remediation of the media of concern at the site. An inventory of technology types and process options is presented based on professional experience, published sources, computer databases, and other available documentation for the general response actions identified in Section 3.1. This step may eliminate a general response action from the FS process if there are no feasible technologies identified. The object, however, is to retain the best technology types and process options within each general response action and to use them to develop remedial alternatives.

The evaluation and screening of technology types and process options for soil is presented in Table 3-2. Each technology type and process option is either a demonstrated, proven process, or a potential process that has undergone laboratory trials or field-scale testing.

The primary screening of technology types and process options is presented in the first seven columns of the tables based on technical implementability. The factors in this evaluation include the state of technology development; site conditions; waste characteristics; the nature and extent of contamination; and the presence of constituents that could limit the effectiveness of the technology. Entire technologies and individual process options were eliminated from further screening based on technical implementability, as shown in column 7, and were not evaluated further. Those technologies screened out are shown in shaded background.

Technologies and process options that remained after the primary screening were further evaluated using a qualitative comparison based on effectiveness, implementability, and cost (presented in columns 8, 9 and 10, respectively of Table 3-2). These secondary screening criteria are defined as follows:

- **Effectiveness** is the ability of the technology or process option to perform adequately to achieve the remedial objectives alone or as part of an overall system.
- **Implementability** refers to the relative degree of difficulty expected in implementing a particular measure under practical technical, regulatory, and schedule constraints.
- **Relative cost** is comparative only and is judged similar to the effectiveness criterion. It is used to preclude further evaluation of process options that are very costly where there are other choices that perform similar functions with comparable effectiveness. It includes construction and long-term operation and maintenance costs.

Those technologies and process options considered infeasible based on effectiveness, implementability, and cost is shown in shaded background. The following sections highlight technologies where more detailed evaluation was necessary to distinguish between technologies or process options during the secondary screening.

3.2.1 Containment

Under the containment response, asphalt or concrete caps, native soil caps and surface controls such as grading and revegetation in combination with capping were selected because they achieve the remedial objectives of preventing direct contact exposure and erosion, while also being implementable in an urban area of residential properties. Caps consisting of low permeability layers were not retained because leaching of contaminants to groundwater is not a migration pathway of concern. Also they would be ineffective on residential properties where tree roots and subsurface utilities would penetrate the cap.

Regrading to prevent erosion along the banks of Moncrief Creek was also retained. Other erosion control techniques applicable to bank stabilization such as erosion control blankets, rip rap etc., will also be considered during alternative development. Regrading to smooth the ground surface on portions of the school property would be accomplished prior to placement of the native soil cap. Once the soil cap is placed the areas would be revegetated with sod on residential properties or seeded on the school property.

3.2.2 Removal

Excavation of contaminated soil would be carried out using small construction equipment such as mini-excavators and bobcats on residential properties and ordinary construction equipment such as, backhoes, bulldozers, and front-end loaders on larger areas such as the school property. The objective of excavation would be to remove all contaminated soil exceeding RGOs. In areas where this may not be feasible because of the depth of contamination, removal of sufficient soil to allow placement of a native soil cap would be the primary objective.

3.2.3 In-situ Treatment

In-situ soil mixing and solidification/stabilization were retained as process options within the physical treatment technology. In-situ soil mixing could be used either by itself to reduce COC concentrations below RGOs where soil is marginally contaminated above RGOs or it can be used in combination with solidification/stabilization. If used alone in-situ soil mixing would reduce concentrations to below RGOs by mixing soils exceeding criteria with deeper soils within the regulated exposure depth that have concentrations less than the criteria, resulting in soil throughout the regulated exposure depth that meets the RGOs. Soil outside of the regulated exposure depth would not be included. In-situ solidification/ stabilization would be used in areas such as along the creek banks where erosion is a significant concern. In-situ solidification does not eliminate or reduce the contaminants, but isolates them and reduces their mobility. It would not be used on residential properties because it significantly lowers the permeability of the soil leading to poor infiltration of rainwater, surface water ponding and difficulty in maintaining a grass cover on the surface.

Natural attenuation was retained as a process option within in-situ biological treatment because the organic COCs such as PAHs are known to slowly biodegrade over time. It could

not be used however for the majority of the areas exceeding RGOs because lead does not biologically degrade and does not attenuate significantly over time.

Phytoremediation was also considered for biological in-situ treatment of the upper 2 feet of soil on the school property or other open non-residential areas. It has been pilot tested for removal of lead through the uptake of lead in plant roots and bioconcentration in the plant biomass. The lead is ultimately removed from the site through crop harvesting and offsite disposal in a landfill.

Indian Mustard (*Brassica juncea)* has shown promise as one of the best crops for phytoextraction of lead. A synthetic chelate such as HEDTA (hydroxyethyl-ethylene-dinitrilo-triacatic acid), is applied to the soil to increase the bioavailability and uptake of lead. Lead has been shown to concentrate to 2,000 mg/kg in the crop (USEPA Office of Solid Waste and Emergency Response, August, 2000. An Overview of Phytoremediation of Lead and Mercury). While concentrations of lead on the order of 2,000 mg/kg are necessary to allow substantial removal of lead from the soil, they may result in the crop becoming a characteristic D008 hazardous waste because the lead may cause the crop to exceed the lead TCLP limit of 5 mg/L. In this case the crop would require solidification prior to landfill disposal.

The time needed for phytoextraction of lead to reduce concentrations to below the RGO is estimated at about 40 years. This estimate is based on the following:

- Bioconcentration of lead to 2,000 mg/kg,
- an initial average soil lead concentration of 2,500 mg/kg,
- a biomass production rate of 40 tons/acre/crop and
- three crops/year.

In addition to this considerable time, there would be substantial annual operational costs for application of the synthetic chelate, planting and harvesting the crops, solidification and offsite disposal of the crop. Given the many disadvantages such as the limited area and depth for which it applies, the substantial time required and the high costs, it was not retained.

3.2.4 Ex-situ Treatment

Ex-situ solidification/ stabilization was retained as the only process option for the ex-situ treatment technology. It would be used as necessary to treat the excavated soil to below LDRs for contaminated soil and below TCLP limit for lead. Once treated to these levels the soil would no longer be a hazardous waste and could be disposed as a special waste at a Subtitle D landfill.

Ex-situ acid extraction chemical treatment was also considered for lead removal. The unit processes for treatment include material segregation and classification, mixing and acidification of soil to leach the lead, and treatment of aqueous leachate using liquid ion exchange or similar process. The unit cost of this treatment system is $100 to $200/ton. Additional costs would be incurred for pilot testing, start-up and treated soil disposal. The recovered lead may be recyclable but if not, it would require solidification and disposal in landfill. This technology was screened out based on the high cost relative to other ex-situ treatment technologies such as solidification/stabilization.

Ex-situ thermal treatment of the soil in a secondary lead smelter was also evaluated. However it was screened out because it is not implementable for contaminated soils or for wastes having less than 2% lead (20,000 mg/kg). The large majority of the excavated material is a mix of incinerator ash and soil having less than 5,000 mg/kg lead.

3.2.5 Disposal

Disposal options for excavated soil that survived the primary screening included onsite consolidation, disposal in a hazardous waste landfill and disposal in a solid waste Subtitle D landfill. Onsite consolidation of excavated soils involves excavating the soils from surrounding areas and placing them on contaminated areas of the former school property. Once consolidated, the soil would exceed 10 feet in height. This would then be covered with native soil and revegetated. While technically the soil could be consolidated onsite and capped with sufficient cover soil to prevent erosion or direct contact exposures, the area would require perpetual care. Routine mowing, inspections and erosion repair would be needed. Onsite consolidation of excavated soils on the former school property was screened out because it does not offer significant cost savings and the urban location makes it a poor choice for long-term disposal.

Disposal of excavated soil at a hazardous waste landfill was also screened out because the majority of the soil is not expected to be a hazardous waste and can be disposed at a Subtitle D solid waste landfill. The extra protection that hazardous waste landfills have been designed to include are not necessary for soil that has relatively low concentrations (compared to typical hazardous waste) of low mobility contaminants such as lead and PAHs. Portions of the excavated soil that exceed the lead TCLP limit of 5 mg/L would be solidified onsite to levels below LDRs and characteristic waste limits prior to offsite disposal.

3.3 Technology Screening Summary

Table 3-3 summarizes the technologies that passed the primary and secondary screening processes.

Section 4.0

4.0 Development of Alternatives

4.1 Alternatives Development

The remedial technologies and process options that remain after screening were assembled into a range of alternatives to allow decision makers to fully evaluate the advantages and disadvantages of the alternatives relative to the NCP detailed evaluation criteria. Following No Action, each succeeding alternative offers increasing levels of control of the soil contamination. The specific details of the remedial components discussed for each alternative are intended to provide sufficient detail to allow detailed evaluation and development of order-of-magnitude cost estimates. Details of the selected remedy may be refined during design. The following sections provide a detailed description of each alternative.

4.2 Alternative Descriptions

Four alternatives were developed to address a range of remedial actions and include all the remaining technologies into at least one alternative. Table 4-1 presents a matrix of the main components included in each alternative.

4.2.1 Alternative 1 – No Action

The objective of Alternative 1, the No Action Alternative, is to provide a baseline for evaluation of remedial alternatives, as required by the NCP. Under this alternative there would be no remedial actions conducted at the site to control exposure to COCs exceeding RGOs.

The risks identified in the human health and ecological risk assessments would continue unabated. The risks to residents exposed to the surface or subsurface soil, groundwater and Moncrief Creek for the school property and the fenced area north of the property exceed the acceptable non cancer risk threshold (HI greater than 1) and exceed an ELCR of 1×10^{-4}. Also, soil lead concentrations greater than 400 mg/kg in residential areas surrounding the school property are considered a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness.

4.2.2 Alternative 2 – Soil Cover with Excavation and Offsite Disposal

The remedial objectives are met by Alternative 2 primarily by providing a cover of uncontaminated soil over all parcels and areas exceeding RGOs. This prevents direct contact, ingestion or inhalation of surficial soils by residents while also preventing impacts to terrestrial biota. Exposure to subsurface soils is addressed through administrative notices and restrictions on excavation of subsurface soil. Erosion of soils and ash exceeding RGOs is also prevented in this alternative through stabilization of the banks of Moncrief Creek. Figure 4-1 presents the layout of Alternative 2. The main components of this alternative are:

- Administrative restrictions
- Soil cover with excavation where required and offsite disposal
- Solidification/stabilization
- Bank stabilization

These components are discussed below.

4.2.2.1 Administrative Restrictions

The objective of administrative restrictions is to provide notice of subsurface soil contamination and restrict excavation within the subsurface contaminated soil. The restrictions would apply to all areas where subsurface soil exceeds RGOs. In cases where excavation within the contaminated subsurface soil is required (for example for utility repair work), the restrictions would specify that proper health and safety procedures are used and that the subsurface soil is disposed properly at permitted facilities. Permanent placement of excavated subsurface soil on the surface would not be allowed.

The precise administrative mechanisms to be used would be determined during pre-design. Mechanisms such as a local ordinance, building permits, deed notices and restrictive covenants would be considered. The measures would specify: (1) the areas of soil contamination in excess of RGOs, (2) excavation within the areas must comply with Occupational Safety and Health Administration (OSHA) requirements for health and safety protection, (3) any excavated soils exceeding RGOs be managed in accordance with applicable laws, (4) where buildings, sidewalks or roadways which overly soil/ash exceeding RGOs are removed, a soil cover will be replaced to cover the area, and (5) activities that threaten the long-term integrity of the soil covers are not permitted.

4.2.2.2 Soil Cover With Excavation and Offsite Disposal

A 0.5 foot thick soil cover would be placed over all areas where surface soil (0 to 0.5 feet bgs) exceeds RGOs. This would include both residential lots and nonresidential parcels such as the school property, Moncrief Village and the undeveloped parcels north of the school property. The purpose of the cover soil would be to prevent direct contact with contaminated soil, prevent erosion of contaminated soil and minimize impacts to terrestrial biota. Garden and playground areas would be provided with a minimum of 2 feet of cover soil.

Some parcels currently residential may be redeveloped as industrial in the future according to the City of Jacksonville Comprehensive Development Plan. These lots, if unoccupied, would be designated only for industrial land use and remediated to industrial cleanup standards (FDEP Industrial SCTLs). The FDEP Industrial SCTLs included in FAC 62-777 would be used as the default values for site cleanup. Remediation of industrial land use parcels may consist of asphalt or concrete cover with soil removal as needed to provide a minimum 0.5 foot clean cover. Any soil excavated for foundations or basements would be solidified as necessary and disposed offsite at a subtitle D landfill.

Other residential and nonresidential areas of surface soil contamination exceeding RGOs would be excavated as necessary to allow placement of the soil cover without creating storm water drainage problems or surface grade problems with fixed surface features or structures. For example it is anticipated that the majority of surface soils on residential lots

exceeding RGOs would have to be excavated prior to cover placement because of the presence of concrete driveways, sidewalks, and the need to maintain the existing grade surrounding buildings. Areas exceeding RGOs below existing buildings, roadways, asphalt or concrete driveways and sidewalks would be considered adequately covered. It is estimated that about 200 residential lots would require soil excavation and cover placement under this alternative. The combined in-situ soil volume estimated to be excavated from residential and non-residential areas is about 30,000 cys.

