Mountain States ACCUTEST LABORATORIES

02/07/11

Technical Report for

KRW Consulting, Inc.

FRU 297-20A

Project 1101-07

Accutest Job Number: D20762

Sampling Date: 01/26/11

Report to:

KRW Consulting, Inc.
8000 West 14th Avenue Suite 200
Lakewood, CO 80214
gknell@krwconsulting.com; dknudson@krwconsulting.com;
jhess@krwconsulting.com; crachak@krwconsulting.com
ATTN: Dwayne Knudson

Total number of pages in report: **18**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

John Hamilton
Laboratory Director

Client Service contact: Amanda Kissell 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)


Test results relate only to samples analyzed.

Sections: 1 2 3 4 5

# Table of Contents

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# Sample Summary

KRW Consulting, Inc.

**Job No:** D20762

FRU 297-20A
Project No: Project 1101-07

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| D20762-1 | 01/26/11 | 11:45 | BB | 02/01/11 | SO | Soil | BACKGROUND 1 |
| D20762-2 | 01/26/11 | 12:00 | BB | 02/01/11 | SO | Soil | BACKGROUND 2 |
| D20762-3 | 01/26/11 | 12:15 | BB | 02/01/11 | SO | Soil | BACKGROUND 3 |
| D20762-4 | 01/26/11 | 12:30 | BB | 02/01/11 | SO | Soil | BACKGROUND 4 |
| D20762-5 | 01/26/11 | 12:45 | BB | 02/01/11 | SO | Soil | BACKGROUND 5 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# CASE NARRATIVE / CONFORMANCE SUMMARY

| | | | |
|---|---|---|---|
| **Client:** | KRW Consulting, Inc. | **Job No** | D20762 |
| **Site:** | FRU 297-20A | **Report Dat** | 2/7/2011 2:49:12 PM |

On 02/01/2011, five (5) samples, 0 Trip Blanks, and 0 Field Blanks were received at Accutest Mountain States (AMS) at a temperature of 2.1°C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D20762 was assigned to the project. The lab sample IDs, client sample IDs, and dates of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

## Metals By Method SW846 6020

**Matrix** SO **Batch ID:** MP3970

- All samples were digested and analyzed within the recommended method holding time.
- The method blank for this batch meets method specific criteria.
- Samples D20760-1MS, D20760-1MSD, and D20760-1SDL were used as the QC samples for the metals analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO **Batch ID:** GN8107

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Mountain States ACCUTEST LABORATORIES



## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | BACKGROUND 1 | | |
| **Lab Sample ID:** | D20762-1 | **Date Sampled:** | 01/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 02/01/11 |
| | | **Percent Solids:** | 81.2 |
| **Project:** | FRU 297-20A | | |

**Metals Analysis**

| Analyte | Result | RL | Units | DF | Prep | Analyzed | By | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 3.8 | 0.49 | mg/kg | 5 | 02/04/11 | 02/04/11 | JM | SW846 6020 [1] | SW846 3010A [2] |

(1) Instrument QC Batch: MA1295
(2) Prep QC Batch: MP3970

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | BACKGROUND 2 | | |
| **Lab Sample ID:** | D20762-2 | **Date Sampled:** | 01/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 02/01/11 |
| | | **Percent Solids:** | 70.1 |
| **Project:** | FRU 297-20A | | |

**Metals Analysis**

| Analyte | Result | RL | Units | DF | Prep | Analyzed | By | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.0 | 0.52 | mg/kg | 5 | 02/04/11 | 02/04/11 | JM | SW846 6020 [1] | SW846 3010A [2] |

(1) Instrument QC Batch: MA1295
(2) Prep QC Batch: MP3970

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | BACKGROUND 3 | | |
| **Lab Sample ID:** | D20762-3 | **Date Sampled:** | 01/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 02/01/11 |
| | | **Percent Solids:** | 78.1 |
| **Project:** | FRU 297-20A | | |

**Metals Analysis**

| Analyte | Result | RL | Units | DF | Prep | Analyzed | By | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 4.1 | 0.49 | mg/kg | 5 | 02/04/11 | 02/04/11 | JM | SW846 6020 [1] | SW846 3010A [2] |

(1) Instrument QC Batch: MA1295
(2) Prep QC Batch: MP3970

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | BACKGROUND 4 | | |
| **Lab Sample ID:** | D20762-4 | **Date Sampled:** | 01/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 02/01/11 |
| | | **Percent Solids:** | 81.0 |
| **Project:** | FRU 297-20A | | |

**Metals Analysis**

| Analyte | Result | RL | Units | DF | Prep | Analyzed | By | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 6.8 | 0.48 | mg/kg | 5 | 02/04/11 | 02/04/11 | JM | SW846 6020 [1] | SW846 3010A [2] |

(1) Instrument QC Batch: MA1295
(2) Prep QC Batch: MP3970

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | BACKGROUND 5 | | |
| **Lab Sample ID:** | D20762-5 | **Date Sampled:** | 01/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 02/01/11 |
| | | **Percent Solids:** | 87.4 |
| **Project:** | FRU 297-20A | | |

