ROLLINS' HIGHWAY•36

FACILITY:
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A Subsidiary of Rollins Environmental Services, Inc.

To: Anita Cummings
Environmental Protection Agency
Office of Solid Waste
Washington, D.C.

From: Richard Grondin

Date: May 17, 1996

Subject: Waste Treatment for Selenium

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Dear Ms. Cummings,

The following is a summary of the selenium study that was concluded on May 15, 1996 at the Rollins' Highway 36 laboratory in Deer Trail, Colorado. Please find the enclosed the following attachments:

Attachment (1): Analytical Summary Reports (Metals)
Attachment (2): QC Summary Reports
Attachment (3): Highway 36 Approved EPA Waste Codes

The study was conducted using a waste sample typical of waste seen at our facility. The sample, consisting primarily of incineration residue and contaminated soils, represented a composite of F039, K061, and various D-coded wastes. The results were consistent with those typically observed following treatment of moderately high selenium waste, where the most desirable pH for selenium treatment renders other metals soluble in TCLP leachate, and hence failing UTS.

The study consisted of a series of constants and variables including pH adjustments, and the use of Portland, Sodium Hydrosulfide (NaHS), and Ferrous Sulfate ($FeSO_4$) as reagents.

Attachment (1) contains analytical summary reports for metals, and are consolidated for selenium in Table 1:

TABLE 1

Treatment Description	Se Results[1] (mg/L)	pH Reading[2] (s.u.)
As Received (w/o Treatment)	1.07	6.19
5% Portland	3.20	8.57
10% Portland	6.41	10.61
20% Portland	3.59	11.49
1% NaHS, 1% $FeSO_4$, 5% Portland	0.916	8.45
1% NaHS, 1% $FeSO_4$, 10% Portland	2.83	10.76
1% NaHS, 1% $FeSO_4$, 20% Portland	1.78	11.94
1% NaHS, 1% $FeSO_4$	1.12	6.80

[1]Selenium in the TCLP extract
[2]pH of TCLP extract after 16-hour extraction process

It is important to note that, upon reviewing the enclosed data summary sheets, there are several cases in which other metals fail UTS in the pursuit of effective selenium treatment. The most effective (and most difficult to achieve) pH range for the stabilization of Se is between 6.5 and 7.5 upon completion of the 16-hour TCLP extraction process. The optimum pH for the stabilization of other metals (i.e. Cd, Pb, Zn, Ni) is between 9.5 and 11.5.

Additionally, since it was not possible to completely homogenize this co-mingled waste sample under routine practices, the data does not perfectly reflect the relationships between pH and selenium treatments.

The NaHS was added to the mix in an attempt to reduce the solubility of other metals since the pH was lower than 9.5. Unfortunately, this approach is unsuccessful.

The $FeSO_4$ was added to eliminate excess sulfide and hamper the oxidation-reduction potential as much as possible. No real benefits from this practice have been observed.

With these results, we would propose to keep the treatment standard for Characteristic Waste at 5.7 mg/L, and to raise the UTS standard to 5.7 mg/L for Se.

Per your request during our conference call yesterday, our design capacity for stabilization is 150,000 tons per year. As mentioned during the call, please recall that Highway 36 does not have any permit limits for receiving waste.

Last year we rejected approximately 4,000 tons of waste from Aptus Utah, due to high selenium concentrations.

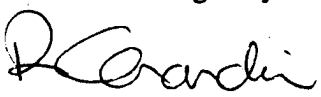
As promised, the following is the chemical vendor that invested a great deal of time and energy addressing our selenium quandary (without success):

Mr. Stan True Phone: (702) 871-1884.
c/o Fluid Tech, Inc.
4335 W. Tropicana Suite 3
Las Vegas, NV 89103

Also enclosed is Attachment (3); a copy of our permit-approved EPA waste codes, taken from our Waste Analysis Plan.

On behalf of Rollins Environmental, Inc., I would like to sincerely thank you for the opportunity to express our concerns and dilemmas. I have very much enjoyed working with you, and the time that you have afforded me is greatly appreciated. I look forward to further discussions following your review of this package. Should you have any immediate questions, please do not hesitate to contact me.

Sincerely,
for Rollins' Highway 36,



Richard Grondin
Technical Manager

CC: Mike Fusco, Rollins Environmental, Inc.

ATTACHMENT 1

TCLP SAMPLE REPORT

SAMPLE DESCRIPTION

TCLP # 5115-G2-3

Sample # AS RECEIVED

HWY 36 WC #

Date 5-8-96

MR #

Date Sampled 5-8-96

Tech RTM

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1 PRELIMINARY EVALUATIONS

1) EXTR FL # 2 a) pH sample + H_2O 11.57 b) pH sample + H_2O + HCl 11.21

2) % SOLIDS 100% a) wt sample 100g b) wt beaker + residue — c) wt sample + beaker —

d) wt filtrate — e) wt cont — f) wt cont + filtrate —

g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID? NO a) wt dry solid — b) wt filter — c) wt filter + dry solid —

d) % dry solids. (wt dry solid/sample wt) x 100 = —

4) COMPAT W/ EXTR FL ? Yes

SECTION #2 NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000 ((20 x % solid x sample wt) / 100)

2) DATE STARTED 5-8-96 TIME STARTED 12.00

3) DATE STOPPED 5-9-96 TIME STOPPED 4.00

4) WT FILTRATE 1947 a) wt cont 543 b) wt cont + filtrate 2490

5) pH of EXTRACTS a) pH filtrate section #1 — b) pH filtrate section #2 6.19

6) COMMENTS

SECTION #3 VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ ((25 / % solids) X 100)

2) EXTR FL #1 VOL _____ ((20 X % solids x sample wt) /100)

3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____

4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____

5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____

6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____

NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.

7) COMMENTS:

CONTROLLED

ENT

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Just 22, 1995

ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium

Run #: ICAP 960509 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	0.184
ARSENIC	6010	mg/l		0.030	<0.030
BARIUM	6010	mg/l		0.010	0.336
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	6.40
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	23.5
NICKEL	6010	mg/l		0.010	2.20
SELENIUM	6010	mg/l		0.050	1.07
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	<0.070
VANADIUM	6010	mg/l		0.005	<0.005
ZINC	6010	mg/l		0.500	52.1
MERCURY	6010	mg/l		0.008	0.154

Analyst: Helene Sokol Date: 5/10/96

Tier II Review: Steven W. Schneider Date: 5-10-96

Teir III Review: [signature] Date: 5-16-96

TCLP SAMPLE REPORT

SAMPLE DESCRIPTION

TCLP # 5123-610-2

Sample # 1HOH Se Study 0.05 Portland

HWY 36 WC # Camp 1093

Date 5-9-96

MR # N/A

Date Sampled 5-9-96

Tech Royce

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1: PRELIMINARY EVALUATIONS

1) EXTR FL # 2 a) pH sample + H_2O 12.09 b) pH sample + H_2O + HCl 12.00

2) % SOLIDS 100% a) wt sample 100g. b) wt beaker + residue — c) wt sample + beaker —

d) wt filtrate — e) wt cont — f) wt cont + filtrate —

g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID? No a) wt dry solid — b) wt filter — c) wt filter + dry solid —

d) % dry solids (wt dry solid/sample wt) x 100 = — —

4) COMPAT W/ EXTR FL ? Yes

SECTION #2: NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000 ml ((20 x % solid x sample wt) / 100)

2) DATE STARTED 5-9-96 TIME STARTED 1401

3) DATE STOPPED 5-10-96 TIME STOPPED 6.00

4) WT FILTRATE 1950 a) wt cont 540 b) wt cont + filtrate 2490

5) pH of EXTRACTS a) pH filtrate section #1 — b) pH filtrate section #2 8.57

6) COMMENTS

SECTION #3: VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ ((25 / % solids) X 100)

2) EXTR FL #1 VOL _____ ((20 X % solids x sample wt) /100)

3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____

4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____

5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____

6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____

NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.

7) COMMENTS:

CONTROLLED

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ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 5% Portland

Run #: ICAP 960510 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	0.435
ARSENIC	6010	mg/l		0.030	0.089
BARIUM	6010	mg/l		0.010	0.399
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	0.038
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	<0.030
NICKEL	6010	mg/l		0.010	0.105
SELENIUM	6010	mg/l		0.050	3.20
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	<0.070
VANADIUM	6010	mg/l		0.005	<0.005
ZINC	6010	mg/l		0.500	<0.500
MERCURY	6010	mg/l		0.008	0.053

Analyst: Helene Sokol Date: 5/10/96

Tier II Review: Steven W Schmidt CHECKED BY Date: 5-10-96

Teir III Review: [signature] Date: 5-16-96

R. GROSSI

TCLP SAMPLE REPORT

SAMPLE DESCRIPTION

TCLP # 5724-611-2

Sample # 1/4 Se Study 0.10 Portland

HWY 36 WC # comp 1053

Date 5-9-96

MR # N/A

Date Sampled 5-9-96

Tech RJL

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1 PRELIMINARY EVALUATIONS

1) EXTR FL # 2 a) pH sample + H_2O 12.17 b) pH sample + H_2O + HCl 12.10

2) % SOLIDS 10.86 a) wt sample 100g. b) wt beaker + residue — c) wt sample + beaker —
d) wt filtrate — e) wt cont — f) wt cont + filtrate —
g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID? No a) wt dry solid — b) wt filter — c) wt filter + dry solid —
b) % dry solids (wt dry solid/sample wt) x 100 = —

4) COMPAT W/ EXTR FL ? Yes

SECTION #2 NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000ml ((20 x % solid x sample wt) / 100)
2) DATE STARTED 5-9-96 TIME STARTED 17:00
3) DATE STOPPED 5-10-96 TIME STOPPED 6.00
4) WT FILTRATE 1955 a) wt cont 541 b) wt cont + filtrate 2496
5) pH of EXTRACTS a) pH filtrate section #1 — b) pH filtrate section #2 10.61
6) COMMENTS

SECTION #3 VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ ((25 / % solids) X 100)
2) EXTR FL #1 VOL _____ ((20 X % solids x sample wt) /100)
3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____
4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____
5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____
6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____
NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.
7) COMMENTS:

CONTROLLED

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Last 22, 1995

ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 10% Portland

Run #: ICAP 960510 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	0.221
ARSENIC	6010	mg/l		0.030	0.132
BARIUM	6010	mg/l		0.010	0.473
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	<0.005
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	<0.030
NICKEL	6010	mg/l		0.010	0.022
SELENIUM	6010	mg/l		0.050	6.41
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	<0.070
VANADIUM	6010	mg/l		0.005	0.012
ZINC	6010	mg/l		0.500	<0.500
MERCURY	6010	mg/l		0.008	<0.008

Analyst: Helene Sarel Date: 5/10/96

Tier II Review: Steven W. Schneider Date: 5-10-96

Teir III Review: [signature] Date: 5-16-96

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TCLP SAMPLE REPORT

SAMPLE DESCRIPTION

TCLP # 5116-G3-14

Sample # AS RECD + 20% PORT

HWY 36 WC # _____

Date 5-8-96

MR # _____

Date Sampled 5-8-96

Tech RTM

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1: PRELIMINARY EVALUATIONS

1) EXTR FL # 2 a) pH sample + H_2O 12.10 b) pH sample + H_2O + HCl 11.46

2) % SOLIDS 100% a) wt sample 100g b) wt beaker + residue — c) wt sample + beaker —
d) wt filtrate — e) wt cont — f) wt cont + filtrate —
g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID? NO a) wt dry solid — b) wt filter — c) wt filter + dry solid —
b) % dry solids (wt dry solid/sample wt) x 100 = — —

4) COMPAT W/ EXTR FL ? Yes

SECTION #2: NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000 { (20 x % solid x sample wt) / 100}
2) DATE STARTED 5-8-96 TIME STARTED 12.00
3) DATE STOPPED 5-9-96 TIME STOPPED 4.00
4) WT FILTRATE 1948 a) wt cont 538 b) wt cont + filtrate 2486
5) pH of EXTRACTS a) pH filtrate section #1 — b) pH filtrate section #2 11.49
6) COMMENTS

SECTION #3: VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ { (25 / % solids) X 100}
2) EXTR FL #1 VOL _____ { (20 X % solids x sample wt) /100 }
3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____
4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____
5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____
6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____
NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.
7) COMMENTS:

CONTROLLED

ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 20% Portland

Run #: ICAP 960509 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	<0.030
ARSENIC	6010	mg/l		0.030	0.068
BARIUM	6010	mg/l		0.010	0.625
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	0.011
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	<0.030
NICKEL	6010	mg/l		0.010	0.011
SELENIUM	6010	mg/l		0.050	3.59
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	0.089
VANADIUM	6010	mg/l		0.005	0.015
ZINC	6010	mg/l		0.500	<0.500
MERCURY	6010	mg/l		0.008	<0.008