Excavation and cover placement would be conducted in a manner to allow residents to safely remain in their homes. US EPA discourages relocation of residents unless necessary to protect their health during remediation activities. Prior to excavation however, the City would consult with residents relative to their desires for alternative housing during the several days of excavation work. Paid housing in nearby hotels would be offered and it is assumed, for cost estimating, that about 1/3 of residents would desire this option. However, if house repair/replacement is required, then an analysis of case specific factors will be used in weighting the option of permanent relocation. Residents would also be consulted relative to replacement of any shrubbery, small trees, fencing etc. that may need to be removed during excavation. Efforts would be made to minimize removal of bushes, flowers or other vegetation that residents desire to retain. Large trees would not be removed. Soil would be carefully removed in these areas by hand excavation. The majority of excavation would be performed with small excavation equipment such as mini-excavators and bobcats. Existing concrete or asphalt sidewalks and driveways would not be removed. Following excavation, topsoil would be placed sufficient to provide a minimum 0.5 foot cover and re-establish needed grades. Garden and playground areas would be provided a minimum of 2 feet of cover soil. The entire area would then be sodded with grass.

Soil removed during excavation would be tested for TCLP lead. Soils meeting the TCLP limit would be loaded onto trucks, transported to the Subtitle D Trail Ridge Landfill and disposed as a solid waste. Soils failing the TCLP limit would be transported to a temporary solidification/stabilization facility. The soils would be mixed with chemical solidification/ stabilization agents such as cement to reduce the leachability of lead to below the TCLP limit. The treated soils would be transported and disposed at the Trail Ridge landfill as solid waste. Based on existing TCLP results for soils, it is assumed that about 10% of soils would require solidification/stabilization prior to disposal.

4.2.2.3 Bank Stabilization

The banks of Moncrief Creek which contain visible ash would be stabilized through reducing sideslopes and revegetating with erosion control matting to prevent erosion of ash into Moncrief Creek. It is estimated that about 3,600 feet along the south bank and about 1,900 feet along the north bank would be stabilized.

Stream banks would be cleared of vegetation and banks judged to have an excessive slope would be cut back. Erosion control matting would be placed, cover soil added and a new grass cover established on the sideslopes. An option for providing at least two feet of clean soil between the bank stabilization measures and the ash/soil contamination would be considered also. Excavated soil would be disposed offsite at the Trail Ridge landfill. Soil/ash that fails TCLP will be solidified prior to disposal at the landfill.

Silt fences or other barriers would be used to protect the creek during remedy implementation. The manner in which the creek will be protected in the long term will be the subject of an erosion and sediment control plan. Some post remedy sampling/monitoring of the creek/bank stabilization would be needed to ensure that the soil remediation and the bank stabilization is working.

4.2.3 Alternative 3 – Shallow Excavation, Offsite Disposal, and Soil Cover

The remedial objectives are met under Alternative 3 by providing at least 2 feet of soil meeting RGOs over all parcels and areas exceeding RGOs and administrative notices and restrictions on excavation of subsurface soil. The minimum 2-foot thick of soil meeting the RGOs will result in excavation and offsite disposal of much of the shallow (0-2 ft bgs) soil contaminated above RGOs. Erosion of soils and ash exceeding RGOs is also prevented in this alternative through stabilization of the banks of Moncrief Creek. The areas to be covered and the stream banks to be stabilized are shown in Figure 4-1. The main components of this alternative are:

- Administrative restrictions
- Shallow soil excavation, offsite disposal and soil cover
- Solidification/stabilization
- Bank stabilization

These components are discussed below.

4.2.3.1 Administrative Restrictions

The administrative restrictions are as described under Alternative 2. The restrictions would apply to all areas where subsurface soil exceeding RGOs remains following excavation and offsite disposal. Because more (greater depth) of soil is removed in this alternative, a smaller area would require restrictions.

4.2.3.2 Shallow Soil Excavation, Offsite Disposal, and Soil Cover

The areas identified in Figure 4-1 would be remediated as necessary to provide a minimum of 2 feet of soil meeting RGOs. In general this would be accomplished through excavation of soil in the upper 2-feet that exceeds RGOs and replacement with clean topsoil. However there may be parcels where thin veneers of soil marginally exceeding RGOs can be tilled such that the upper 2 feet then meets RGOs. The application of tilling will be used sparingly, and will be made on a case by case basis that will require EPA approval. Tilling will require confirmation sampling and a contingency excavation if confirmation sampling shows elevated levels remaining. Also, undeveloped parcels north of the school property may receive 2 feet of clean cover soil without excavation, provided drainage and other grade considerations can be satisfied. However, if removal of two feet of contaminated soil will remove all or a substantial amount of the contamination from the undeveloped parcels to the north of the school property, then removal as opposed to soil cover will be preferable. Areas exceeding RGOs below buildings, roadways, asphalt or concrete driveways and sidewalks would be considered adequately covered. The purpose of the cover soil would be to prevent direct contact with contaminated soil, prevent erosion of contaminated soil and minimize impacts to terrestrial biota.

Similar to Alternative 2, parcels currently residential that are designated to be redeveloped for industrial land use would be remediated to industrial cleanup standards (lead = 1,400 mg/kg). Remediation of industrial land use parcels may consist of asphalt or concrete cover with soil removal as needed to provide a minimum 2 foot clean cover. Any soil excavated for foundations or basements would be solidified as necessary and disposed offsite at a subtitle D landfill.

As in Alternative 2, areas of soil contamination exceeding RGOs would be excavated as necessary to allow placement of the soil cover without creating storm water drainage problems or surface grade problems. It is assumed for cost estimating that all residential properties exceeding RGOs (estimated at 200 properties) would have the full thickness of soil exceeding RGOs, up to a maximum thickness of 2 feet, excavated and disposed offsite. This soil combined with soil from non-residential properties is estimated to be about 85,000 cys.

Soil excavation, soil cover placement and sodding would be as described under Alternative 2. Soil removed during excavation would be tested for TCLP lead. Soils meeting the TCLP limit would be loaded onto trucks, transported to the Trail Ridge Landfill and disposed as a solid waste. Soils failing the TCLP limit would be transported to a temporary solidification/stabilization facility. The treated soils would be transported and disposed at the Trail Ridge landfill as solid waste.

4.2.3.3 Bank Stabilization

The banks of Moncrief Creek would be stabilized as described under Alternative 2.

4.2.4 Alternative 4 – Deep Excavation and Offsite Disposal

The remedial objectives are met by Alternative 4 by excavation of all soil exceeding RGOs that is not below existing structures and roadways and administrative notices and restrictions on excavation of subsurface soil that remains below structures or roadways. The areas to be excavated are shown in Figure 4-2. The main components of this alternative are:

- Administrative restrictions
- Soil excavation and offsite disposal

These components are discussed below.

4.2.4.1 Administrative Restrictions

The administrative restrictions are as described under Alternative 2. The restrictions would apply to all areas where subsurface soil exceeding RGOs remains following excavation and offsite disposal. Under Alternative 4 this is limited to the areas below structures and roadways.

4.2.4.2 Soil Excavation and Offsite Disposal

All soils exceeding RGOs to the maximum depth of the water table would be excavated. Soil exceeding RGOs below buildings, roadways, driveways and sidewalks would not be removed. It is estimated that about 200 residential properties would have soils excavated and disposed offsite. This soil combined with soil from non-residential properties is estimated to be about 290,000 cys.

Soil excavation would be as described under Alternative 2. Soil removed during excavation would be tested for TCLP lead. Soils meeting the TCLP limit would be loaded onto trucks, transported to the Trail Ridge Landfill and disposed as a solid waste. Soils failing the TCLP limit would be transported to a temporary solidification/stabilization facility. The treated soils would be transported and disposed at the Trail Ridge landfill as solid waste.

Following excavation the areas would be backfilled with clean fill and topsoil. Backfilling is assumed to be to original grade. Clean fill and an upper 0.5 foot topsoil layer would be used for backfilling.

Section 5.0

5.0 Detailed Analysis of Alternatives

5.1 Introduction

The detailed analysis of alternatives presents the relevant information needed to compare the remedial alternatives. Detailed analysis of alternatives consists of a detailed evaluation of each alternative against the evaluation criteria followed by a comparative evaluation.

5.1.1 Evaluation Criteria

In accordance with the National Contingency Plan (NCP), remedial actions must:

- Be protective of human health and the environment
- Attain applicable or relevant and appropriate requirements (ARARs) or provide grounds for invoking a waiver of ARARs that cannot be achieved
- Be cost-effective
- Utilize permanent solutions and alternative treatment technologies or resource-recovery technologies to the maximum extent practicable
- Satisfy the preference for treatment that reduces toxicity, mobility, or volume (TMV) as a principal element

The NCP also emphasizes long-term effectiveness and related considerations including:

- The long-term uncertainties associated with land disposal
- The goals, objectives, and requirements of the Solid Waste Disposal Act
- The persistence, toxicity, and mobility of hazardous substances and their constituents and their propensity to bioaccumulate
- The short- and long-term potential for adverse health effects from human exposure
- Long-term maintenance costs
- The potential for future remedial action costs if the selected remedial action fails
- The potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment

Provisions of the NCP require that each alternative be evaluated against nine criteria listed in 40 CFR 300.430(e)(9). These criteria were published in the March 8, 1990 *Federal Register* (55 *FR* 8666) to provide grounds for comparison of the relative performance of the alternatives and to identify their advantages and disadvantages. This approach is intended to provide sufficient information to adequately compare the alternatives and to select the most appropriate alternative for implementation at the site as a remedial action. The evaluation criteria are:

- Overall protection of human health and the environment
- Compliance with ARARs
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost
- Community acceptance
- State acceptance

The criteria are divided into three groups: threshold, balancing, and modifying criteria. Threshold criteria must be met by a particular alternative for it to be eligible for selection as a remedial action. There is little flexibility in meeting the threshold criteria—either they are met by a particular alternative, or that alternative is not considered acceptable. The two threshold criteria are overall protection of human health and the environment, and compliance with ARARs. If ARARs cannot be met, a waiver may be obtained when one of the six exceptions listed in the NCP occurs (see 40 CFR 300.430 (f)(1)(ii)(C)(1 to 6).

Unlike the threshold criteria, the five balancing criteria weigh the trade-offs between alternatives. A low rating on one balancing criterion can be compensated by a high rating on another. The five balancing criteria include:

- Long-term effectiveness and permanence
- Reduction of TMV through treatment
- Short-term effectiveness
- Implementability
- Cost

The modifying criteria are community and state acceptance. These are evaluated following public comment and are used to modify the selection of the recommended alternative. As a result, community and state acceptance is not addressed in this FS. The remaining seven evaluation criteria are briefly described in Table 5-1.

The level of detail required to analyze each alternative against these evaluation criteria depends on the nature and complexity of the site, the types of technologies and alternatives being considered, and other project-specific considerations. The analysis is conducted in sufficient detail to understand the significant aspects of each alternative and to identify the uncertainties associated with the evaluation.

5.2 Detailed Evaluation of Remedial Alternatives

The four remedial alternatives described in Section 4 are:

1. No Further Action
2. Soil Cover with Excavation and Offsite Disposal
3. Shallow Excavation, Offsite Disposal, and Soil Cover
4. Deep Excavation and Offsite Disposal

These four alternatives were evaluated in detail using the seven evaluation criteria described in Section 5.1. The detailed evaluations are presented in Table 5-2.

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5.3 Comparative Analysis of Remedial Alternatives

The four remedial alternatives are compared against each other to evaluate the relative performance of each alternative in relation to each of the criteria. The comparative analysis is presented below.

5.3.1 Overall Protection of Human Health and the Environment

Alternative 1 (no further action) is not protective because the unacceptable risks identified in the risk assessment are not reduced and the remedial objectives would not be attained. The remaining alternatives would be protective of human health and the environment. Alternatives 2 and 3 are similar in their overall protectiveness because potential risks related to exposure to the contaminated soils are eliminated and risks related to erosion of ash to Moncrief Creek are eliminated. Alternative 3 is somewhat better in terms of overall protection because it provides a thicker barrier of soil to minimize the potential for risks related to exposure to subsurface soil or accumulation of chemicals in vegetables for those who garden. Alternative 3 does increase risks related to construction compared to Alternative 2, though these risks should be manageable.

While Alternative 4 removes the greatest amount of soil exceeding RGOs, this reduction in residual risk is counterbalanced by an increase in risks to the community during the estimated 32 month construction period and the substantial truck traffic (estimated 75,000 truck loads) that would occur. These risks related to construction could be significant and would have to be actively managed. Dust control efforts will be important because nearly all the ash with high concentrations of lead will be excavated, loaded into trucks and transported offsite. The potential for vehicle or pedestrian accidents is much higher for this alternative because of the estimated 75,000 trucks to be loaded and driven through the surrounding neighborhoods during the 32 month construction period.

5.3.2 Compliance with ARARs

Appendix A presents a compilation and evaluation of state and federal chemical-specific, location-specific, and action-specific ARARs. All alternatives other than No Action meet ARARs. Alternative 2 would not meet the TBC requirement of FAC 62-785 Brownfield Cleanup Criteria for a minimum of 2 feet of soil meeting residential cleanup criteria. Alternative 2 provides a minimum of 0.5 feet of cover soil meeting RGOs rather than 2 feet.

5.3.3 Long-term Effectiveness and Permanence

All alternatives result in soil remaining that exceeds the RGOs. There is an estimated 340,000 cys of soil above the water table that would remain under the No Action alternative. Alternative 2 would result in removal of about 30,000 cys, leaving 310,000 cys. Alternative 3 would result in a residual volume of about 255,000 cy. Alternative 4 would leave about 50,000 cys below roadways, buildings, driveways and sidewalks.

Alternatives 2, 3 and 4 all rely on institutional controls to prevent excavation of subsurface soil exceeding RGOs with subsequent spreading on the surface where long-term exposure could occur. Alternative 4 offers the greatest long-term effectiveness because it relies on institutional controls only for soils that are already isolated from the potential for exposure (i.e., below buildings, roadways etc.) Alternative 2 is the least favorable in terms of long-term effectiveness because it provides for only 0.5 feet of cover soil. The institutional

controls for this alternative though are still considered adequate and reliable because only commercial construction contractors would have the equipment to engage in the amount of excavation that could result in enough subsurface soil to be spread on the surface to pose a substantial threat. These contractors would be notified of the requirements for excavation and proper disposal of soils through the construction permit process. It would be more difficult to ensure proper excavation of soils below either 0.5 feet (Alternative 2) or 2 feet (Alternative 3) by individual residents. However, these activities would typically be for small excavations such as for planting bushes or installing posts that would not result in substantial risk if the soil were spread on the surface. Alternative 2 would require a deeper 2 foot soil cover in garden and playground areas to minimize risks.

5.3.4 Reduction of Toxicity, Mobility, and Volume (TMV) Through Treatment

TCLP test data collected during the RI suggests that about 10% of the soil exceeding RGOs will fail the TCLP limit for lead and require solidification prior to offsite disposal. As a result Alternatives 2, 3 and 4 will treat an estimated 3,000, 8,500 and 29,000 cys of soil, respectively. Solidification does not destroy the lead so therefore it is a reversible process, although the treated soil would be isolated in a subtitle D landfill and would not be expected to leach to groundwater over the long-term. Solidification will reduce the mobility of the contaminants; however, the volume is actually increased with the solidification materials. Therefore, the toxicity may be considered reduced proportionately over the increased volume, but the amount of contamination is not reduced. Alternative 1, No Action, would not result in any reduction of toxicity.

5.3.5 Short-term Effectiveness

Because there would be no remedial construction activities associated with Alternative 1 (No Further Action) this alternative has the least short-term construction impacts. The other alternatives would include construction activities with varying levels of impacts to construction workers, the community and the environment. The amount of impact is proportional to the amount of excavation of contaminated soil and the amount of truck traffic through the neighborhoods. The estimated number of truck loads of soil, trucks per day and the duration of construction are:

- Alternative 2- 11,000 tuck loads, 30 trucks/day, 18 month construction
- Alternative 3- 32,000 tuck loads, 60 trucks/day, 24 month construction
- Alternative 4- 75,000 tuck loads, 110 trucks/day, 32 month construction

Alternative 4 would have by far the greatest impact to the community during the estimated 32 month construction period. Alternatives 2 and 3 have considerably less impact to the community. Potential impacts to workers can be minimized through adherence to proper health and safety requirements during excavation and cover activities. Likewise impacts to the environment can be minimized through mitigative measures such as use of silt fences to control erosion and watering of dry soils to minimize dust generation. Potential environmental impacts are most likely during bank stabilization of Moncrief Creek. All 3 alternatives incorporate the same bank stabilization measures.

5.3.6 Implementability

Excavation and placement of soil covers on residential properties will require extensive coordination with local community officials and individual residents. Alternatives 2

through 4 have the same implementability concerns relative to the substantial coordination because all three will target similar numbers of residential properties. The availability of local landfill capacity would be strained with implementation of Alternative 4 because of the large volume of soil to be disposed (290,000 cys). Alternative No. 1, No Action, is considered already implemented.

5.3.7 Cost

The estimated costs for each alternative are summarized in Table 5-3. The table breaks down the estimated capital, average annual O&M, and net present worth. Appendix A contains detailed cost tables for each alternative.

The cost estimates presented above have been developed strictly for comparing the four alternatives. The final costs of the project and the resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, the implementation schedule, the firm selected for final engineering design, and other variables. Therefore, final project costs will vary from the cost estimates. Because of these factors, project feasibility and funding needs must be reviewed carefully before specific financial decisions are made or project budgets are established to help ensure proper project evaluation and adequate funding.

The cost estimates are order-of-magnitude estimates having an intended accuracy range of +50 to -30 percent. The range applies only to the alternatives as they are defined in Section 4 and does not account for changes in the scope of the alternatives. The specific details of remedial actions and cost estimates would be refined during final design.

A cost sensitivity analysis was performed to evaluate the effect of differing discount rates and volumes of contaminated media. Many other factors that have substantial uncertainty can also effect the present worth costs of alternatives but they are not as significant as the factors listed above. Remedy failure and its potential to require additional remedial work in future years is not significant at this site because the primary technologies are excavation and covering which are not technologies that are likely to fail. The project duration is also not likely to greatly affect the relative costs between alternatives because the duration would likely vary by only a few years at most.

Discount rates were varied because they effect the present worth costs of operation and maintenance (O & M). Table 5-4 presents the effects of varying discount rates. The baseline discount rate for alternative comparison is 7% and is shown in the middle column above. At the lower 3% discount rate, alternatives that rely more on O &M, such as Alternatives 2 and 3, increase in cost relative to Alternative 4 that has minimal O & M. However because of the relatively low O & M of Alternatives 2 and 3, this is small effect. A higher discount rate reduces the costs of these two alternatives relative to Alternative 4, but again only marginally.

Although Alternative 4 will remove the largest volume of contaminated soil, residual contaminated soil will remain at the site (e.g. under streets and sidewalks) and institutional controls will be necessary and require long term monitoring (and costs). As a result, a Five-Year Review will be needed for this alternative as well as Alternatives 2 and 3. The O&M costs include the cost of a Five-Year Review.

There is substantial uncertainty on the actual volumes of soil to be remediated under each of the alternatives. Additional sampling will be conducted prior to design and construction to determine the precise number of parcels to be remediated and the volume of soils to be excavated. Also, the actual cleanup goals and how they will be specifically applied during remediation will not be set until the Record of Decision (ROD) is finalized. They may vary from those assumed herein, particularly relative to the cleanup goals for arsenic and dioxins. A sensitivity analysis, however, cannot be performed on excavation volumes because it is not clear to what degree the volumes may change from those assumed for the baseline case.

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Tables

TABLE 2-1
Universal Treatment Standards (UTS) for Contaminated Soil
Brown's Dump Site Feasibility Study

Contaminant of Concern	UTS (mg/kg)	10 x UTS (mg/kg)	Maximum Soil Concentration (mg/kg)	Potential for Soil to Require Treatment to Meet LDRs for Contaminated Soil (Yes or No)
Aldrin	0.066	0.66	0.16	No
Benzo(a)anthracene	3.4	34	2.2	No
Benzo(a)pyrene	3.4	34	3.0	No
Benzo(b)fluoranthene	6.8	68	3.9	No
Benzo(k)fluoranthene	6.8	68	2.2	No
Chrysene	3.4	34	2.5 J	No
p,p-DDT	0.087	0.87	1.0	No [a]
Dibenz(a,h)anthracene	8.2	82	0.78	No
Dieldrin	0.13	1.3	0.1 J	No
Gamma-chlordane	.26	2.6	0.46	No
Indeno(1,2,3,-c,d)pyrene	3.4	34	1.6	No
PCBs (sum of all isomers)	10	100	0.26	No
Tetrachlorodibenzo-p-dioxins	0.001	0.01	0.0001687	No
TCLP Constituents	**UTS TCLP mg/L**	**10 x UTS mg/L**	**Maximum TCLP mg/L**	
Arsenic	5	50	0.05 U	No
Antimony	1.15	11.5	NA b.	No [c]
Barium	21	210	5.1	No
Cadmium	0.11	1.1	0.55	No
Chromium	0.6	6	0.5 U	No
Lead	0.75	7.5	84	Yes
Mercury	0.025	0.25	0.005 U	No
Vanadium	1.6	16	NA [b]	No [d]
Zinc	4.3	43	NA [b]	Yes [e]
Contaminants of Concern Without Universal Treatment Standards				
Aluminum				
Copper				
Iron				
Manganese				

[a] Only one sample of 36 samples analyzed for p,p DDT exceeded the 10 x UTS value of 0.87 mg/kg. The one exceedance was only marginally in exceedance. As a result, it is unlikely that soil will exceed the LDR treatment standard for p,p DDT.

[b] Antimony, vanadium and zinc were not analyzed for TCLP because the purpose of the TCLP analysis was to determine whether the soil was potentially a toxicity characteristic hazardous waste and these chemicals are not toxicity characteristic chemicals.

[c] Antimony cannot exceed the 10 x UTS standard of 11.5 mg/L in the TCLP test because the maximum detected soil concentration was 200 mg/kg, below the minimum of 230 mg/kg (assuming 100% of the antimony leached in the test) needed to potentially exceed the standard (note the test includes a 20 fold dilution).

[d] Vanadium very unlikely to exceed the 10 x UTS standard of 16 mg/L in the TCLP test because only 1 of 118 soil samples had vanadium greater than the minimum of 320 mg/kg (assuming 100% of the vanadium leached in the test) needed to potentially exceed the standard (note the test includes a 20 fold dilution).

[e] Zinc possibly could exceed the 10 x UTS standard of 43 mg/L in the TCLP test because 21 of 118 soil samples had zinc greater than the minimum of 860 mg/kg (assuming 100% of the zinc leached in the test) needed to potentially exceed the standard (note the test includes a 20 fold dilution).

U – not detected at or above concentration indicated

NA- not analyzed

J- estimated value

TABLE 2-2
Soil Remedial Goal Options
Brown's Dump Site Feasibility Study

Chemicals of Concern for Residential and School Properties	Surface Soil Background (mg/kg)	Subsurface Soil Background (mg/kg)	Hazard Index [b] (mg/kg)			Carcinogenic Risk [b] (mg/kg)			US EPA ARARs [b]	Ecological PRGs [c]	Florida Residential SCTLs (TBCs)
			0.1	1	3	1 x 10-6	1 x 10-5	1 x 10-4	(mg/kg)	(mg/kg)	(mg/kg)
Antimony	0.68	0.5	2.9	29	87	-	-	-	-	**5**	26
Arsenic	1.21	0.65	2.3	**23**	69	0.59	5.9	59	-	-	0.8
Barium	34.65	20.14	496	**4,960**	14,880	-	-	-	-	-	110
Cadmium	0.36	0.09	3.5	**35**	105	-	-	-	-	-	75
Copper	14.83	0.85	281	2,810	8,430	-	-	-	-	**61**	110
Lead	84.9	8.23	-	-	-	-	-	-	**400**	400 [a]	400
Manganese	46.41	10.4	479	**4,790**	14,370	-	-	-	-	-	1,600
Zinc	107.17	15.26	2,121	21,210	63,630	-	-	-	-	**200**	23,000
Benzo(a)anthracene	0.41	0.07	-	-	-	-	-	-	-	-	1.4
Benzo(a)pyrene	**0.49**	**0.11**	-	-	-	0.07	0.7	7	-	-	0.1
Benzo(b)fluoranthene	0.47	0.07	-	-	-	-	-	-	-	-	1.4
Benzo(k)fluoranthene	0.43	0.10	-	-	-	-	-	-	-	-	15
Chrysene	0.5	0.09	-	-	-	-	-	-	-	-	140
4,4'-DDT	0.003	0.0004	-	-	-	-	-	-	-	**0.043**	3.3
Dibenz(a,h) anthracene	0.08	0.08	-	-	-	-	-	-	-	-	0.1
Indeno(1,2,3-cd)pyrene	0.32	0.10	-	-	-	-	-	-	-	-	1.5
Carcinogenic PAHs	**0.69**	**0.22**	-	-	-	0.07	0.7	7	-	-	-
Aroclor-1260	0.006	0.008	-	-	-	**0.26**	2.6	26	-	-	0.5
2,3,7,8-TCDD	0.00000882	0.00000882	-	-	-	0.000003	0.00003	0.0003	**0.001**	-	0.000007
Chemicals of Concern for Residential Properties Only											
Aluminum	**3,365**	**7,151**	6,990	69,900	209,700	-	-	-	-	600	72,000
Chromium	12.06	6.82	21.1	**211**	633	-	-	-	-	-	210
Iron	**2,900**	**2,971**	2,105	21,050	63,150	-	-	-	-	200	23,000
Mercury	**0.12**	**0.028**	0.7	7	21	-	-	-	-	0.012 [a]	3.4
Vanadium	9.29	8.60	43	**430**	1,290	-	-	-	-	-	15
Aldrin	0.001	0.0002	-	-	-	**0.04**	0.4	4	-	-	0.07
Gamma-Chlordane	0.004	0.002	2.7	2.7	81	**1.85**	18.5	185	-		3.1
Dieldrin	0.004	0.0002	-	-	-	**0.04**	0.4	4	-	-	0.07

Bold values are the lowest RGO for a COC. Where an RGO less than background, the background value is shown as the RGO.

[a] Represents average soil concentration that should be the remedial goal for food chain exposure. PRG for mercury is based on methylated form.

[b] Source: Black and Veatch Special Projects Corporation, May 2002, Final Draft Ecological Risk Assessment, Revision 1, Brown's Dump, Jacksonville, Duval County Florida.

[c] Source: Black and Veatch Special Projects Corporation, September, 2002, Baseline Risk Assessment Brown's Dump.

- indicates no value is available.

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TABLE 2-3
Soil Samples with COCs > RGOs and Outside of Area with Ash >25% or Lead >400 mg/kg
Brown's Dump Site Feasibility Study

Soil Sample	COC Concentration > RGO (mg/kg)	RGO (mg/kg)	Discussion
Parcel 033	Dibenz(a,h)anthracene - 0.076 J	0.07 – 10^{-6} ELCR	Sample is from parcel at corner of 36th and Moncrief. This parcel was sampled in Phase 2 (BD033X0.5). Phase 2 sample had no COCs > RGOs and no ash. Lead is 33 mg/kg. **Not included in remediation area** because phase 1 sample was only marginally exceeding the 10^{-6} ELCR for one COC and the phase 2 sample had no COCs exceeding RGOs.
Parcel 059	Dieldrin- 0.1 J	0.04 – 10^{-6} ELCR	Sample is from parcel near 34th and Pierce. This parcel was sampled in Phase 2 (BD59X0.5). Phase 2 sample had ash <25% and lead < 400 mg/kg. **Not included in remediation area** because phase 1 sample is within the 10^{-5} and 10^{-6} ELCR for one COC, nearby parcels are not included in *remediation area and the dieldrin has not* been associated with the ash fill material.
Parcel 010	CPAHs- 0.78 to 3.1 Arsenic- 5	0.07 – 10^{-6} ELCR As Background 1.2 – mg/kg	Sample is from area NE of school property. Ash is reported in this area at 0 to 25 %. Lead is 77 mg/kg. Included in remediation area because surrounding area is included and arsenic > 1.2 mg/kg.
Parcel 041	Dibenz(a,h)anthracene - 0.12	0.07 – 10^{-6} ELCR	Sample is from parcel near 36th and Pierce and located between parcels include in remediation area. Ash is reported in sample at 0 to 25 %. Lead is 96 mg/kg. Included in remediation area because surrounding area is included.
Parcel 081	Dibenz(a,h)anthracene - 0.11	0.07 – 10^{-6} ELCR	Sample is from parcel at corner of 31st and Pierce. No ash is reported in sample. Lead is 18 mg/kg. Although dibenz(a,h)anthracene has been determined to not be site related, it is included in remediation area because surrounding area is included.
Parcel 260 (BD260)	Dioxin TEQ- 53.3 ng/kg	Background 8.82 – ng/kg	Residential parcel meets all other RGOs except dioxin TEQ > 8.82 ng/kg
Parcel 278 (BD278)	Dioxin TEQ- 14.2 ng/kg	Background 8.82 – ng/kg	Residential parcel meets all other RGOs except dioxin TEQ > 8.82 ng/kg
Parcel 070 (BD070)	Arsenic- 1.5J Dioxin TEQ- 25 ng/kg	Background 1.2 – mg/kg Background 8.82 ng/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg and dioxin TEQ > 8.82 ng/kg
Parcel 015 (BD015)	Arsenic- 1.5J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 024 (BDSB063)	Arsenic- 2J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 043 (BDSB073)	Arsenic- 1.4J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 085 (BD085)	Arsenic- 2.6J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg

TABLE 2-3
Soil Samples with COCs > RGOs and Outside of Area with Ash >25% or Lead >400 mg/kg
Brown's Dump Site Feasibility Study

Soil Sample	COC Concentration > RGO (mg/kg)	RGO (mg/kg)	Discussion
Parcel 091 (BD091)	Arsenic- 7.4J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 096 (BD096)	Arsenic- 1.9J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 134 (BD134)	Arsenic- 1.5J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 156 (BD156)	Arsenic- 3.4J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 164 (BDSB180)	Arsenic- 2.5	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 168 (BD168)	Arsenic- 6.1	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 183 (BD183)	Arsenic- 2.9J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 195 (BD195)	Arsenic- 3.4J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 206 (BDSB170)	Arsenic- 2.8	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 211 (BD211)	Arsenic- 2.7J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 217 (BDSB178)	Arsenic- 1.4J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 230 (BDSB109)	Arsenic- 1.6J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 232 (BDSB108)	Arsenic- 1.3J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 241 (BDSB152)	Arsenic- 8.2	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 256 (BDSB151)	Arsenic- 1.3J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 321 (BD321)	Arsenic- 1.3J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 347 (BD347)	Arsenic- 5.4J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 351 (BD351)	Arsenic- 2.3J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 701 (BD701)	Arsenic- 1.6J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 702 (BD702)	Arsenic- 1.6J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg
Parcel 703 (BD703)	Arsenic- 2.7J	Background 1.2 – mg/kg	Residential parcel meets all other RGOs except arsenic > 1.2 mg/kg

TABLE 2-3A
Ecological RGO Exceedance Samples, Parcels, and Status at the End of FS Implementation
Brown's Dump Site Feasibility Study

Sample Location ID	Location of the Sample in a Parcel	Color Coding in Section 4.0 Figures	Status
BDSB009	From the intersection of Rita & Nash go northeast to the 2nd parcel on the southeast side of street (adjacent to Moncrief Creek).	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB012	From the intersection of Rita & Nash go northeast to the 6th parcel on the southeast side of street (adjacent to Moncrief Creek).	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB014	In Parcel 006.	Pink	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB016	In Parcel 010.	Pink	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB045	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB046	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB054	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB055	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB058	It is within the large asymmetrical parcel identified as Moncrief Village. This parcel is located east across the street from the JEA substation.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB124	In Parcel 133.	Brown	Soils Proposed for Remediation
BDSB130	From the intersection of Connie and 33rd go southeast to the 6th parcel on the west side of Connie.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB134	It is located on the southwest corner of Etta and 33rd.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB136	In Parcel 177.	Brown	Soils Proposed for Remediation
BDSB097	From Parcel 228, it is west across the street from the north portion of parcel 228 (northwest corner of that intersection - Bessie Circle East and Bessie Circle South).	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB101	From the intersection of Bessie & 33rd, go north to the 5th parcel on west side of Bessie.	Brown	Soils Proposed for Remediation (In Phase 1 Area)

TABLE 2-3A
Ecological RGO Exceedance Samples, Parcels, and Status at the End of FS Implementation
Brown's Dump Site Feasibility Study

Sample Location ID	Location of the Sample in a Parcel	Color Coding in Section 4.0 Figures	Status
BDSB180	In Parcel 154.	White	No remediation
BDSB182	In Parcel 150.	Brown	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB039	In Parcel 003.	Pink	Soils Proposed for Remediation (Lead Exceeds)
BDSB040	In Parcel 004.	Pink	Soils Proposed for Remediation (Ash and Lead Exceeds)
BDSB041	In Parcel 003.	Pink	Soils Proposed for Remediation (Lead Exceeds)
BDSB042	In Parcel 016.	Green	Additional Sampling for COCs
BDSB043	In Parcel 022.	Green	Additional Sampling for COCs
BDSB149	In Parcel 160.	Brown	Soils Proposed for Remediation (Lead Exceeds)
BDSB189	In Parcel 078.	Green	Additional Sampling for COCs
BDSB307	In Parcel 233.	Green	Additional Sampling for COCs
BDSB066	In Parcel 032.	Green	Additional Sampling for COCs
BDSB108	In Parcel 232.	Brown	Soils Proposed for Remediation
BDSB304	From the intersection of Spires & 33rd go west to 1st road on left (Leonard) and turn south to the 3rd parcel on the west side of Leonard.	Brown	Soils Proposed for Remediation (In Phase 1 Area)
BDSB345	In Parcel 265.	Green	Additional Sampling for COCs
BDSB111	In Parcel 289.	Green	Additional Sampling for COCs
BDSB078	In Parcel 047.	Green	Additional Sampling for COCs
BDSB085	In Parcel 700.	Pink	Soils Proposed for Remediation (In Mary McCleod Bethune Elementary School Property)
BDSB110	In Parcel 293.	Green	Additional Sampling for COCs
BDSB170	In Parcel 206.	Brown	Soils Proposed for Remediation
BDSB311	In Parcel 317.	Brown	Soils Proposed for Remediation (Ash and Lead Exceeds)

TABLE 2-4
Soil Areas and Volumes Exceeding RGOs
Brown's Dump Site Feasibility Study

	Number of Parcels	Approx Width (ft)	Approx Length (ft)	Approx Area/ Parcel (sf)	Area (acres)	Average Thickness of Soil > RGOs (ft) [d]	In Situ Volume of Soil > RGOs (cy)	Average Thickness of Soil > RGOs From 0-2' bgs (ft) [e]	In Situ Volume of Soil > RGOs- From 0-2' bgs (cy)	In Situ Volume of Soil > RGOs- Maximum Excavation of 0.5 ft (cy)
Residential Parcels Requiring Remediation [a]										
Parcels East of Pearce	23	[b]	[b]	3,985	2.1	1.0	3,395	1.0	3,395	1,697
Parcels South of 33rd and West of Pearce	109	[b]	[b]	5,495	13.8	1.5	33,275	1.5	33,275	11,092
Parcels West of School	38	[b]	[b]	6,495	5.7	2.5	22,853	2.0	18,282	4,571
Parcels North of Railroad	50	[b]	[b]	6,495	7.5	2.0	24,056	1.0	12,028	6,014
Residential Parcels Subtotal	**220**				**29.0**		**83,578**		**66,980**	**23,374**
Residential Parcels Average Area and Volumes				***5,737***			***380***		***304***	***106***
Non-Residential Properties Requiring Remediation										
Moncrief Village	1	[b]	[b]	261,100	6.0	1.5	14,506	1.0	9,670	4,835
Area North of Moncrief Creek and South of Railroad	1	850	80	68,000	1.6	5.0	12,593	2.0	5,037	1,259
Area South of Moncrief Creek and North of Railroad	1	900	220	198,000	4.5	5.0	36,667	0.0	-	-
Area North of Moncrief Creek and East of Glenvale	1	250	480	120,000	2.8	4.0	17,778	2.0	8,889	2,222
School- Fenced Area North of School [c]	1	[b]	[b]	324,300	7.4	10.0	120,111	2.0	24,022	6,006
School- South Area [c]	1	[b]	[b]	253,250	5.8	1.5	14,069	1.5	14,069	4,690
Non-Residential Parcels Subtotal					**28.1**		**215,723**		**61,688**	**19,012**
Total Areas and Volumes					**57.1**		**299,301**		**128,668**	**42,386**

[a] Unsampled phase 2 residential properties were assigned to the remediation area based on proximity to other sampled properties requiring remediation and the overall pattern of ash deposits.
[b] See "Lot Sizes" spreadsheet for development of average lot size in each neighborhood and nonresidential area.
[c] Area of School property does not include electrical substation, or area below school buildings, driveways and parking lots.
[d] Average depth of soil estimated from Figure ES-1 Visible Ash Extent, Brown's Dump Site Remedial Investigation Report Revision 1, Sept. 2002.
[e] Average thickness of soil > RGOs in the depth interval of 0 to 2 ft bgs based on comparison of Figures 4-1 and 4-2 of Brown's Dump Site Remedial Investigation Report Revision 1, Sept. 2002. In residential areas it is assumed that the soil overlying ash would also be removed.

TABLE 3-1
Identification of General Response Actions for Soil
Brown's Dump Site Feasibility Study

General Response Action	Evaluation
No Action	Required by the NCP for comparison to other actions.
Monitoring	Used in conjunction with other containment and treatment general response actions to monitor effectiveness.
Institutional Controls	Reduces the likelihood of direct contact with or ingestion or inhalation of contaminated soil. Retained for use in conjunction with other general response actions.
Containment	Minimizes the exposure to contaminated soil. Confines contamination and reduces mobility of contamination.
Removal	Prevents direct contact with or ingestion or inhalation of contaminated soil.
In-situ Treatment	Reduces mobility, toxicity, or volume of contaminated media in place.
Ex-situ Treatment	Reduces mobility, toxicity, or volume of contaminated media after removal.
Disposal	Minimizes the likelihood of exposure to contaminants by placing them in a controlled environment.

TABLE 3-2
Technology Screening for Soil
Brown's Dump Site Feasibility Study

General Response Action	Remedial Technology	Process Options	Description	Primary Screening: Retain	Primary Screening: Reject	Primary Screening: Waste and Site Characteristics	Primary Screening: Effectiveness	Primary Screening: Implementability	Secondary Screening: Relative Capital Cost	Secondary Screening: Relative O & M Cost	Secondary Screening: Retain	Secondary Screening: Reject	Secondary Screening: Screening comments
		Secondary Smelting	Lead in recycled waste such as batteries are fed into in reverbatory or blast furnace for smelting.	X		Technically implementable.	Would be effective in removing lead from incinerator ash.	Not applicable to soils or materials having less than 2% lead (i.e. 20,000 mg/kg). Incinerator ash onsite is mixed with soil and is generally less than 5,000 mg/kg lead.	Moderate.	None.		X	Rejected because soils cannot be added to smelters and incinerator ash is less than the necessary 2% lead content.
	Biological Treatment	Landfarming	Organics degraded by microorganisms in an aerobic environment.		X	Effective for aerobically biodegradable organics but does not treat lead. Lead would have to be treated by an additional process.	Still a need to address lead concerns.						
Disposal	Consolidation	Onsite Consolidation	Consolidation of lead contaminated soil on the school property. Placement of cover over consolidated soils to minimize erosion and prevent direct contact exposures.	X		Technically implementable.	Effective. Onsite consolidation isolates wastes, preventing erosion and direct contact threats.	May be difficult to implement.	Moderate to high.	Moderate to high.		X	Rejected because urban location is not considered a good location for disposal of contaminated soil.
	Landfill	Hazardous Waste Landfill	Transport and dispose of untreated or treated material in an approved hazardous waste landfill (Subtitle C).	X		Technically implementable.	Good effectiveness because of multiple liners and covers incorporated into hazardous waste landfills.	Easily implemented.	Very high.	None.		X	Rejected because contaminants are not mobile. Much higher cost is not justified because special waste landfill offers similar effectiveness for immobile site COCs. Portions of the excavated soil that are characteristic hazardous waste must be treated to levels rendering it nonhazardous prior to land disposal even if the landfill is a Subtitle C hazardous waste landfill.
		Subtitle D Special Waste Landfill	Transport and dispose of untreated or treated soil in a nonhazardous waste landfill (Subtitle D) permitted to receive contaminated soil.	X		Technically implementable.	Good effectiveness because of multiple liners and covers incorporated into Subtitle D landfills.	Easily implemented.	Moderate to high	None.	X		Retained.

TABLE 3-2
Technology Screening for Soil
Brown's Dump Site Feasibility Study

				Primary Screening					Secondary Screening				
General Response Action	**Remedial Technology**	**Process Options**	**Description**	**Retain**	**Reject**	**Waste and Site Characteristics**	**Effectiveness**	**Implementability**	**Relative Capital Cost**	**Relative O & M Cost**	**Retain**	**Reject**	**Screening comments**
Treatment (Ex-situ)	Physical Treatment	Soil Vapor Extraction	Ex situ soil vapor extraction (SVE) is a full-scale technology in which soil is excavated and placed over a network of aboveground piping to which a vacuum is applied to encourage volatilization of organics. Soil piles are generally covered with a geomembrane to prevent volatile emissions and to prevent the soil from becoming saturated by precipitation.		X	Not applicable to lead and other low volatility COCs.							
		Solidification/Stabilization	Contaminants are physically bound or enclosed within a stabilized mass (solidification), or chemical reactions are induced between the stabilizing agent and contaminants to reduce their mobility (stabilization). Ex situ S/S typically requires disposal of the resultant materials. There are many innovations in the stabilization and solidification technology.	X		Retained because it may be needed to meet TCLP limits prior to disposal.	Effective. Solidification is routinely used to solidify soils failing TCLP.	Easily implementable. Solidification with pozzolonic additives is routine.	Moderate	None	X		Retained because it may be needed to meet TCLP limits.
		Soil Washing	Contaminants sorbed onto fine soil particles are separated from bulk soil in an aqueous-based system on the basis of particle size. Sometimes the wash water may be augmented with a leaching agent, surfactant, etc (see chemical extraction below).		X	Rejected because of limited mobility of lead.							
	Chemical Treatment	Chemical Extraction	Soil and extraction agent such as an acid are mixed in an extractor, dissolving the lead. The extracted water is subsequently chemically treated for removal of lead.	X		Technically implementable.	Acid extraction of lead from soil is technically feasible but requires many process units to separate the lead from the soil and remove dissolved lead from water.	Implementable but would require pilot testing to determine application rates, acid levels and water treatment methods. Would generate a waste sludge with high lead concentrations that would require solidification prior to disposal in a landfill.	High.	None.	X		Rejected because excessive cost to separate lead from soil. The same mass of lead may ultimately be disposed in a landfill under this technology compared to solidification/stabilization alone.
	Thermal Treatment	Incineration	High temperatures, 870 to 1,200°C (1,400 to 2,200°F), are used to volatilize and combust (in the presence of oxygen) halogenated and other refractory organics in hazardous wastes. Incineration is different from other thermal technologies in that it oxidizes bulk quantities of waste that may be in liquid and solid phase.		X	Not applicable to removal of lead. A more effective technology for lead removal is secondary smelting.	Secondary smelting is a more effective means of thermal treatment available.						

TABLE 3-2
Technology Screening for Soil
Brown's Dump Site Feasibility Study

General Response Action	Remedial Technology	Process Options	Description	Primary Screening: Retain	Primary Screening: Reject	Primary Screening: Waste and Site Characteristics	Primary Screening: Effectiveness	Primary Screening: Implementability	Secondary Screening: Relative Capital Cost	Secondary Screening: Relative O & M Cost	Secondary Screening: Retain	Secondary Screening: Reject	Secondary Screening: Screening comments
	Biological Treatment	Land Treatment	Impacted surface soil is treated in place by tilling to achieve aeration, and if necessary, by addition of amendments. Periodically tilling, to aerate the waste, enhances the biological activity.		X	Effective for aerobically biodegradable organics but does not treat lead. Soil in residential areas would be difficult to aerate. Lead would have to be treated by an additional process.							
		Natural Attenuation	Natural subsurface processes such as dilution, volatilization, biodegradation, adsorption, and chemical reactions with subsurface materials are allowed to reduce contaminant concentrations to acceptable levels.	X		Technically implementable for COCs such as PAHs and dioxins. Natural attenuation processes do not appreciably effect lead concentrations. Natural attenuation mechanisms such as biodegradation will result in diminishing concentrations of other COCs such as PAHs and dioxins.	Natural attenuation processes do not appreciably effect lead concentrations. Natural attenuation mechanisms such as biodegradation will result in diminishing concentrations of other COCs such as PAHs and dioxins.	Easily implemented. Monitoring would be required to measure the decline in concentrations of PAHs and dioxins.	Low.	Low.	X		Retained only for areas exceeding RGOs for COCs other than lead.
		Phytoremediation	Use of plants and their associated rhizospheric microorganisms to remove, transfer, stabilize, and/or destroy COC in soil or groundwater.	X		Technically implementable.	Phytoextraction has been demonstrated for removal of lead from soil. Indian Mustard has been shown to concentrate lead up to 2,000 mg/kg with the addition of a soil amendment (HEDTA) to increase uptake of lead in roots. About 160 pounds of lead could be removed/acre/crop in the biomass. However about 22,000 pounds of lead are present on average/acre, thus requiring about 40 years of crop growth and harvesting (assuming 3 crops/year).	Would require pilot testing to verify approach for soils. Implementable for open areas such as the school property but not residential yards.	Moderate.	High.		X	Rejected because phytoextraction is limited to upper 2 feet of soil, cannot be implemented in residential yards, lead removal rate is very low and biomass may require treatment prior to disposal, greatly increasing costs (see text for further discussion).
	Chemical Treatment	Surfactant/ Cosolvent Flushing (Soil Flushing)	Delivery of a solution that promote the dissolution of COCs into groundwater where they are extracted and treated. In some cases, the flushing solution is injected directly into the groundwater which raises the water table into the capillary fringe where high concentrations of COCs are often found. Flushing solutions for lead removal would include an acidic solution to mobilize lead.		X	Rejected because acid would corrode buried utilities, the mobilized lead would contaminate groundwater and be difficult to effectively remove, and it would be extremely difficult to implement in residential yards.							

TABLE 3-2
Technology Screening for Soil
Brown's Dump Site Feasibility Study

				Primary Screening					Secondary Screening				
General Response Action	**Remedial Technology**	**Process Options**	**Description**	**Retain**	**Reject**	**Waste and Site Characteristics**	**Effectiveness**	**Implementability**	**Relative Capital Cost**	**Relative O & M Cost**	**Retain**	**Reject**	**Screening comments**
Treatment (In-situ)	Physical Treatment	Electrokinetic Separation	Electrokinetic remediation is a process in which a low-voltage direct-current electric field is applied across a section of impacted soil. The principle of electrokinetics remediation is similar to a battery. After electrodes (a cathode and anode) are introduced and charged, particles (e.g., ions) are mobilized by the electric current. Ions and water move toward the electrodes.		X	Rejected because not proven effective for removal of lead and not implementable on residential yards.							
		In-Situ Soil Mixing (ISESM)	Use of mechanical equipment to physically mix the subsurface. Soil mixing can be combined with soil solidification/stabilization to minimize erosion potential and availability of soil for direct contact ingestion and inhalation.	X		Technically implementable.	Effective in reducing COC concentrations to below RGOs where deeper soil is minimally contaminated. Can also be used with stabilization additives to reduce erosion potential and availability of lead.	In-situ soil mixing has been used for a number of years in the construction industry. Implementation may be limited to shallow soils in areas populated with underground utilities.	Moderate.	None	X		Retained.
		Soil flushing	In situ leaching method using extraction wells and addition of water to soils to flush contaminants from soil.		X	Rejected because lead has limited mobility and would not flush to groundwater without the addition of flushing agents such as acid (see below for chemical removal technologies).							
		Stabilization/ solidification	Physically or chemically binds contaminants in solidified matrix.	X		Technically implementable.	Effective in limiting migration through erosion and limiting availability of lead or other COCs for direct contact ingestion or inhalation. May be effective for creek bank stabilization. Does not however remove contaminants.	Implementable.	Moderate.	Low	X		Retained.
		Soil Vapor Extraction	In situ process for removing VOCs from the vadose zone soil. VOCs are volatilized by forcing air through the subsurface using wells screened in the vadose zone.		X	Not applicable to lead and other low volatility COCs.							
		Vitrification	Soil heated and converted in place into durable glass-like material.		X	Energy intensive and not applicable due to many subsurface utilities onsite. Technology is not widely commercially available.							
	Thermal Treatment	Thermal Desorption	Desorbs organic compounds from soil at 500°F to 1,000°F.		X	Energy intensive and not applicable due to many subsurface utilities onsite. High energy required and this method generally causes electrical/fire concerns.							

TABLE 3-2
Technology Screening for Soil
Brown's Dump Site Feasibility Study

General Response Action	Remedial Technology	Process Options	Description	Primary Screening: Retain	Primary Screening: Reject	Primary Screening: Waste and Site Characteristics	Primary Screening: Effectiveness	Primary Screening: Implementability	Secondary Screening: Relative Capital Cost	Secondary Screening: Relative O & M Cost	Secondary Screening: Retain	Secondary Screening: Reject	Secondary Screening: Screening comments
		Clay Cap	2-foot-thick low-permeability clay cap. May include drainage layer and vegetative layer.		X	Rejected because the low permeability of clay is not needed because of the low mobility of lead and other COCs. Would not be suitable for residential lawns, vegetable gardens and ornamental plants.							
		Geomembrane Cap	Geomembrane cap and drainage layer with a vegetated soil cover.		X	Rejected because control of infiltration, for which the geomembrane is best suited, is not needed. The geomembrane would limit infiltration and could cause wet conditions on lawns and around homes.							
		Multilayer Cap	Synthetic membrane and 2-foot-thick low-permeability clay cap with a drainage layer and vegetated soil cover. Total cap thickness of about 5 feet.		X	Rejected because control of infiltration is not needed and not technically implementable in residential yards. The multilayer cap would require excavation of yards to about 5 foot depth to allow construction of the cap. Presence of underground utilities would make the cap ineffective. Drainage above impermeable layers would not be possible and cap integrity would be compromised because of root systems of large trees.							
		Native Soil	Non-impacted native soil placed over the areas exceeding RGOs.	X		Technically implementable. Suitable for low mobility contaminants such as Pb and other site COCs.	Effective in limiting direct human contact and minimizing erosion. Applicable to low mobility site COCs.	Easily implemented though may require some removal of contaminated soil to allow proper runoff from the lot. May require re-planting bushes and small trees and other fixed site features.	Low.	Low.	X		Retained.
	Surface Controls	Regrading and vegetation	Regrade to promote runoff and reduce infiltration, install stormwater diversions, and vegetate.	X		Technically implementable.	Effective in areas where erosion is a concern. Some regrading of school property and banks of Moncrief Creek may be necessary to minimize the potential for soil erosion.	Implementable but will require controls to minimize creek siltation and bank erosion during construction.	Low.	Low.	X		Retained.
Removal	Excavation	Excavation	Removal of contaminated soil with a variety of equipment such as mini-excavators, bobcats and hand tools.	X		Technically implementable.	Effective in removing contaminated soil exceeding RGOs. Soil contamination can be easily excavated. Near trees and buildings smaller excavation equipment is needed.	Implementation for residential property will require extensive coordination and planning.	Cost is moderate to high for excavation on small residential properties.	None	X		Retained.

TABLE 3-2
Technology Screening for Soil
Brown's Dump Site Feasibility Study

				Primary Screening					Secondary Screening				
General Response Action	**Remedial Technology**	**Process Options**	**Description**	**Retain**	**Reject**	**Waste and Site Characteristics**	**Effectiveness**	**Implementability**	**Relative Capital Cost**	**Relative O & M Cost**	**Retain**	**Reject**	**Screening comments**
No Action	None												Required by the NCP for comparison to other alternatives.
Monitoring	Soil Sampling and Analysis		Sampling and analysis of soil either to confirm adequacy of soil remediation or the long-term attenuation of contaminants.	X		Technically implementable.	Ineffective alone in meeting remedial objectives because lead does not attenuate appreciably over time. Used in conjunction with other technologies though it is effective for determining adequacy of remediation.	Easily implementable.	Low	Low	X		Retained.
Institutional Controls	Administrative Restrictions	Restrictive Covenants	Restrictive covenants on property deeds to provide notification of the presence of contaminated soil, require proper health and safety during excavation, and require proper disposal of excavated soil.	X		Technically implementable for portions of site.	Hazardous waste remains onsite. The effectiveness is dependent on the maintenance of the restrictions over time.	Potentially implementable on former school property but very difficult to implement on residential properties.	Low.	Low.	X		Retained.
		Local Ordinances, Building Permits, Deed Notices	Restrictions passed by city ordinance, deed notices and building permits to provide notification of the presence of contaminated soil, require proper health and safety during excavation, require proper disposal of excavated soil or potentially prevent future construction until sampling and potentially remediation is performed.	X		Technically implementable.	Hazardous waste remains onsite. The effectiveness is dependent on the maintenance of the restrictions over time.	Potentially implementable on former school property but very difficult to implement on residential properties.	Low.	Low.	X		Retained.
	Access Restrictions	Fence Site	Fence site to restrict access.		X	Fencing the former school property would prevent future use but is not reasonable given the need for useable land in this urban area. Not applicable to residential properties.							
Containment	Engineered Caps	Asphalt or Concrete Cap	Asphalt or concrete cap.	X		Technically implementable. Minimizes potential for direct contact and erosion.	Effective in limiting potential for direct contact and erosion. Contaminated soil is left onsite.	Not applicable to majority of site but can be used in areas where hard surfaces are desired such as sidewalks, driveways, and parking lots.	Low.	Moderate	X		Retained.
		Chemical Sealant/ Stabilizers	Water-dispersible emulsions and/or resins placed over the impacted areas to form a crust that reduces water and wind or dust erosion. Most are nontoxic to plants and animals. Temporary cover only.		X	Rejected for its temporary nature.							

TABLE 3-3
Retained Technologies and Process Options
Brown's Dump Site Feasibility Study

General Response Action	Technology	Process Options
No Action	None	None
Institutional controls	Administrative Restrictions	Restrictive Covenants
		Local Ordinances, Building Permits Deed Notices
	Monitoring	Soil Sampling and Analysis
Containment	Engineered Caps	Asphalt or Concrete
		Native Soil
	Surface Controls	Regrading and Vegetation
Removal	Excavation	Excavation
In-situ Treatment	Physical Treatment	In-Situ Soil Mixing
		Stabilization/ Solidification
	Biological Treatment	Natural Attenuation
Ex-situ treatment	Physical Treatment	Solidification/ Stabilization (as needed to meet TCLP limits and LDRs)
Disposal	Landfill	Subtitle D Landfill

TABLE 4-1
Assembly of Remedial Alternatives
Brown's Dump Site Feasibility Study

Technology/ Process Option	Alternative 1 No Action	Alternative 2 Soil Cover with Excavation and Offsite Disposal	Alternative 3 Shallow Excavation, Offsite Disposal and Soil Cover	Alternative 4 Deep Excavation and Offsite Disposal
No Action	X			
Monitoring		X	X	X
Administrative Restrictions on Land Use		X	X	X
Engineered Caps/ Asphalt or Concrete		X	X	
Native Soil		Minimum 0.5-foot Soil Cover	Minimum 2-foot Soil Cover	
Surface Controls/ Regrading and Vegetation		X	X	X
Excavation of Soil/ash		X	X	X
		As needed to provide soil cover	As needed to provide soil cover	All soil/ash > RGOs to water table
		Estimated 30,000 in-situ cys	Estimated 85,000 in-situ cys	Estimated 290,000 in-situ cys
Physical Treatment/ In-Situ Soil Mixing Stabilization/ Solidification		[a]	[a]	[a]
Physical Treatment/ Ex-Situ Solidification/ Stabilization		X	X	X
		As needed to meet LDRs	As needed to meet LDRs	As needed to meet LDRs
Subtitle D Landfill		X	X	X

[a] Ex situ stabilization of soil/ash exceeding TCLP limits prior to offsite disposal in a Subtitle D Landfill is included in alternative, thus making in-situ stabilization unnecessary.

TABLE 5-1
Detailed Evaluation Criteria
Brown's Dump Site Feasibility Study

Threshold Criteria	
Overall Protection of Human Health and the Environment	*Protectiveness is the primary requirement that remedial actions must meet under* Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). A remedy is protective if it adequately eliminates, reduces, or controls all current and potential risk posed by the site through each exposure pathway. The assessment against this criterion describes how the alternative achieves and maintains protection of human health and the environment.
Compliance with ARARs	Compliance with ARARs is a statutory requirement of remedy selection. ARARs are cleanup standards, standards of control, and other substantive environmental statutes or regulations that are either "applicable" or "relevant and appropriate" to the CERCLA cleanup action (42 USC 9621 [d] [2]). Applicable requirements address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site. Relevant and appropriate requirements are those that, while not applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to environmental or technical factors at a particular site. The assessment against this criterion describes how the alternative complies with ARARs or presents the rationale for waiving an ARAR. ARARs are identified in Appendix A and are summarized in Section 2.2.1.
Balancing Criteria	
Long-term Effectiveness and Permanence	This criteria reflects CERCLA's emphasis on implementing remedies that will protect human health and the environment in both the long term and the short term. The assessment of alternatives against this criterion evaluates the magnitude of residual risks at a site after completing a remedial action or enacting a no-action alternative and includes evaluation of the adequacy and reliability of controls.
Reduction of Toxicity, Mobility or Volume through Treatment	This criteria addresses the statutory preference for remedies that employ treatment as a principal element. Factors to be considered include: 1) the treatment or recycling process and materials treated, 2) the amount of contaminants destroyed, treated or recycled, 3) the expected reduction in TMV, 4) the degree to which the treatment is irreversible, 5) the type and quantity of treatment residuals, and 6) the degree to which the treatment reduces the inherent hazards posed by the principal threats at the site.
Short-term Effectiveness	Short-term effectiveness examines the effectiveness of alternatives in protecting human health and the environment (i.e., minimizing risk associated with an alternative) during construction and implementation of a remedy until the response objectives have been met. Factors to be considered include: 1) short-term risks to the community, 2) short-term risks to workers, 3) potential construction-related environmental impacts and 4) time until protection is achieved.
Implementability	Implementability addresses the technical and administrative feasibility of the alternative and the availability of the goods and services needed to implement it.
Cost	Cost encompasses all engineering, construction, and operation and maintenance (O&M) costs incurred over the life of the project. The assessment against this criterion is based on the estimated capital, operation and maintenance and present worth cost of each alternative. Present worth is a method of evaluating expenditures, such as construction and O&M, which occur over different lengths of time. This allows costs for remedial alternatives to be compared by discounting all costs to the year that the alternative is implemented. The present worth of a project represents the amount of money, which if invested in the initial year of the remedy and disbursed as needed, would be sufficient to cover all costs associated with the remedial action. As stated in the RI/FS guidance (USEPA 1988b), these estimated costs are expected to provide an accuracy of + 50 to - 30 percent. Appendix B provides a breakdown of the cost estimate for each alternative.

TABLE 5-2
Detailed Evaluation of Remedial Alternatives
Brown's Dump Site Feasibility Study

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
1. Overall protection of human health and the environment.	• The risks to residents exposed to the surface or subsurface soil for the school property area and the fenced area north of the property would continue to exceed the acceptable non cancer risk threshold (HI greater than 1) and exceed an ELCR of 1×10^{-4}. • Soil lead concentrations would continue to exceed the RGO of 400 mg/kg. Lead concentrations greater than this value in residential areas surrounding the school property are considered a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Land use restrictions to minimize potential exposure to subsurface soil exceeding RGOs would not be enacted.	• The soil cover, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil will be minimized through administrative restrictions. • Risk assessment concluded that a potential unacceptable risk exists from ingestion of vegetables grown in soil with lead exceeding RGOs. Excavation and backfilling with topsoil to depths of 2 feet would be necessary in areas where residents maintain vegetable gardens. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Stabilization of Moncrief Creek banks prevents erosion of soil and ash with subsequent contamination of creek sediments. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 12,000 trucks during the 18 month construction period will be important.	• The soil cover, removal of shallow soils exceeding RGOs in residential areas, administrative restrictions and stabilization of the creek banks are protective of human health and the environment. • Soil cover minimizes potential for direct contact with soil exceeding RGOs, thus preventing unacceptable risks from this exposure path. • Potential for human exposure to subsurface soil below 2 feet will be minimized through administrative restrictions. • Soil cover reduces risks to terrestrial biota from direct contact with contaminated soil. • Erosion of soil exceeding RGOs is prevented through soil cover. • Stabilization of Moncrief Creek banks prevents erosion of soil and ash with subsequent contamination of creek sediments. • Risks related to construction are manageable although dust control will be important and safe loading and transport of an estimated 34,000 trucks during the 24 month construction period will be important.	• The excavation and offsite disposal of soils exceeding RGOs and stabilization of the creek banks are protective of human health and the environment. • Direct contact risks are eliminated through removal of the soil posing unacceptable risks. • Risks to terrestrial biota from direct contact with contaminated soil are nearly eliminated. Soil exceeding RGOs will remain below buildings, roadways, driveways and sidewalks. • Erosion of surface soil and soil along stream banks exceeding RGOs is eliminated. • Risks related to construction could be significant and would have to be actively managed. Dust control efforts will be important because nearly all the ash with high concentrations of lead will be excavated, loaded into trucks and transported offsite. The potential for vehicle or pedestrian accidents is much higher for this alternative because of the estimated 78,000 trucks to be loaded and driven through the surrounding neighborhoods during the 32 month construction period.
2. Compliance with ARARs	• The USEPA chemical- specific ARAR of 400 mg/kg for lead would not be met by this alternative because exposure to soils containing 400 ppm lead could occur.	• The USEPA chemical- specific ARAR of 400 mg/kg for lead would be met by this alternative. • FAC 62-785 Brownfield Cleanup Criteria of a minimum of 2 feet of soil meeting residential cleanup criteria would not be met. However this regulation is a TBC and is not required to be met for Brown's Dump Site. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met. • Construction activities along the banks of Moncrief Creek would be conducted in a manner that minimizes impacts to aquatic habitats.	• The USEPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met. • Construction activities along the banks of Moncrief Creek would be conducted in a manner that minimizes impacts to aquatic habitats.	• The USEPA chemical-specific ARAR of 400 mg/kg for lead would be met by this alternative. • RCRA requirements for disposal of contaminated soil would be met. Specifically, excavated soil would be tested for TCLP lead and the soil would be treated to levels below the TCLP limit of 5 mg/L. LDRs for contaminated soil (the higher of 90% reduction in constituent concentrations or 10 x UTS) would also be met prior to landfilling the soil as a solid waste. • Regulations requiring control of erosion and particulate emissions during construction activities would be met. • Construction activities along the banks of Moncrief Creek would be conducted in a manner that minimizes impacts to aquatic habitats.

TABLE 5-2
Detailed Evaluation of Remedial Alternatives
Brown's Dump Site Feasibility Study

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
3. Long-term effectiveness and permanence				
(a) Magnitude of residual risks	• No significant change in risk because no action taken. • Volume of soil exceeding RGOs is 309,000 cy.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil from resident excavations was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 25 and an ELCR of 4×10^{-4}. In addition lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 303,000 cy. • Potential unacceptable risks would occur if vegetables were grown in areas where lead exceeds RGOs in the root zone of the plants.	• The soil cover prevents risks related to direct contact with surficial soils. Residual direct contact risks exceeding acceptable levels however would occur if subsurface soil was spread on the surface where long-term exposure to the soil could occur. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 25 and an ELCR of 4×10^{-4}. In addition lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. This presents a potential public health threat, depending on the bioavailability of lead and the level of exposure pathway completeness. • Residual volume of soil exceeding RGOs is 210,000 cy.	• Residual risks related to direct contact would remain only if soils exceeding RGOs from below buildings, roadways, driveways and sidewalks are excavated and spread on the surface. Based on the risk assessment results for exposure to subsurface soil, these risks would be a HI of 25 and an ELCR of 4×10^{-4}. In addition a potential public health threat from exposure to lead concentrations greater than 400 mg/kg would occur if subsurface soil was spread on the surface. • Residual volume of soil exceeding RGOs (i.e. below buildings, roadways, driveways and sidewalks) is 50,000 cy.
(b) Adequacy and reliability of controls	• Not applicable	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate a large area of subsurface soil and spread it on the surface because it would require use of excavation equipment that most residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below the soil cover. Area contractors would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit. Residents would also be made aware of the need for proper disposal. It is unlikely that a resident would excavate soil from below 2 feet or excavate a large area of subsurface soil and spread it on the surface because it would most likely require use of excavation equipment that residents are not trained to operate. Smaller hand excavations, such as that necessary to plant bushes, are unlikely to be at depths greater than the 2 foot cover thickness or result in a substantial exposure area.	• Administrative restrictions are expected to be effective in minimizing the potential for surface spreading of soil excavated from below buildings, roadways, driveways or sidewalks. Area contractors would most likely perform such excavations and would be made aware of the requirements for proper disposal of subsurface soil from the area as they obtain the necessary building permit.
4. Reduction of toxicity, mobility, or volume through treatment				
(a) Treatment process used	• Not applicable.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.	• Solidification/stabilization of soil and ash exceeding TCLP limits.
(b) Degree and quantity of TMV reduction	• Not applicable.	• An estimated 3,700 cy of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 9,000 cy of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.	• An estimated 30,000 cy of soil/ash would be treated to reduce the leachability of lead to less than 5 mg/L, as measured using the TCLP test.
(c) Irreversibility of TMV reduction	• Not applicable.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.	• Lead is not destroyed in the solidification/stabilization process but rather its mobility is significantly reduced. The treated soil/ash would be contained in a Subtitle D landfill, further reducing its potential to migrate.
(d) Type and quantity of treatment residuals	• None, because no treatment included.	• The treated residuals will include the 3,700 cy of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 9,000 cy of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.	• The treated residuals will include the 30,000 cy of soil/ash plus the stabilization/solidification agent. The solidification/stabilization agents will not increase the volume of treated soils substantially.
(e) Statutory preference for treatment as a principal element	• Preference not met because no active treatment included.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.	• Preference met because treatment is directed at the contaminants posing the principal threat.

TABLE 5-2
Detailed Evaluation of Remedial Alternatives
Brown's Dump Site Feasibility Study

Alternative: Criterion	Alternative 1- No Further Action	Alternative 2- Soil Cover with Excavation and Offsite Disposal	Alternative 3- Shallow Excavation, Offsite Disposal and Soil Cover	Alternative 4- Deep Excavation and Offsite Disposal
5. Short-term effectiveness				
(a) Protection of workers during remedial action	• No construction activities, so no risks to workers.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.	• Employing appropriate health and safety procedures and protective equipment can minimize risks to workers from exposure to contaminants. Construction-related injury risks would also be minimized through implementation of the plan.
(b) Protection of community during remedial action	• No construction activities, so no short-term risks to community.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 12,000 truckloads of soil that would be transported to or from the site. Based on an 18 month construction schedule about 30 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 34,000 truckloads of soil that would be transported to or from the site. Based on a 24 month construction schedule about 60 trucks would be entering and leaving the site each day.	• Risks to community during construction would be minimized through implementation of a construction health and safety plan. Specific elements of plan would focus on minimizing dust generation through use of dust control measures such as soil wetting and minimizing safety threats to the community by control of access to the construction area. • Also truck transport routes would be selected to minimize impacts from noise and inconvenience associated with the estimated 78,000 truckloads of soil that would be transported to or from the site. Based on a 32 month construction schedule about 110 trucks would be entering and leaving the site each day.
(c) Environmental impacts of remedial action	• No construction activities, so no environmental impacts from remedial action.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.	• Environmental impacts will likely be limited to erosion of soils during excavation, particularly during stabilization of the stream banks. The impacts can be minimized through the use of appropriate erosion control measures or stream diversion during construction.
(d) Time until RAOs are achieved	• RAO's not achieved.	• RAOs achieved at completion of the estimated 18 month construction schedule.	• RAOs achieved at completion of the estimated 24 month construction schedule.	• RAOs achieved at completion of the estimated 32 month construction schedule.
6. Implementability				
(a) Technical feasibility	• No technical constraints.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.	• No technical constraints although construction contractor selection and oversight will be important in successful project performance.
(b) Administrative feasibility	• No impediments.	• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	• Excavation and placement of soil cover on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.	• Excavation on residential properties will require extensive coordination with local community officials and individual residents. • Administrative restrictions will also require close coordination with local officials.
© Availability of services and materials	• None needed.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.	• Trail Ridge landfill has sufficient capacity to accept soil for disposal. • Services and materials readily available for other alternative components.
7. Total Cost	Capital Cost $0 Average Annual O&M Cost $3,900 Total Present Worth Cost $50,000	Capital Cost $10,600,000 Average Annual O&M Cost $38,000 Total Present Worth Cost $11,100,000	Capital Cost $19,900,000 Average Annual O&M Cost $38,000 Total Present Worth Cost $20,400,000	Capital Cost $42,900,000 Average Annual O&M Cost $3,900 Total Present Worth Cost $43,000,000

[a] For a detailed listing and analysis of key ARARS, see Appendix A.

TABLE 5-3
Summary Cost Table
Brown's Dump Site Feasibility Study

Alternative	Capital Costs ($)	Average Annual O&M ($)	Total Project Present Worth Costs ($)
Alternative 1 – No Further Action	0	$3,900	$50,000
Alternative 2 – Soil Cover with Excavation and Offsite disposal	$10,600,000	$38,000	$11,100,000
Alternative 3 – Shallow Excavation, Offsite Disposal and Soil Cover	$19,900,000	$38,000	$20,400,000
Alternative 4 – Deep Excavation and Offsite Disposal	$42,900,000	$3,900	$43,000,000

TABLE 5-4
Cost Sensitivity of Discount Rates
Brown's Dump Site Feasibility Study

Alternative	Total Present Worth Costs 3% Discount Rate ($)	Total Present Worth Costs 7% Discount Rate ($)	Total Present Worth Costs 10% Discount Rate ($)
Alternative 1 – *No Further Action*	$100,000	$50,000	$40,000
Alternative 2 – Soil Cover with Excavation and Offsite disposal	$11,600,000	$11,100,000	$11,000,000
Alternative 3 – Shallow Excavation, Offsite Disposal and Soil Cover	$20,900,000	$20,400,000	$20,300,000
Alternative 4 – Deep Excavation and Offsite Disposal	$43,000,000	$43,000,000	$42,900,000

Figures

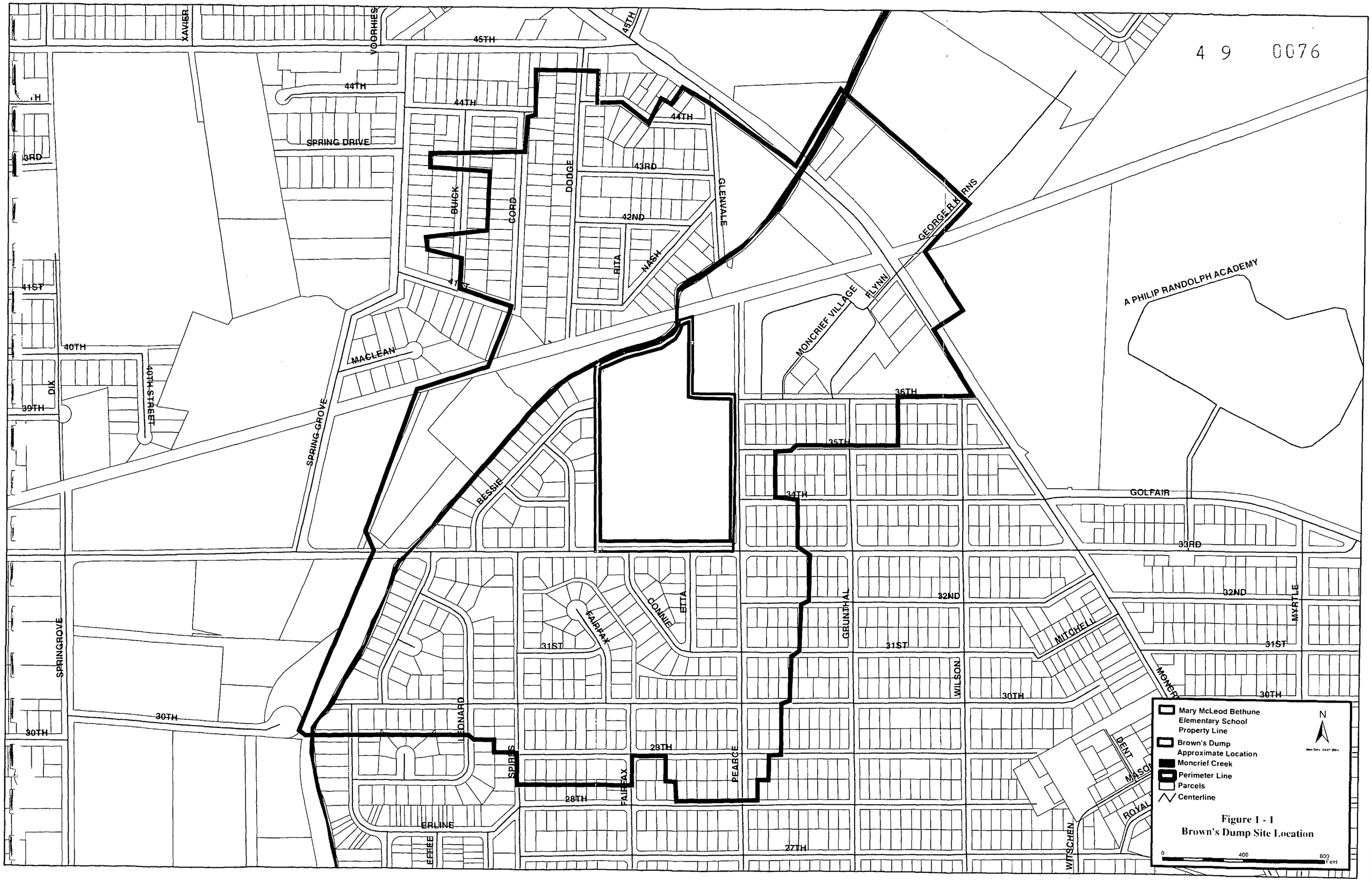


Figure 1 - 1
Brown's Dump Site Location

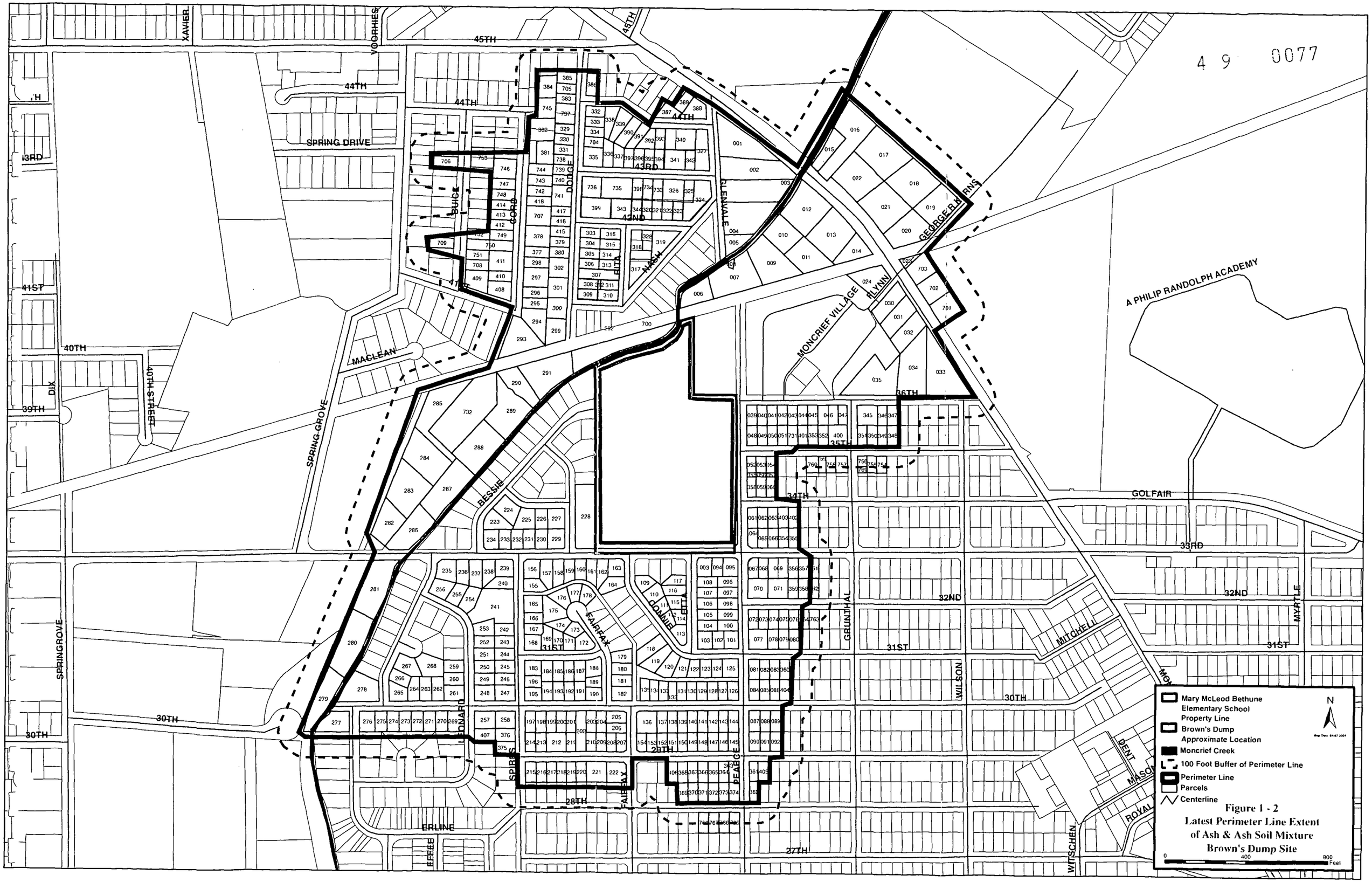


Figure 1 - 2
Latest Perimeter Line Extent of Ash & Ash Soil Mixture Brown's Dump Site

4 9 0078
45TH
44TH
43RD
42ND
41ST
40TH
39TH
38TH
37TH
36TH
35TH
34TH
32ND
31ST
30TH
29TH
28TH
27TH
XAVIER
SPRING DRIVE
BUICK
CORD
DODGE
GLENVALE
NASH
RITA
GEORGE R KERNS
A PHILIP RANDOLPH ACADEMY
MONCRIEF VILLAGE
FLYNN
A.C.L. Railroad Right of Way
JEA Substation
MACLEAN
SPRING GROVE
40TH STREET
DIX
BESSIE
GOLFAIR
MITCHELL
WILSON
GRUNTHAL
PEARCE
FAIRFAX
CONNIE
ETTA
LEONARD
SHIRES
ERLINE
SPRINGROVE
N
Figure 1 - 3
Brown's Dump Site
Feasibility Study
Remedial Investigation Results For Ash & Lead
Ash < 25% Lead < 400 ppm
Ash > 25% Lead < 400 ppm
Ash > 25% Lead > 400 ppm
Ash < 25 % Lead > 400 ppm
Lots Identified For Remediation From Phase I
Lots With Only 1 Lead Sample > 400 ppm
Unsampled Parcels - Access Could Not Be Obtained
Moncrief Creek
Mary McLeod Bethune Elementary School Property Line
Brown's Dump Approximate Location
Parcels
0
400
800
Feet

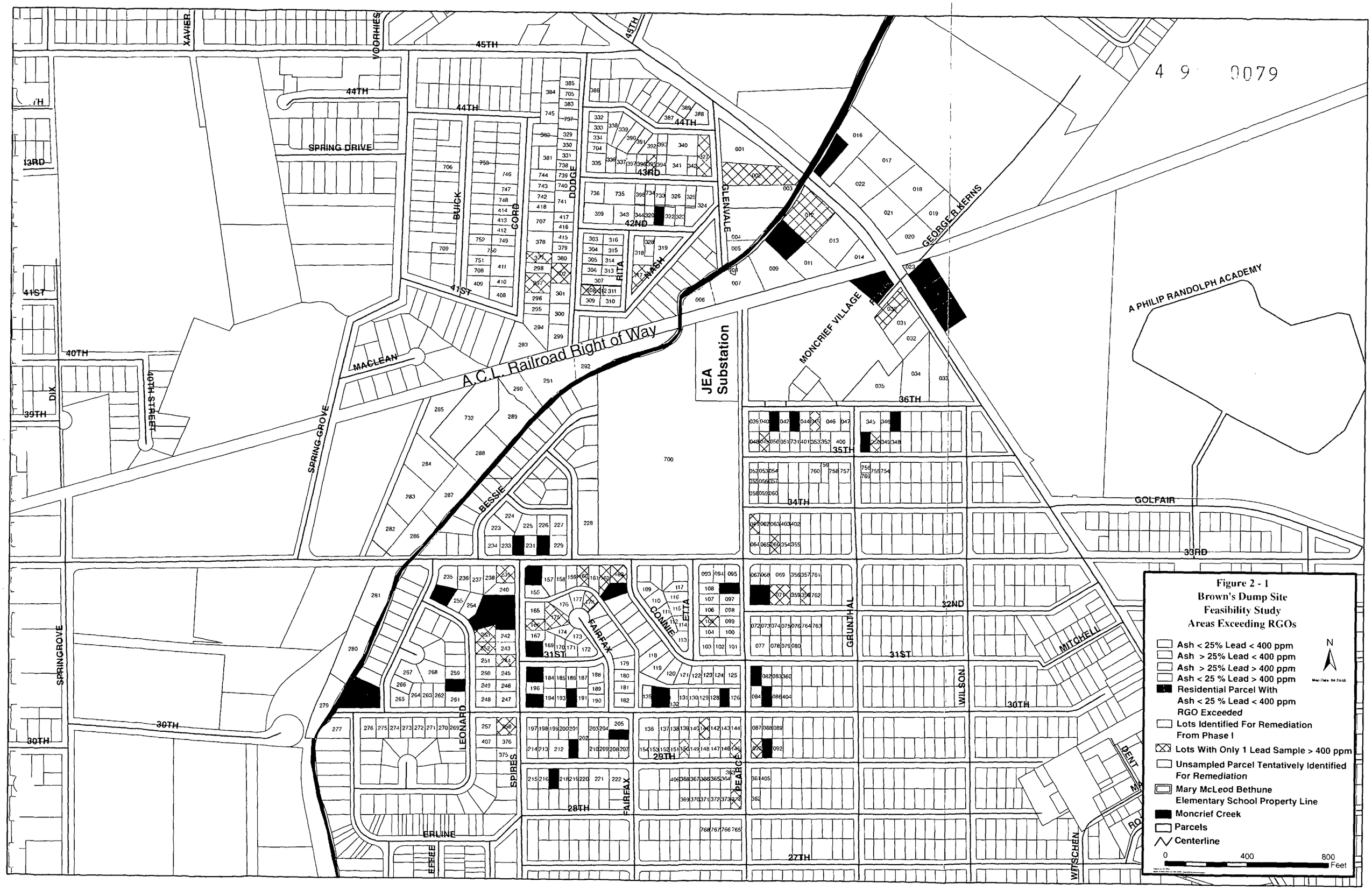


Figure 2 - 1
Brown's Dump Site
Feasibility Study
Areas Exceeding RGOs
Ash < 25% Lead < 400 ppm
Ash > 25% Lead < 400 ppm
Ash > 25% Lead > 400 ppm
Ash < 25 % Lead > 400 ppm
Residential Parcel With Ash < 25 % Lead < 400 ppm RGO Exceeded
Lots Identified For Remediation From Phase I
Lots With Only 1 Lead Sample > 400 ppm
Unsampled Parcel Tentatively Identified For Remediation
Mary McLeod Bethune Elementary School Property Line
Moncrief Creek
Parcels
Centerline
0
400
800
Feet
N
A.C.L. Railroad Right of Way
JEA Substation
A PHILIP RANDOLPH ACADEMY
MONCRIEF VILLAGE
GEORGE B KERNS
GLENVALE
DODGE
CORD
BUICK
RITA
WASH
XAVIER
VOORHIES
45TH
44TH
43RD
42ND
41ST
40TH
39TH
13RD
SPRING DRIVE
MACLEAN
SPRING GROVE
BESSIE
DIX
40TH STREET
SPRINGROVE
LEONARD
SPIRES
ERLINE
EFFIE
FAIRFAX
CONNIE
ETTA
PEARCE
GRUNTHAL
WILSON
MITCHELL
DENT
WITSCHEN
GOLFAIR
36TH
35TH
34TH
33RD
32ND
31ST
30TH
29TH
28TH
27TH

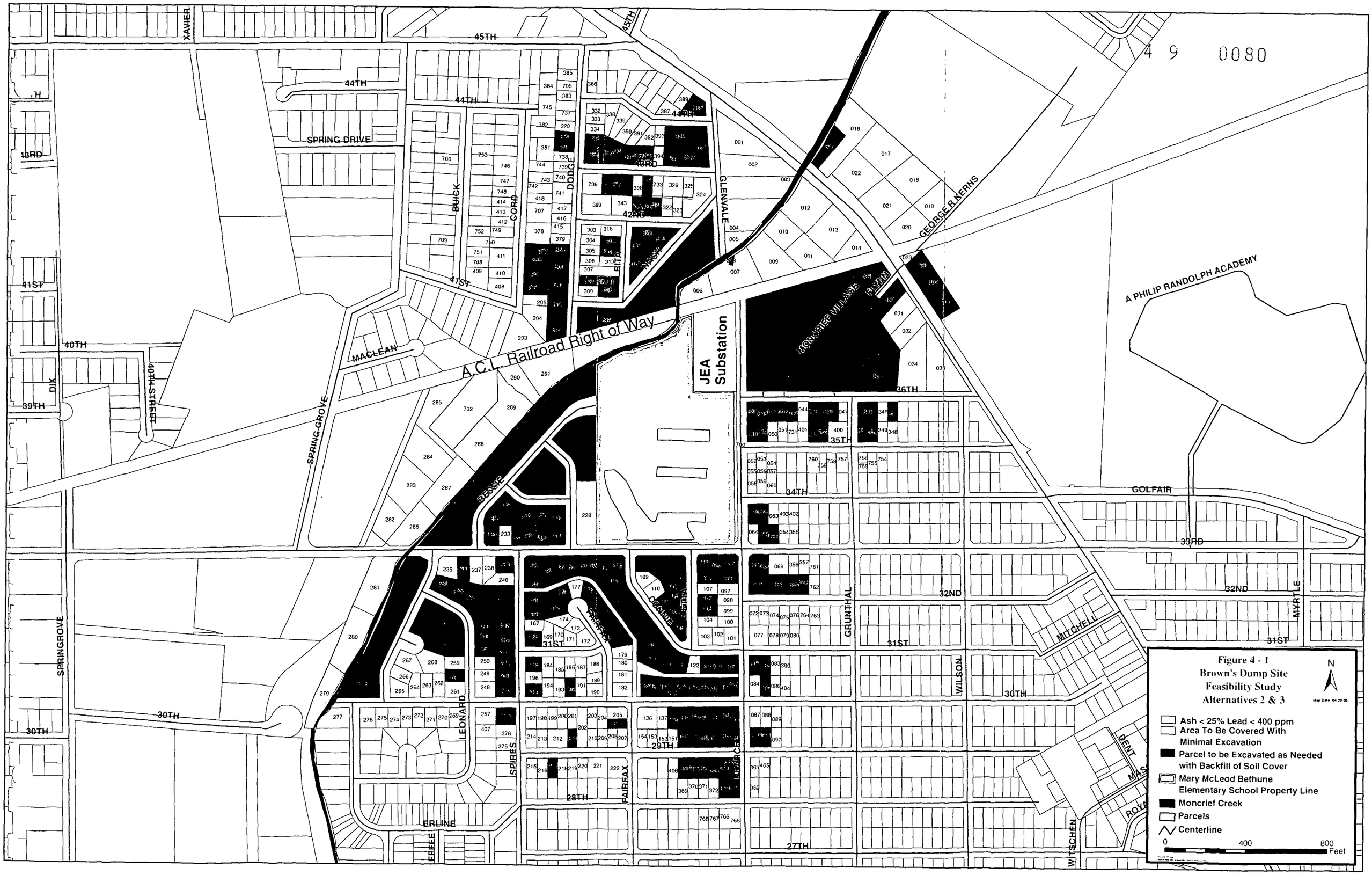
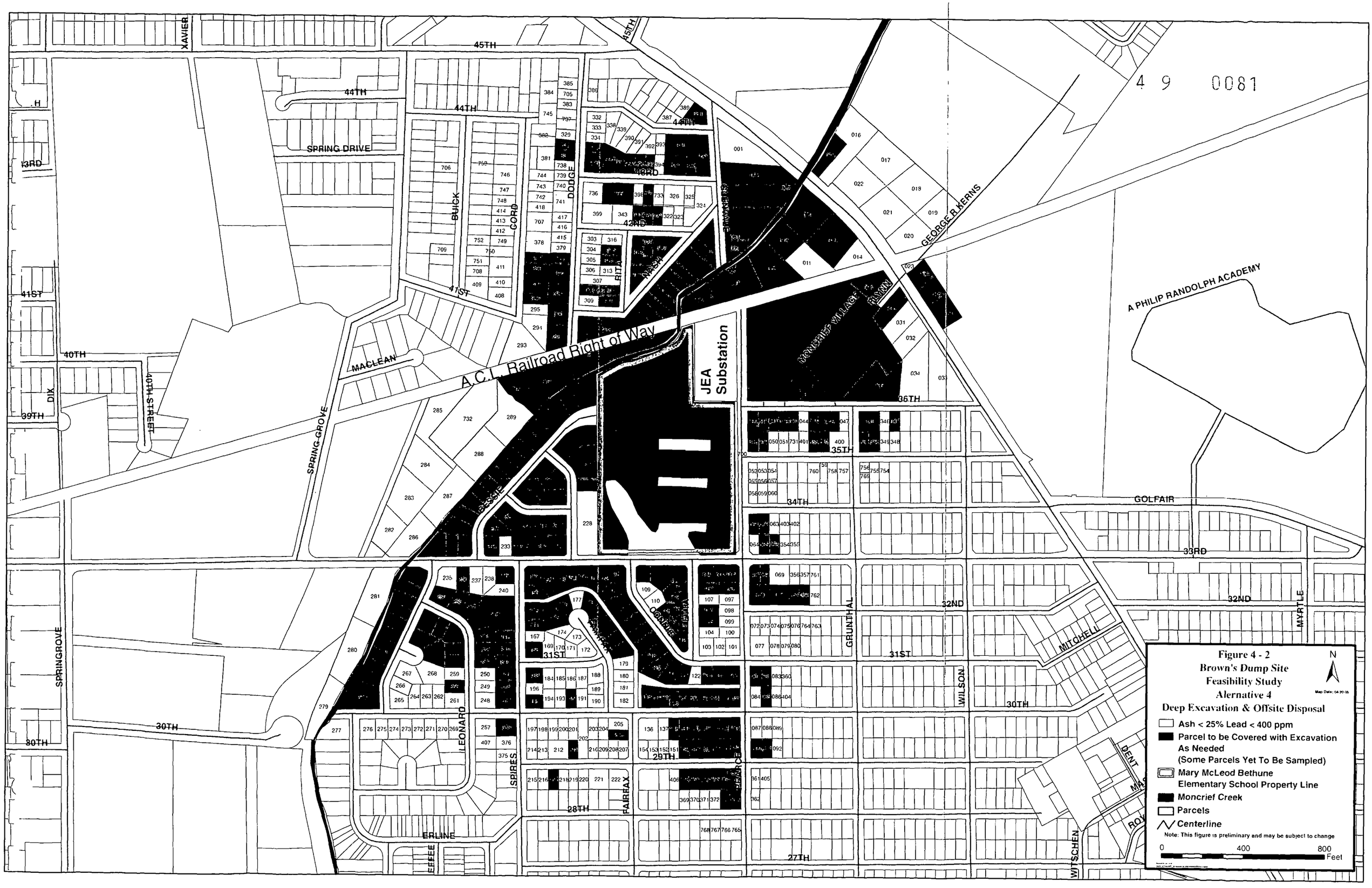


Figure 4 - 1
Brown's Dump Site
Feasibility Study
Alternatives 2 & 3
Map Date 04 20 05
N
Ash < 25% Lead < 400 ppm
Area To Be Covered With Minimal Excavation
Parcel to be Excavated as Needed with Backfill of Soil Cover
Mary McLeod Bethune Elementary School Property Line
Moncrief Creek
Parcels
Centerline
0
400
800
Feet
A.C.L. Railroad Right of Way
JEA Substation
A PHILIP RANDOLPH ACADEMY
MONCRIEF VILLAGE
XAVIER
45TH
44TH
SPRING DRIVE
43RD
42ND
41ST
40TH
39TH
DIX
40TH STREET
MACLEAN
SPRING GROVE
BUICK
CORD
DODGE
NASH
GLENVALE
GEORGE R KERNS
FLYNN
BESSIE
36TH
35TH
34TH
GOLFAIR
33RD
32ND
31ST
30TH
29TH
28TH
27TH
GRUNTHAL
WILSON
MITCHELL
MYRTLE
SPRINGROVE
LEONARD
SPIRES
FAIRFAX
ERLINE
WITSCHEN
BENT



4 9 0081
A.C.L. Railroad Right of Way
JEA Substation
A PHILIP RANDOLPH ACADEMY
MONCRIEF VILLAGE
GEORGE R KERNS
SPRING DRIVE
SPRING GROVE
MACLEAN
BUICK
CORD
DODGE
RITA
NASH
GRUNTHAL
WILSON
MITCHELL
MYRTLE
GOLFAIR
LEONARD
SPIRES
FAIRFAX
ERLINE
EFFEE
WITSCHEN
DENT
45TH
44TH
43RD
42ND
41ST
40TH
39TH
36TH
35TH
34TH
33RD
32ND
31ST
30TH
29TH
28TH
27TH
N
Map Date: 04-20-05
Figure 4 - 2
Brown's Dump Site
Feasibility Study
Alernative 4
Deep Excavation & Offsite Disposal
Ash < 25% Lead < 400 ppm
Parcel to be Covered with Excavation As Needed (Some Parcels Yet To Be Sampled)
Mary McLeod Bethune Elementary School Property Line
Moncrief Creek
Parcels
Centerline
Note: This figure is preliminary and may be subject to change
0
400
800
Feet