**Metals Analysis**

| Analyte | Result | RL | Units | DF | Prep | Analyzed | By | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 7.6 | 0.44 | mg/kg | 5 | 02/04/11 | 02/04/11 | JM | SW846 6020 [1] | SW846 3010A [2] |

(1) Instrument QC Batch: MA1295
(2) Prep QC Batch: MP3970

RL = Reporting Limit

Mountain States ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

# CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST LABORATORIES
Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: D20762

**Client / Reporting Information**

Company Name: KRW Consulting
Street Address: 8000 W 14th Ave
City: Lakewood State: CO Zip: 80214
Project Contact: Dwayne Knudson E-mail:
Phone #: 303 239 9011 Fax #: 303 239 0745
Sampler(s) Name(s): Brent B Phone #: 970 756 4205

**Project Information**

Project Name: FRU 297-20A Back Ground
Street:
City:
Project#: 1101-07
Client PO#:
Project Manager:

**Billing Information (If different from Report to)**

Company Name:
Street Address:
City State Zip:
Attention: PO#:

**Requested Analysis (see TEST CODE sheet)**

Arsenic

**Matrix Codes**

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | Number of preserved Bottles: HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bisulfate | Arsenic | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Back Ground 1 | | 01/26/2011 | 1145 | BB | SO | 1 | | | | | 1 | | | | | 1 | 01 |
| | Back Ground 2 | | 01/26/2011 | 1200 | BB | SO | 1 | | | | | 1 | | | | | 1 | 02 |
| | Back Ground 3 | | 01/26/2011 | 1215 | BB | SO | 1 | | | | | 1 | | | | | 1 | 03 |
| | Back Ground 4 | | 01/26/2011 | 1230 | BB | SO | 1 | | | | | 1 | | | | | 1 | 04 |
| | Back Ground 5 | | 01/26/2011 | 1245 | BB | SO | 1 | | | | | 1 | | | | | 1 | 05 |
| | | | | | | | | | | | | | | | | | | (P) |

**Turnaround Time (Business days)**

Approved By (Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ Std. 5 Business Days (By Contract only)
- ☐ 5 Day RUSH
- ☒ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

**Data Deliverable Information**

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ Commercial "B" +Narrative
- ☐ FULLT1 (Level 3+4)
- ☐ State Forms
- ☐ EDD Format
- ☒ PDF

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

email results to
dknudson@krwconsulting.com
jhess@... gknell@... bberger@...

**Sample Custody must be documented below each time samples change possession, including courier delivery.**

| | Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
|---|---|---|---|---|---|---|
| 1 | Brent Berger | 01/26/2011 | 1 | 2 | | 2 2-1-11 good |
| | Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
| 3 | | | 3 | 4 | | 4 |
| | Relinquished by: | Date Time: | Received By: | Custody Seal # | Preserved where applicable | On Ice | Cooler Temp. |
| 5 | | | 5 | ☐ Intact ☐ Not Intact | ☐ NA | ☑ | 2-1 |

**D20762: Chain of Custody**
**Page 1 of 1**

Mountain States ACCUTEST LABORATORIES



## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D20762
Account: KRWCCOL - KRW Consulting, Inc.
Project: FRU 297-20A

QC Batch ID: MP3970
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 02/04/11

| Metal | RL | IDL | MDL | MB raw | final |
|---|---|---|---|---|---|
| Aluminum | 25 | .14 | 1.2 | | |
| Antimony | 0.20 | .001 | .0095 | | |
| Arsenic | 0.40 | .049 | .22 | 0.25 | <0.40 |
| Barium | 1.0 | .0035 | .1 | | |
| Beryllium | 0.10 | .0075 | .014 | | |
| Boron | 20 | .97 | 1 | | |
| Cadmium | 0.050 | .023 | .048 | | |
| Calcium | 200 | 1.8 | 8.2 | | |
| Chromium | 1.0 | .021 | .24 | | |
| Cobalt | 0.10 | .0033 | .003 | | |
| Copper | 1.0 | .011 | .063 | | |
| Iron | 20 | .81 | 3.7 | | |
| Lead | 0.25 | .0012 | .015 | | |
| Magnesium | 50 | .067 | 2.6 | | |
| Manganese | 0.50 | .007 | .029 | | |
| Molybdenum | 0.50 | .0044 | .023 | | |
| Nickel | 1.0 | .0029 | .031 | | |
| Phosphorus | 30 | 1.8 | 3.5 | | |
| Potassium | 100 | 2 | 3.2 | | |
| Selenium | 0.20 | .075 | .19 | | |
| Silver | 0.050 | .0008 | .002 | | |
| Sodium | 250 | .8 | 4.4 | | |
| Strontium | 10 | .004 | .04 | | |
| Thallium | 0.10 | .015 | .02 | | |
| Tin | 5.0 | .006 | .028 | | |
| Titanium | 1.0 | .035 | .062 | | |
| Uranium | 0.25 | .00038 | .0009 | | |
| Vanadium | 2.0 | .052 | .29 | | |
| Zinc | 5.0 | .039 | .12 | | |