Analyst: Helene Sokol Date: 5/10/96

Tier II Review: Steven W. Schneider Date: 5-10-96

Teir III Review: [illegible] Date: 5-16-96

TCLP SAMPLE REPORT

SAMPLE DESCRIPTION — TCLP # 5125-612-2

Sample # H. Se Study 0.01 NaHS + 0.1 GSDI + 0.05 Port. — HWY 36 WC # Conf/093

Date 5-9-96 — MR # N/A

Date Sampled 5-9-96 — Tech Roger

PARAMETERS: Metals X — TOC — — TOX — — VOA — — BNA —

SECTION #1 PRELIMINARY EVALUATIONS

1) EXTR FL # 2 — a) pH sample + H_2O 12.10 — b) pH sample + H_2O + HCl 12.00

2) % SOLIDS 100% — a) wt sample 100g. — b) wt beaker + residue — — c) wt sample + beaker —
d) wt filtrate — — e) wt cont — — f) wt cont + filtrate —
g) wt solid phase — — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID? NO — a) wt dry solid — — b) wt filter — — c) wt filter + dry solid —
b) % dry solids (wt dry solid/sample wt) x 100 = —

4) COMPAT W/ EXTR FL? Yes

SECTION #2 NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000 ml — ((20 x % solid x sample wt) / 100)

2) DATE STARTED 5-9-96 — TIME STARTED 14:00

3) DATE STOPPED 5-10-96 — TIME STOPPED 6.00

4) WT FILTRATE 1947 — a) wt cont 542 — b) wt cont + filtrate 2489

5) pH of EXTRACTS — a) pH filtrate section #1 — — b) pH filtrate section #2 8.45

6) COMMENTS

SECTION #3 VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT ______ ((25 / % solids) X 100)

2) EXTR FL #1 VOL ______ ((20 X % solids x sample wt) /100)

3) FIRST FILTRATION WT ______ a) WT CONT ______ B) wt cont + filtrate ______

4) DATE STARTED ______ TIME STARTED ______ PRESSURE ______

5) DATE STOPPED ______ DATE STOPPED ______ PRESSURE ______

6) 2nd FILTRATION WT ______ a) wt cont ______ b) wt cont + filtrate ______

NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.

CONTROLLED

7) COMMENTS:

FN:

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Aug 22, 1995

ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 1% NaHS + 1% $FeSO_4$ + 5% Portland

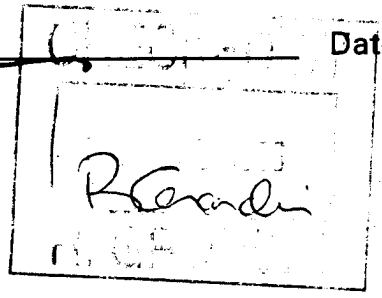
Run #: ICAP 960510 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	0.648
ARSENIC	6010	mg/l		0.030	0.069
BARIUM	6010	mg/l		0.010	0.312
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	<0.005
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	<0.030
NICKEL	6010	mg/l		0.010	0.229
SELENIUM	6010	mg/l		0.050	0.916
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	<0.070
VANADIUM	6010	mg/l		0.005	<0.005
ZINC	6010	mg/l		0.500	<0.500
MERCURY	6010	mg/l		0.008	<0.008

Analyst: Helene Sobal Date: 5/10/96

Tier II Review: Steven W. Schneider Date: 5-10-96

Teir III Review: [signature] Date: 5-16-96



TCLP SAMPLE REPORT

SAMPLE DESCRIPTION

TCLP # 5126-613-8

Sample # HWY 36 Study .01 NaHS + .01 FeSO4 + .10 Peat

HWY 36 WC # Camp1093

Date 5-9-96

MR # N/A

Date Sampled 5-9-96

Tech Roya

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1: PRELIMINARY EVALUATIONS

1) EXTR FL # 2 a) pH sample + H_2O 12.17 b) pH sample + H_2O + HCl 12.15

2) % SOLIDS 10.1% a) wt sample 100g b) wt beaker + residue — c) wt sample + beaker —
d) wt filtrate — e) wt cont — f) wt cont + filtrate —
g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID? No a) wt dry solid — b) wt filter — c) wt filter + dry solid —
d) % dry solids (wt dry solid/sample wt) x 100 = —

4) COMPAT W/ EXTR FL ? Yes

SECTION #2: NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000 ml { (20 x % solid x sample wt) / 100}
2) DATE STARTED 5-9-96 TIME STARTED 1400
3) DATE STOPPED 5-10-96 TIME STOPPED 6.00
4) WT FILTRATE 1949 a) wt cont 543 b) wt cont + filtrate 2492
5) pH of EXTRACTS a) pH filtrate section #1 — b) pH filtrate section #2 10.76
6) COMMENTS

SECTION #3: VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ { (25 / % solids) X 100}
2) EXTR FL #1 VOL _____ { (20 X % solids x sample wt) /100 }
3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____
4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____
5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____
6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____
NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.
7) COMMENTS:

CONTROLLED

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ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 1% NaHS + 1% $FeSO_4$ + 10% Portland

Run #: ICAP 960510 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	0.341
ARSENIC	6010	mg/l		0.030	0.128
BARIUM	6010	mg/l		0.010	0.331
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	<0.005
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	<0.030
NICKEL	6010	mg/l		0.010	0.026
SELENIUM	6010	mg/l		0.050	2.83
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	<0.070
VANADIUM	6010	mg/l		0.005	0.018
ZINC	6010	mg/l		0.500	<0.500
MERCURY	6010	mg/l		0.008	<0.008

Analyst: Helene Jokel Date: 5/10/96

Tier II Review: Steven W. Schneider Date: 5-10-96

Teir III Review: Date: 5-16-96

TCLP SAMPLE REPORT

SAMPLE DESCRIPTION

TCLP # 527-614-12

Sample # 1/3 Sc Study 0.01 NaHS to 0.01 FeSO4 + 0.20 Pept

HWY 36 WC # CAmy1093

Date 5-9-96

MR # N/a

Date Sampled 5-9-96

Tech Rose

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1: PRELIMINARY EVALUATIONS

1) EXTR FL # 2 a) pH sample + H_2O 12.20 b) pH sample + H_2O + HCl 12.17

2) % SOLIDS 100% a) wt sample 100g. b) wt beaker + residue — c) wt sample + beaker —
d) wt filtrate — e) wt cont — f) wt cont + filtrate —
g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —

3) INSUFF SOLID NO a) wt dry solid — b) wt filter — c) wt filter + dry solid —
b) % dry solids (wt dry solid/sample wt) x 100 = —

4) COMPAT W/ EXTR FL Yes

SECTION #2: NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2.000L { (20 x % solid x sample wt) / 100}
2) DATE STARTED 5-9-96 TIME STARTED 14:00
3) DATE STOPPED 5-10-96 TIME STOPPED 6:00
4) WT FILTRATE 1998 a) wt cont 538 b) wt cont + filtrate 2486
5) pH of EXTRACTS a) pH filtrate section #1 — b) pH filtrate section #2 11.99
6) COMMENTS

SECTION #3: VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ { (25 / % solids) X 100}
2) EXTR FL #1 VOL _____ { (20 X % solids x sample wt) /100 }
3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____
4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____
5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____
6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____
NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.
7) COMMENTS:

CONTROLLED

ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 1% NaHS + 1% $FeSO_4$ + 20% Portland

Run #: ICAP 960510 HG 960510

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	<0.030
ARSENIC	6010	mg/l		0.030	0.033
BARIUM	6010	mg/l		0.010	0.468
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	<0.005
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	<0.030
NICKEL	6010	mg/l		0.010	0.011
SELENIUM	6010	mg/l		0.050	1.78
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	<0.070
VANADIUM	6010	mg/l		0.005	0.010
ZINC	6010	mg/l		0.500	<0.500
MERCURY	6010	mg/l		0.008	<0.008

Analyst: Helene Jodeal Date: 5/10/96

Tier II Review: Steven W. Schneider Date: 5-10-96

Teir III Review: [signature] Date: 5-16-96

TCLP SAMPLE REPORT

SAMPLE DESCRIPTION .01 NaHS + .01 FeSO4

TCLP # 5156-618-16

Sample # Se Study

HWY 36 WC # N/A

Date 5-14-96

MR # N/A

Date Sampled 5-14-96

Tech Royce

PARAMETERS: Metals X TOC — TOX — VOA — BNA —

SECTION #1 PRELIMINARY EVALUATIONS

1) EXTR FL # 2
2) % SOLIDS 100%
3) INSUFF SOLID? No
4) COMPAT W/ EXTR FL ? YES

a) pH sample + H_2O 11.90 b) pH sample + H_2O + HCl 11.90
a) wt sample 100g. b) wt beaker + residue — c) wt sample + beaker —
d) wt filtrate — e) wt cont — f) wt cont + filtrate —
g) wt solid phase — h) % solids (wt solid phase/wt sample) x 100 = —
a) wt dry solid — b) wt filter — c) wt filter + dry solid —
b) % dry solids (wt dry solid/sample wt) x 100 = — —

SECTION #2 NONVOLATILES METALS EXTRACTION PROCEDURE

1) EXTR FL VOL 2000 ml { (20 x % solid x sample wt) / 100}
2) DATE STARTED 5-14-96 TIME STARTED 14:00
3) DATE STOPPED 5-15-96 TIME STOPPED 06:00
4) WT FILTRATE 1950
a) wt cont 5.49 b) wt cont + filtrate 2499
5) pH of EXTRACTS
a) pH filtrate section #1 — b) pH filtrate section #2 6.80
6) COMMENTS

SECTION #3 VOLATILES EXTRACTION PROCEDURE

1) OPTIMUM SAMPLE WT _____ { (25 / % solids) X 100}
2) EXTR FL #1 VOL _____ { (20 X % solids x sample wt) /100 }
3) FIRST FILTRATION WT _____ a) WT CONT _____ B) wt cont + filtrate _____
4) DATE STARTED _____ TIME STARTED _____ PRESSURE _____
5) DATE STOPPED _____ DATE STOPPED _____ PRESSURE _____
6) 2nd FILTRATION WT _____ a) wt cont _____ b) wt cont + filtrate _____

NOTE: 2nd FILTRATION WT MAY ALSO BE COMBINED FILTRATE WT IF FROM 1st AND 2nd FILTRATIONS ARE COMPATIBLE.

7) COMMENTS:

CONTROLLED

ROLLINS HWY 36 LABORATORY
METALS ANALYSIS REPORT

Sample Matrix: TCLP-High Selenium + 1% NaHS + 1% $FeSO_4$

Run #: ICAP 960515 HG 960515

Analysis	Method	Units	DF	Report Limit	Results
ANTIMONY	6010	mg/l		0.030	0.137
ARSENIC	6010	mg/l		0.030	<0.030
BARIUM	6010	mg/l		0.010	0.288
BERYLLIUM	6010	mg/l		0.005	<0.005
CADMIUM	6010	mg/l		0.005	2.95
CHROMIUM	6010	mg/l		0.005	<0.005
LEAD	6010	mg/l		0.030	14.7
NICKEL	6010	mg/l		0.010	2.46
SELENIUM	6010	mg/l		0.050	1.12
SILVER	6010	mg/l		0.050	<0.050
THALLIUM	6010	mg/l		0.070	0.152
VANADIUM	6010	mg/l		0.005	<0.005
ZINC	6010	mg/l		0.500	30.1
MERCURY	6010	mg/l		0.008	<0.008

Analyst: _____ Date: 5/16/96

Tier II Review: _____ Date: 5/16/96

Teir III Review: _____ Date: 5-16-96

ATTACHMENT 2

II

CONTINUING CALIBRATION VERIFICATION

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL. CO 80105

QC REPORT # 184
RUN # 960509
DATE OF RUN 5/9/96
UNITS: MG/L
LAB ID METHOD: TCLP2PT
TECH INITIALS TA

METHOD SW846/METHOD 6010
CHEK SAMPLE ID IS: ICV/CCV
METAL STD # MO 187
CHECK SAMPLE SOURCE: SPEX

ELEMENTS	CCV-VAL	ICV	%D	CCV-1	%D	CCV-2	%D
Sb	5.00	5.05	0.98	5.04	0.86	5.04	0.78
As	5.00	4.92	-1.54	4.90	-1.94	4.95	-0.98
Ba	5.00	4.98	-0.42	4.91	-1.78	4.88	-2.46
Be	5.00	5.54	10.88 *	5.42	8.42	5.48	9.60
Cd	5.00	4.94	-1.18	4.95	-1.06	4.97	-0.56
Cr	5.00	5.00	-0.08	4.96	-0.74	5.02	0.36
[illegible]	5.00	5.02	0.38	5.00	-0.04	5.06	1.14
	5.00	4.97	-0.56	4.97	-0.68	5.05	0.98
Se	5.00	5.12	2.36	5.24	4.76	5.36	7.18
Tl	5.00	4.71	-5.82	4.69	-6.12	4.73	-5.38
Ag	0.50	0.47	-5.04	0.48	-4.22	0.47	-5.30
V	5.00	5.07	1.30	5.03	0.64	5.07	1.38
Zn	5.00	5.11	2.16	5.08	1.64	5.13	2.50

* = OUT OF CONTROL RANGE (%D +/- 10%)
NR = NOT REPORTED
%D = ((OBSERVED VALUE/TRUE VALUE)X100)-100

COMMENTS: * Reference CA-# 960423-01 TA

Q/A-Q/C REVIEWER INTL.: [signature] DATE: 5/10/96

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LABORATORY CONTROL SAMPLE

HIGHWAY 36 LAND DEVELOPMENT COMPANY
108555 E. HWY 36
DEER TRAIL, CO 80105

QC REPORT # 0845
RUN # ICAP960509
DATE OF RUN 5/9/96
UNITS: MG/L

CHECK SAMPLE ID: LCS
STANDARD SOURCE: NIST
CHECK SAMPLE STANDARD # 1186

ANALYSIS METHOD: SW846 METHOD 6010
LAB ID METHOD: TCLP2BT
TECH INITIALS IK

ELEMENT	VALUE	LCS-1ST	%REC	LCS-2ND	%REC
Sb	0.200	0.206	103.05		0.00
As	0.200	0.214	107.15		0.00
Ba	0.100	0.097	97.20		0.00
Be	0.040	0.045	112.75		0.00
Cd	0.100	0.106	106.40		0.00
Cr	0.100	0.093	92.70		0.00
Ni	0.100	0.106	105.60		0.00
Pb	0.200	0.224	111.80		0.00
	0.400	0.416	104.00		0.00
Tl	1.000	0.988	98.79		0.00
Ag	0.150	0.138	91.73		0.00
V	0.040	0.042	106.00		0.00
Zn	1.500	1.627	108.47		0.00

NR = NOT REPORTED
* = OUT OF CONTROL RANGE.(%REC +/- 20%)
%D = ((OBSERVED VALUE/TRUE VALUE)X100)-100

COMMENTS: _____

Q/A-Q/C REVIEWER INTL.: IK DATE 5/10/96

QC 7 of 15

II

1

BLANKS

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL, CO 80105

QC REPORT # 1184
RUN # ICAP960509
DATE OF RUN 5/9/96
UNITS: MG/L

TECH INITIALS TH
ANALYSIS METHOD # 6010
PREP BLK #1 960509m

LAB ID METHOD # TotP2PT
PREP BLK #2

ELEMENT	CALIBRATION BLANKS ICB	CCB-1	CCB-2	CCB-3	METHOD BLANKS BLK 1	BLK 2
Sb	BDL	BDL	BDL		BDL	
As	BDL	BDL	BDL		BDL	
Ba	BDL	BDL	BDL		BDL	
Be	BDL	BDL	BDL		BDL	
Cd	BDL	BDL	BDL		BDL	
Cr	BDL	BDL	BDL		BDL	
Ni	BDL	BDL	BDL		BDL	
Pb	BDL	BDL	BDL		BDL	
	BDL	BDL	BDL		BDL	
Tl	BDL	BDL	BDL		BDL	
Ag	BDL	BDL	BDL		BDL	
V	BDL	BDL	BDL		BDL	
Zn	BDL	BDL	BDL		BDL	

NR = NOT REPORTED
BDL = BELOW DETECTION LIMIT
* = VALUE ABOVE LIMIT (> 5% OF REGULATORY LEVEL)

COMMENTS

Q/A-Q/C REVIEWER INTL.: DATE 5/10/96

Qc 3 of 15

MATRIX SPIKE ADDITION / DUPLICATE RECOVERY

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL, CO 80105

METALS LAB # V-25603
QC REPORT # 0780
RUN # ICAP9600509
DATE OF RUN 5/9/96
TECH INITIALS

ANALYSIS METHOD: 6010 PREP METHOD: 3015
LAB ID METHOD: TCLP2PT SPIKING SOLUTION # 1186
MATRIX: WATER ____, TCLP X, OTHER ____
UNITS: mg/L or mg/Kg (Circle One)

ELEMENTS	SPK-ADDED	SAMPLE	SPIKE	%REC	SPIKE-DUP	%REC	RPD
Sb	0.200	0.0319	0.257	112.75	0.253	110.35	1.88
As	0.200	0.0507	0.305	127.00 *	0.278	113.55	9.24
Ba	0.100	0.8120	0.897	85.00	0.920	107.80	-2.51
Be	0.040	0.0000	0.043	106.25	0.042	106.00	0.24
Cd	0.100	0.0000	0.108	107.90	0.104	104.20	3.49
Cr	0.100	0.0205	0.119	98.80	0.115	94.80	3.41
[illegible]	0.100	0.0000	0.102	101.60	0.095	94.50	7.24
	0.200	0.0000	0.181	90.25	0.176	88.10	2.41
Se	0.400	0.0000	0.556	138.95 *	0.554	138.55 *	0.29
Tl	1.000	0.0000	1.036	103.60	0.957	95.69	7.94
Ag	0.150	0.0000	0.137	91.53	0.134	89.40	2.36
V	0.040	0.0156	0.056	99.75	0.055	98.00	1.27
Zn	1.500	0.0000	1.615	107.67	1.586	105.73	1.81

NR = NOT REPORTED
%REC = ((SPK-SMPL)/SPK-ADDED) X 100
* = OUT OF CONTROL RANGE (%REC <75% - >125%)
RPD = ((SPIKE-SPIKEDUP)/((SPIKE+SPIKEDUP)/2)) X 100
COMMENTS * LCS O.K. 5/9/96

A-Q/C INTL.: DATE 5/10/96

Qc 4 of 15

ROLLINS HWY 36 LABORATORY

MERCURY ANALYSIS WORKSHEET

SW-846 Method (check one): 7470 (X), 7471 ( )

n #: H6960510 Date: 5/10/96

Standard ID	Absorbance	Calc. Conc. (optional)	Comments
Blank	0		
0.40ug/L Std	0.008	0.339	
1.0 ug/L Std	0.020	1.13	
5.0 ug/L Std	0.083	5.26	
10 ug/L Std	0.153	9.86	
15 ug/L Std			

Correlation Coefficient (r): 0.99901

Stds. Traceability:

Stock Std # M1188 ICV/CCV Std # M1188

Sample ID	Absorbance	Inst. Conc.	D. F.	Sample Result mg/L or mg/Kg	QC: T. V.	% R	Comments
ICV	0.078	4.93	-		5.00	98.6	
ICB	0	<0.40	-			-	
Method Blank	0	1	-			-	
LCS	0.077	4.87	-		5.00	97.4	
V-25646	0	<0.40	20	<0.008			
V-25646ms	0.084	5.33			5.00	107	} RPD
V-25646msd	0.083	5.26			5.00	105	}
V-25654	0	<0.40		<0.008			
O-25648	0						
R-25626	0						
BLK 65	0						
high Sc 0.05 port	0.043	2.64		0.053			
CCV	0.083	5.26			5.00	105	
CCB	0	<0.40					
high Sc 0.01 NaHS 0.01 FeSO4 0.05 port	0		20	<0.008			
high Sc 0.10 port	0						
high Sc 0.01 NaHS 0.01 FeSO4 0.20 port	0						
high Sc 0.01 NaHS 0.01 FeSO4 0.40 port	0						
high Sc	0.120	7.69		0.154			
high Sc 2.0 port	0	<0.40		<0.008			
CCV	0.089	5.66			5.00	113	
CCB	0	<0.40					

CONTROLLED DOCUMENT

Analyst: Helene Sabol Date: 5/10/96

Tier II Review: Date: 5/14/96

Tier III Review: Date: 5-14-96

QC Windows (%):

ICV/CCV	85-115
LCS	80-120
MS/MSD	76-126
RPD	Qc 5d 10-20 95

II

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CONTINUING CALIBRATION VERIFICATION

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL, CO 80105

QC REPORT # 1185
RUN # ICAP960510
DATE OF RUN 5/10/96
UNITS: MG/L
LAB ID METHOD: TCLP2PT
TECH INITIALS HS

METHOD SW846/METHOD 6010
CHEK SAMPLE ID IS: ICV/CCV
METAL STD # MO 187
CHECK SAMPLE SOURCE: SPEX

ELEMENTS	CCV-VAL	ICV	%D	CCV-1	%D	CCV-2	%D
Sb	5.00	5.06	1.26	5.23	4.56	5.06	1.24
As	5.00	4.85	-2.94	5.03	0.54	4.80	-4.00
Ba	5.00	4.96	-0.76	4.77	-4.62	4.97	-0.54
Be	5.00	5.64	12.86 *	5.55	11.08 *	5.31	6.26 *
Cd	5.00	4.84	-3.20	5.14	2.80	4.82	-3.70
Cr	5.00	4.90	-2.00	5.08	1.50	4.91	-1.80
Co	5.00	4.94	-1.18	5.11	2.14	4.94	-1.30
Pb	5.00	4.84	-3.24	5.11	2.24	4.85	-3.04
Se	5.00	5.02	0.32	5.19	3.86	4.94	-1.28
Tl	5.00	4.66	-6.72	4.68	-6.36	4.82	-3.54
Ag	0.50	0.48	-4.64	0.49	-2.30	0.46	-7.46
V	5.00	5.02	0.38	5.07	1.40	4.99	-0.16
Zn	5.00	5.01	0.28	5.28	5.52	4.98	-0.38

* = OUT OF CONTROL RANGE (%D +/- 10%)
NR = NOT REPORTED
%D = ((OBSERVED VALUE/TRUE VALUE)X100)-100

COMMENTS: * Reference QCA# 96042301 TK 5/14/96

QA-Q/C REVIEWER INTL.: TK DATE: 5/14/96

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CONTINUING CALIBRATION VERIFICATION

OLLINS' HIGHWAY 36
108555 E. HWY 36
EER TRAIL, CO 80105

QC REPORT # 1185 cont
RUN # ICAL960510 cont
DATE OF RUN 5/10/96
UNITS: MG/L
LAB ID METHOD: ICLP2PT
TECH INITIALS RS

ETHOD SW846/METHOD 6010
HEK SAMPLE ID IS: ICV/CCV
ETAL STD # MO_____
HECK SAMPLE SOURCE: SPEX

LEMENTS	CCV-VAL	CCV-3	%D	CCV-1	%D	CCV-2	%D
Sb	5.00	4.82	-3.52	5.00	0.00		-100.00
As	5.00	4.60	-8.10	5.00	0.00		-100.00
Ba	5.00	5.09	1.70	5.00	0.00		-100.00
Be	5.00	5.18	3.52	5.00	0.00		-100.00
Cd	5.00	4.53	-9.32	5.00	0.00		-100.00
	5.00	4.72	-5.64	5.00	0.00		-100.00
	5.00	4.71	-5.82	5.00	0.00		-100.00
Pb	5.00	4.55	-9.02	5.00	0.00		-100.00
Se	5.00	4.91	-1.78	5.00	0.00		-100.00
Tl	5.00	4.65	-7.06	5.00	0.00		-100.00
Ag	0.50	0.46	-8.40	0.50	0.00		-100.00
V	5.00	4.87	-2.64	5.00	0.00		-100.00
Zn	5.00	4.70	-5.98	5.00	0.00		-100.00

= OUT OF CONTROL RANGE (%D +/- 10%)
R = NOT REPORTED
D = ((OBSERVED VALUE/TRUE VALUE)X100)-100

OMMENTS: _____

/A-Q/C REVIEWER INTL.: TR DATE: 5/14/96

QC 7 of 15

LABORATORY CONTROL SAMPLE

IGHWAY 36 LAND DEVELOPMENT COMPANY
108555 E. HWY 36
EER TRAIL, CO 80105

QC REPORT # 0846
RUN # ICAP960510
DATE OF RUN 5/10/96
UNITS: MG/L

HECK SAMPLE ID: LCS
TANDARD SOURCE: NIST
HECK SAMPLE STANDARD # 1586
ANALYSIS METHOD: SW846 METHOD 6010
LAB ID METHOD: TCLP2PT
TECH INITIALS IS

ELEMENT	VALUE	LCS-1ST	%REC	LCS-2ND	%REC
Sb	0.200	0.228	114.00		0.00
As	0.200	0.202	101.05		0.00
Ba	0.100	0.096	95.80		0.00
Be	0.040	0.045	113.00		0.00
Cd	0.100	0.104	104.20		0.00
Cr	0.100	0.107	107.20		0.00
	0.100	0.107	107.20		0.00
	0.200	0.229	114.50		0.00
Se	0.400	0.438	109.45		0.00
Tl	1.000	1.000	100.00		0.00
Ag	0.150	0.139	92.60		0.00
	0.040	0.040	99.50		0.00
Zn	1.500	1.663	110.87		0.00

NR = NOT REPORTED
* = OUT OF CONTROL RANGE (%REC +/- 20%)
SD = ((OBSERVED VALUE/TRUE VALUE)X100)-100

COMMENTS: _____

A-Q/C REVIEWER INTL.: _____ DATE 5/14/96

Qc 8 of 15

II

BLANKS

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL, CO 80105

QC REPORT # 1185
RUN # ICAP960510
DATE OF RUN 5/10/96
UNITS: MG/L

TECH INITIALS HS
ANALYSIS METHOD # 6010
PREP BLK #1 960510

LAB ID METHOD # TCLP2PT
PREP BLK #2

ELEMENT	CALIBRATION BLANKS				METHOD BLANKS	
	ICB	CCB-1	CCB-2	CCB-3	BLK 1	BLK 2
Sb	BDL	BDL	BD;	BDL	BDL	
As	BDL	BDL	BDL	BDL	BDL	
Ba	BDL	BDL	BDL	BDL	BDL	
Be	BDL	BDL	BDL	BDL	BDL	
Cd	BDL	BDL	BDL	BDL	BDL	
Cr	BDL	BDL	BDL	BDL	BDL	
[illegible]	BDL	BDL	BDL	BDL	BDL	
[illegible]	BDL	BDL	BDL	BDL	BDL	
Se	BDL	BDL	BDL	BDL	BDL	
Tl	BDL	BDL	BDL	BDL	BDL	
Ag	BDL	BDL	BDL	BDL	BDL	
V	BDL	BDL	BDL	BDL	BDL	
Zn	BDL	BDL	BDL	BDL	BDL	

R = NOT REPORTED
DL = BELOW DETECTION LIMIT
= VALUE ABOVE LIMIT (> 5% OF REGULATORY LEVEL)

COMMENTS

/A-Q/C REVIEWER INTL.: TC DATE 5/14/96

QC 96 15

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MATRIX SPIKE ADDITION / DUPLICATE RECOVERY

ROLLINS' HIGHWAY 36
108555 E. HWY 36
PEER TRAIL, CO 80105

METALS LAB # V-25654
QC REPORT # 0781
RUN # ICAP960510
DATE OF RUN 5/10/96
TECH INITIALS JS

ANALYSIS METHOD: 6010 PREP METHOD: 3015
LAB ID METHOD: TCLP2PT SPIKING SOLUTION # 1186
MATRIX: WATER____, TCLP ✓ ____, OTHER_____
UNITS: (mg/L) or mg/Kg (Circle One)

ELEMENTS	SPK-ADDED	SAMPLE	SPIKE	%REC	SPIKE-DUP	%REC	RPD
Sb	0.200	0.0386	0.288	124.60	0.270	115.80	6.31
As	0.200	0.0000	0.247	123.40	0.244	121.80	1.31
Ba	0.100	0.9767	1.061	84.30	1.090	113.30	-2.70
Be	0.040	0.0000	0.043	108.25	0.043	107.00	1.16
Cd	0.100	0.0000	0.109	108.90	0.106	105.50	3.17
[illegible]	0.100	0.0793	0.181	102.10	0.172	92.70	5.32
[illegible]	0.100	0.0000	0.099	99.30	0.093	93.20	6.34
Pb	0.200	0.0000	0.231	115.35	0.219	109.30	5.39
Se	0.100	0.0000	0.534	133.43*	0.520	129.88*	2.70
Tl	1.000	0.0000	0.935	93.47	0.926	92.55	0.99
Ag	0.150	0.0000	0.137	91.60	0.134	89.47	2.36
V	0.040	0.0103	0.052	103.25	0.049	96.00	5.78
Zn	1.500	0.0000	1.695	113.00	1.644	109.60	3.05

NR = NOT REPORTED
%REC = ((SPK-SMPL)/SPK-ADDED) X 100
* = OUT OF CONTROL RANGE (%REC <75% - >125%)
RPD = ((SPIKE-SPIKEDUP)/((SPIKE+SPIKEDUP)/2)) X 100
COMMENTS *LCS OK

QA/A-Q/C INTL.: [illegible] DATE 5/14/96

ROLLINS HWY 36 LABORATORY

MERCURY ANALYSIS WORKSHEET

SW-846 Method (check one): 7470 (X), 7471 ( )

Run #: H6960515 Date: 5/15/96

Standard ID	Absorbance	Calc. Conc. (optional)	Comments
Blank	0		
0.40 ug/L Std	0.007		
1.0 ug/L Std	6024		
5.0 ug/L Std	0.114		
10 ug/L Std	0.228		
15 ug/L Std	—		

Correlation Coefficient (r): 0.99992

Stds. Traceability:

Stock Std # M1188 ICV/CCV Std # M1188

Sample ID	Absorbance	Inst. Conc.	D. F.	Sample Result mg/L or mg/Kg	QC: T. V.	% R	Comments
ICV	0.116	5.09	-		5.00	102	
ICB	0	<0.40	-			-	
Method Blank	0	✓	-			-	
LCS	0.120	5.27	-		5.00	105	
V-25769	0	<0.40	20	<0.008			
MS	0.116	5.09			5.00	102	RPD = 2.52
MSD	0.119	5.22			5.00	104	
V-25770	0	<0.40	20	<0.008			
V-25771	0						
V-25784	0						
P-25720	0						
P-25721	0	✓	✓	✓			
CCV	0.117	5.14			5.00	103	
CCB	0	<0.40					
P-25722	0		20	<0.008			
P-25723	0						
P-25724	0						
R-25730	0						
R-25756	0						
P-25711	0						
R-25731	0						
✓	0.110	4.83			5.00	96.6	
CCB	0	<0.40					

CONTROLLED DOCUMENT

Analyst: Date: 5/15/96

Tier II Review: Date: 5/15/96

Tier III Review: Date: 5-15-96

QC Windows (%):

ICV/CCV	85-115
LCS	80-120
MS/MSD	75-125
RPD	QC limit 20

CONTINUING CALIBRATION VERIFICATION

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL, CO 80105

QC REPORT # 1188
RUN # ICAP9CC0515
DATE OF RUN 5/15/96
UNITS: MG/L
LAB ID METHOD: TCLP2PT
TECH INITIALS TR

METHOD SW846/METHOD 6010
CHEK SAMPLE ID IS: ICV/CCV
METAL STD # MO 1187
CHECK SAMPLE SOURCE: SPEX

ELEMENTS	CCV-VAL	ICV	%D	CCV-1	%D	CCV-2	%D
Sb	5.00	5.07	1.32	5.11	2.24	5.07	1.30
As	5.00	4.92	-1.56	5.06	1.28	5.11	2.28
Ba	5.00	4.99	-0.22	4.87	-2.54	4.88	-2.38
Be	5.00	5.46	9.18	5.51	10.16*	5.58	11.50*
Cd	5.00	4.86	-2.72	4.91	-1.74	4.80	-4.04
[illegible]	5.00	4.94	-1.22	5.03	0.58	5.05	0.90
[illegible]	5.00	4.97	-0.64	5.09	1.80	5.10	2.00
Pb	5.00	4.86	-2.72	5.01	0.22	4.95	-0.98
Se	5.00	5.11	2.20	5.26	5.26	5.30	5.90
Tl	5.00	4.74	-5.18	4.82	-3.54	4.89	-2.14
Ag	0.50	0.47	-5.34	0.47	-6.18	0.46	-8.16
V	5.00	5.06	1.22	5.07	1.42	5.09	1.82
Zn	5.00	5.04	0.82	5.12	2.40	5.06	1.16

* = OUT OF CONTROL RANGE (%D +/- 10%)
NR = NOT REPORTED
%D = ((OBSERVED VALUE/TRUE VALUE)X100)-100

COMMENTS: * Reference CA# 9604230 TR 5/15/96

Q/A-Q/C REVIEWER INTL.: RB DATE: 5/15/96

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I

LABORATORY CONTROL SAMPLE

IGHWAY 36 LAND DEVELOPMENT COMPANY
108555 E. HWY 36
EER TRAIL, CO 80105

QC REPORT # C8419
RUN # ICAP9608SR
DATE OF RUN 5/15/96
UNITS: MG/L

HECK SAMPLE ID: LCS
TANDARD SOURCE: NIST
HECK SAMPLE STANDARD # 1186

ANALYSIS METHOD: SW846 METHOD 6010
LAB ID METHOD: TCLP2PT
TECH INITIALS TH

ELEMENT	VALUE	LCS-1ST	%REC	LCS-2ND	%REC
Sb	0.200	0.215	107.50		0.00
As	0.200	0.219	109.40		0.00
Ba	0.100	0.099	99.00		0.00
Be	0.040	0.046	114.25		0.00
Cd	0.100	0.103	102.70		0.00
Cr	0.100	0.105	105.20		0.00
[illegible]	0.100	0.108	108.10		0.00
I	0.200	0.207	103.65		0.00
Se	0.400	0.417	104.25		0.00
Tl	1.000	1.040	104.00		0.00
Ag	0.150	0.134	89.07		0.00
V	0.040	0.041	101.50		0.00
Zn	1.500	1.611	107.40		0.00

P = NOT REPORTED
= OUT OF CONTROL RANGE (%REC +/- 20%)
= ((OBSERVED VALUE/TRUE VALUE)X100)-100

OMMENTS

/A-Q/C REVIEWER INTL.: HS DATE 5/15/96

CI

BLANKS

ROLLINS' HIGHWAY 36
10855 E. HWY 36
DEER TRAIL, CO 80105

QC REPORT # 1186
RUN # ICAP960515
DATE OF RUN 5/15/96
UNITS: MG/L

TECH INITIALS TL
ANALYSIS METHOD # 6010
PREP BLK #1 960515m

LAB ID METHOD # ~~6010~~ TCLP 2PT
PREP BLK #2 —

ELEMENT	CALIBRATION BLANKS ICB	CCB-1	CCB-2	CCB-3	METHOD BLANKS BLK 1	BLK 2
Sb	BDL	BDL	BDL	BDL	BDL	BDL
As	BDL	BDL	BDL	BDL	BDL	BDL
Ba	BDL	BDL	BDL	BDL	BDL	BDL
Be	BDL	BDL	BDL	BDL	BDL	BDL
Cd	BDL	BDL	BDL	BDL	BDL	BDL
Cr	BDL	BDL	BDL	BDL	BDL	BDL
	BDL	BDL	BDL	BDL	BDL	BDL
	BDL	BDL	BDL	BDL	BDL	BDL
Se	BDL	BDL	BDL	BDL	BDL	BDL
Tl	BDL	BDL	BDL	BDL	BDL	BDL
Ag	BDL	BDL	BDL	BDL	BDL	BDL
V	BDL	BDL	BDL	BDL	BDL	BDL
Zn	BDL	BDL	BDL	BDL	BDL	BDL

NR = NOT REPORTED
BDL = BELOW DETECTION LIMIT
* = VALUE ABOVE LIMIT (> 5% OF REGULATORY LEVEL)

COMMENTS _____

Q/A-Q/C REVIEWER INTL.: TL DATE 5/15/96

QC 14 of 15

II

MATRIX SPIKE ADDITION / DUPLICATE RECOVERY

ROLLINS' HIGHWAY 36
108555 E. HWY 36
DEER TRAIL, CO 80105

METALS LAB # V-25784
QC REPORT # 6784
RUN # ICAP9405S
DATE OF RUN 5/15/96
TECH INITIALS TK

ANALYSIS METHOD: 6010 PREP METHOD: 3015
LAB ID METHOD: TCLP2PT SPIKING SOLUTION # 1186
MATRIX: ~~WATER~~ , TCLP X , OTHER
UNITS: mg/L or mg/Kg (Circle One)

ELEMENTS	SPK-ADDED	SAMPLE	SPIKE	%REC	SPIKE-DUP	%REC	RPD
Sb	0.200	0.1549	0.377	111.05	0.374	109.75	0.69
As	0.200	0.0570	0.310	126.65*	0.324	133.25*	-4.17
Ba	0.100	0.1038	0.208	103.70	0.204	99.70	1.95
Be	0.040	0.0000	0.044	110.75	0.044	110.50	0.23
Cd	0.100	0.0253	0.128	102.30	0.127	102.10	0.16
C-	0.100	0.0087	0.110	101.30	0.105	96.50	4.46
.	0.100	0.0401	0.143	102.50	0.137	97.20	3.79
Pb	0.200	0.0000	0.252	125.80	0.242	120.90	3.97
Se	0.400	0.0000	0.582	145.48*	0.554	138.60*	4.84
Tl	1.000	0.0000	0.933	93.26	0.977	97.65	-4.60
Ag	0.150	0.0000	0.128	85.60	0.131	87.53	-2.23
V	0.010	0.0000	0.045	111.25	0.041	101.75	8.92
Zn	1.500	0.0000	1.619	107.93	1.646	109.73	-1.65

R = NOT REPORTED
REC = ((SPK-SMPL)/SPK-ADDED) X 100
= OUT OF CONTROL RANGE (%REC <75% - >125%)
PD = ((SPIKE-SPIKEDUP)/((SPIKE+SPIKEDUP)/2)) X 100
OMMENTS * LCS O.K. TK 5/15/96

/A-Q/C INTL.: KJ DATE 5/15/96

Qc 15 of 15

ATTACHMENT 3

WASTE ANALYSIS PLAN
APPROVED WASTE CODES

D Codes	F Codes	K Codes	P Codes	U Codes
D001 thru D043	F001 thru F012 F019 thru F028 F032 F034, F035 F037 thru F039	K001 thru K052 K060 thru K062 K064 thru K066 K069, K071 K073 K083 thru K088 K090, K091 K093 thru K118 K123 thru K126 K131, K132 K136 K141 thru K145 K147 thru K151 K156 thru K161	P001 thru P018 P020 thru P031 P033 thru P051 P054 P056 thru P060 P062 thru P078 P081, P082 P084, P085 P087 thru P089 P092 thru P099 P101 thru P116 P118 thru P123 P127, P128 P185 P188 thru P192 P194 P196 thru P199 P201 thru P205	U001 thru U012 U014 thru U223 U225 thru U249 U271 U277 thru U280 U328, U353, U359 U364 thru U367 U372, U373 U375 thru U379 U381 thru U387 U389 thru U396 U400 thru U404 U407 U409, U410, U411