Associated samples MP3970: D20762-1, D20762-2, D20762-3, D20762-4, D20762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D20762
Account: KRWCCOL - KRW Consulting, Inc.
Project: FRU 297-20A

QC Batch ID: MP3970
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 02/04/11

| Metal | D20760-1 Original | MS | Spikelot MPICPALL | % Rec | QC Limits |
|---|---|---|---|---|---|
| Aluminum | | | | | |
| Antimony | | | | | |
| Arsenic | 13.5 | 113 | 109 | 91.5 | 60-119 |
| Barium | | | | | |
| Beryllium | | | | | |
| Boron | | | | | |
| Cadmium | | | | | |
| Calcium | | | | | |
| Chromium | | | | | |
| Cobalt | | | | | |
| Copper | | | | | |
| Iron | | | | | |
| Lead | | | | | |
| Magnesium | | | | | |
| Manganese | | | | | |
| Molybdenum | | | | | |
| Nickel | | | | | |
| Phosphorus | | | | | |
| Potassium | | | | | |
| Selenium | | | | | |
| Silver | | | | | |
| Sodium | | | | | |
| Strontium | | | | | |
| Thallium | | | | | |
| Tin | | | | | |
| Titanium | | | | | |
| Uranium | | | | | |
| Vanadium | | | | | |
| Zinc | | | | | |

Associated samples MP3970: D20762-1, D20762-2, D20762-3, D20762-4, D20762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D20762
Account: KRWCCOL - KRW Consulting, Inc.
Project: FRU 297-20A

QC Batch ID: MP3970 Methods: SW846 6020
Matrix Type: SOLID Units: mg/kg

Prep Date: 02/04/11

| Metal | D20760-1 Original | MSD | Spikelot MPICPALL | % Rec | MSD RPD | QC Limit |
|---|---|---|---|---|---|---|
| Aluminum | | | | | | |
| Antimony | | | | | | |
| Arsenic | 13.5 | 110 | 113 | 85.4 | 2.7 | 20 |
| Barium | | | | | | |
| Beryllium | | | | | | |
| Boron | | | | | | |
| Cadmium | | | | | | |
| Calcium | | | | | | |
| Chromium | | | | | | |
| Cobalt | | | | | | |
| Copper | | | | | | |
| Iron | | | | | | |
| Lead | | | | | | |
| Magnesium | | | | | | |
| Manganese | | | | | | |
| Molybdenum | | | | | | |
| Nickel | | | | | | |
| Phosphorus | | | | | | |
| Potassium | | | | | | |
| Selenium | | | | | | |
| Silver | | | | | | |
| Sodium | | | | | | |
| Strontium | | | | | | |
| Thallium | | | | | | |
| Tin | | | | | | |
| Titanium | | | | | | |
| Uranium | | | | | | |
| Vanadium | | | | | | |
| Zinc | | | | | | |

Associated samples MP3970: D20762-1, D20762-2, D20762-3, D20762-4, D20762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D20762
Account: KRWCCOL - KRW Consulting, Inc.
Project: FRU 297-20A

QC Batch ID: MP3970
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 02/04/11

| Metal | BSP Result | Spikelot MPICPALL | % Rec | QC Limits |
|---|---|---|---|---|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | 86.9 | 100 | 86.9 | 80-120 |
| Barium | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | | | | |
| Calcium | | | | |
| Chromium | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Iron | | | | |
| Lead | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | | | | |
| Silver | | | | |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | | | | |

Associated samples MP3970: D20762-1, D20762-2, D20762-3, D20762-4, D20762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D20762
Account: KRWCCOL - KRW Consulting, Inc.
Project: FRU 297-20A

QC Batch ID: MP3970
Matrix Type: SOLID

Methods: SW846 6020
Units: ug/l

Prep Date: 02/04/11

| Metal | D20760-1 Original | SDL 5:25 | %DIF | QC Limits |
|---|---|---|---|---|
| Aluminum | | | | |
| Antimony | | | | |
| Arsenic | 119 | 118 | 0.7 | 0-10 |
| Barium | | | | |
| Beryllium | | | | |
| Boron | | | | |
| Cadmium | | | | |
| Calcium | | | | |
| Chromium | | | | |
| Cobalt | | | | |
| Copper | | | | |
| Iron | | | | |
| Lead | | | | |
| Magnesium | | | | |
| Manganese | | | | |
| Molybdenum | | | | |
| Nickel | | | | |
| Phosphorus | | | | |
| Potassium | | | | |
| Selenium | | | | |
| Silver | | | | |
| Sodium | | | | |
| Strontium | | | | |
| Thallium | | | | |
| Tin | | | | |
| Titanium | | | | |
| Uranium | | | | |
| Vanadium | | | | |
| Zinc | | | | |

Associated samples MP3970: D20762-1, D20762-2, D20762-3, D20762-4, D20762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested