



PARAGON ANALYTICS,

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September 8, 2000

Mr. Michael Dale
NMED DOE Oversight Bureau
134 State Road 4, Suite A
White Rock, NM 87544



RE: Paragon Workorder: 00-08-259
Client Project Name: HRMB 2000 EPA Grant
Client Project Number: 7.10.00-157 (SW)

Dear Mr. Dale:

Eight water samples were received from NMED DOE Oversight Bureau on May 4, 2000. The samples were scheduled for Manganese (pages 1-8) analysis. The results for this analysis are contained in the following reports.

Thank you for your confidence in Paragon Analytics, Inc. Should you have any questions, please call.

Sincerely,

Paragon Analytics, Inc.
Lance Steere
Senior Project Manager

LRS/mc
Enclosure: Report



3065

G/M/2000
FA-6

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Paragon Analytics, Incorporated

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0008259

Client Name: NMED DOE Oversight Bureau

Client Project Name: HRMB 2000 EPA Grant

Client Project Number: 7.10.00-157 (SW)

Client PO Number: Carol; rem Line Item #'s!

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
PC SPRING	hit	0008259-1	5-026-7	5/2/00	12:00
PC SPRING	diss.	0008259-2	5-026-6	5/2/00	12:00
PA-10.6	hit	0008259-3	5-026-2	5/2/00	14:20
PA-10.6	diss.	0008259-4	5-026-1	5/2/00	14:20
SR 501 POND	hit	0008259-5	5-187-06	5/25/00	12:15
SR 501 POND	diss.	0008259-6	5-187-04	5/25/00	12:15
PA-10.6	hit	0008259-7	5-187-13	5/25/00	10:30
PA-10.6	diss.	0008259-8	5-187-11	5/25/00	10:30



PARAGON ANALYTICALS, INC.
225 Commerce Drive Ft. Collins, CO 80524

(800) 443-1511 or (970) 490-1511
(970) 490-1522 - Fax

Project 7.10.00 - 157 (sw)

CHAIN OF CUSTODY

DATE 8-21-00 Page 1 of 1

ACCESSION NUMBER (LAB ID) 0008289

REPORT TO: Michael R. Dale
COMPANY: NMED Doe 03
ADDRESS: 134 STATE ROAD 4, SUITE A
White Rock, NM 87544
SAMPLER: M. Dale, J. Young
505-672-0449 505-672-0466
PHONE NO. FAX NO.

ANALYSIS REQUESTED

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	Oil & Grease 9070/9071/413.2	418.1 - TRPH	8015 Mod. - Gasoline	8015 Mod. - Diesel	8015m/8020 - Gasoline/BETX	8020 - BETX only	8240/8260 - GC/MS VOC's	8270 - GC/MS SVOC's	8080 - Pesticides/PCB's	8080 - PCB's only	8310/610 - HPLC PNA's	8150 - Herbicides	8141/614 - OP Pesticides	TOX - EDX - AOX - TX	Total Metals *(specify parameters in comments)	TCLP: *(specify parameters in comments)	Gross Alpha / Beta	Gross Gamma	Gamma Spec	Isotopic Plutonium	Isotopic Uranium	Total Uranium (KPA)	Radium 226 / 228	Tritium (H3)	Strontium 89 / 90	8315 - Formaldehyde	% Moisture	Dissolved Mn (#31)	Total Mn (#31)	Number of Binners	
PC Spring	5.2.00	1200	H ₂ O	03/0																													X	X	1
PA-10.6	5.2.00	1420	H ₂ O	03/0																													X	X	1
SR 501 POND	5.25.00	1215	H ₂ O	05/0																												X	X	1	
PA-10.6	5.25.00	1030	H ₂ O	05/0																												X	X	1	

PROJECT INFORMATION
PROJECT NUMBER: 7.10.00 - 157 (sw)
PROJECT NAME:
P.O. NUMBER:
TAT: STANDARD RUSH DUE
SAMPLE DISPOSAL: HAZ WASTE \$5.00 ea RAD CHEM \$15.00 ea RETURN

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS:
CHAIN OF CUSTODY SECTIONS:
ISSUES IN CONTACT WITH:
RECEIVED FOR (PURPOSE):

RELINQUISHED BY: 1 Sign. Michael Dale 12:00 Time 8-21-00 Date
RELINQUISHED BY: 2
RELINQUISHED BY: 3
Company NMED Doe 03 Company Company

COMMENTS: Samples submitted with Earlier Projects: HRMB 5.2.00 & HRMB 5.25.00-24(SU)
(1, 3, 5, 7 TOT 2, 4, 6, 8 DS)

RECEIVED BY: 1 Sign. Time
RECEIVED BY: 2 Sign. Time
RECEIVED BY: 3 Sign. Time
Print Date Print Date Print Date
Company Company Company

* DO NOT WRITE IN SHADED AREAS



Paragon Analyticals, Inc.

MANGANESE CASE NARRATIVE

NMED DOE Oversight Bureau

HRMB 200 EPA Grant -- 7.10.00-157 (SW)

Order Number - 0008259

1. This report consists of 4 water samples for both total recoverable and dissolved manganese.
2. The samples were received cool and intact on 05/04/00 and 05/30/00 at a temperature of 17° Celsius.
3. The total recoverable samples had been preserved for the requested analyses. The dissolved samples had been filtered and preserved prior to receipt.
4. The samples were prepared for analysis based on SW-846, 3rd Edition procedures. For analysis by Trace ICP, the samples were digested following method 3005A and PAI SOP 806 Rev. 5.
5. The samples were analyzed following SW-846, 3rd Edition procedures.

Analysis by Trace ICP followed method 6010B and PAI SOP 807 Rev. 4.

The relationship between intensity and concentration for each element is established using at least four standards, one of which is a blank solution. The equation which relates intensity to concentration is:

$$I = A_0 + (A_1 * c^n) + (A_2 * c^{2n})$$

where: I = intensity
c = concentration
A₀ = offset coefficient
A₁ = gain coefficient
A₂ = curvature coefficient
n = exponent coefficient

During sample analysis concentrations are computed by the software and the results are printed in mg/L. The instrument software does not provide a printout which gives both intensity and concentration. The validity of the calibration equation is tested by analyzing the following solutions: a blank, a low level check solution with concentrations near the reporting limit, an Initial



Calibration Verification (ICV) standard from a 2nd source standard solution with concentrations near the middle of the analytical range, a Continuing Calibration Verification (CCV) standard with concentrations at two times those in the ICV, and a readback of the highest calibration standard.

These solutions provide verification that the calibration equations are functioning properly throughout the analytical range of the instrument. During sample analysis dilutions are made for analytes found at concentrations above the highest calibration standard. No results are taken from extrapolations beyond the highest standard.

6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
 7. The samples were prepared and analyzed within the established hold times.
- All in house quality control procedures were followed, as described below.
8. General quality control procedures.
 - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch. There were not more than 20 samples in each digestion batch.
 - The preparation (method) blank results associated with each batch were below the reporting limits for the requested analyte. This indicates that no contaminants were introduced to the samples during the digestion procedure.
 - The laboratory control sample associated with each batch was within the acceptance limits with the exception of the LCS for samples -1 to -4. An unknown contamination of about 0.25 ppm occurred with this batch. The samples were either below the reporting limit or had a value much lower than the contamination level found in the LCS so it was determined that the contamination found in the LCS more than likely did not occur in the samples. A LCSD was performed with this batch. The LCSD was within the acceptance limits.
 - All initial and continuing calibration blanks associated with each batch were below the reporting limit for the requested analyte. This indicates a valid calibration and stable instrument conditions.
 - All initial and continuing calibration verifications associated with each batch were within the acceptance criteria for the requested analyte. This indicates a valid calibration and stable instrument conditions.
 - The interference check samples, and high standard readbacks associated with Method 6010B analyses were within acceptance criteria.
 9. PAI sample IDs 0005050-1 and 0005141-1 were designated as the QC samples for these analyses.
 - A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.



- A sample duplicate and spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.
- A serial dilution was analyzed with each batch. All acceptance criteria were met.

10. Sample dilutions were not required for the requested analyses.

The data contained in the following report have been reviewed and approved by the personnel listed below:

Darryl Patrick

Darryl Patrick
Senior Inorganic Chemist

9/8/00

Date

SW

Reviewer's Initials

9/8/00

Date

CERTIFICATION

Paragon Analytical, Inc. certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Paragon Analytics, Incorporated

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0008259

Client Name: NMED DOE Oversight Bureau

Client Project Name: HRMB 2000 EPA Grant

Client Project Number: 7.10.00-157 (SW)

Client PO Number: Carol; rem Line Item #'s!

Client Sample	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
PC SPRING	0008259-1		WATER	5/2/00	12:00
PC SPRING	0008259-2		WATER	5/2/00	12:00
PA-10.6	0008259-3		WATER	5/2/00	14:20
PA-10.6	0008259-4		WATER	5/2/00	14:20
SR 501 POND	0008259-5		WATER	5/25/00	12:15
SR 501 POND	0008259-6		WATER	5/25/00	12:15
PA-10.6	0008259-7		WATER	5/25/00	10:30
PA-10.6	0008259-8		WATER	5/25/00	10:30

Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M - Duplicate injection precision was not met.
 - N - Spiked sample recovery not within control limits. A post spike is analyzed for all 6010B analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than 4 times the spike added concentration.
 - * - Duplicate analysis (relative percent difference) not within control limits.

MANGANESE

Lab Name: Paragon Analytics, Inc.

Client Name: NMED DOE Oversight Bureau

Client Project ID: HRMB 2000 EPA Grant -- 7.10.00-157 (SW)

Order Number: 0008259

Date Collected: 05/02/00

Prep Date: 05/10/00

Sample Matrix: Water

Date Analyzed: 05/11/00

Analyte	Client Sample ID		Lab Sample ID	Concentration mg/L	Reporting Limit mg/L
Manganese	Reagent Blank		F000510-1MB	ND	0.01
Manganese	PC SPRING	TR	0008259-1	ND	0.01
Manganese	PC SPRING	DS	0008259-2	ND	0.01
Manganese	PA-10.6	TR	0008259-3	0.019	0.01
Manganese	PA-10.6	DS	0008259-4	ND	0.01

ND = Not detected at or above the reporting limit.

TR = Total Recoverable Fraction

DS = Dissolved Fraction

00006

**TOTAL RECOVERABLE METALS
MATRIX SPIKE**

Lab Name: Paragon Analytics, Inc.
 Client Name: NMED DOE Oversight Bureau
 Lab Sample ID: 0005050-1

Sample ID
Shared QC

Sample Matrix: Water

Prep Date: 05/10/00
 Date Analyzed: 05/11/00

Analyte	Spike Added mg/L	Sample Conc. mg/L	MS Conc. mg/L	% Rec. (limits 80-120%)	Flags
Manganese	0.50	0.028	0.493	93	

Analyte	MSD Conc. mg/L	MSD % Rec. (limits 80-120%)	Relative % Difference (limits 0-20%)	Flags
Manganese	0.496	94	1	

MANGANESE

Lab Name: Paragon Analytics, Inc.

Client Name: NMED DOE Oversight Bureau

Client Project ID: HRMB 2000 EPA Grant -- 7.10.00-157 (SW)

Order Number: 0008259

Date Collected: 05/25/00

Prep Date: 05/31/00

Sample Matrix: Water

Date Analyzed: 06/06/00

Analyte	Client Sample ID		Lab Sample ID	Concentration mg/L	Reporting Limit mg/L
Manganese	Reagent Blank		F000510-1MB	ND	0.01
Manganese	SR 501 POND	TR	0008259-5	1.3	0.01
Manganese	SR 501 POND	DS	0008259-6	0.085	0.01
Manganese	PA-10.6	TR	0008259-7	0.019	0.01
Manganese	PA-10.6	DS	0008259-8	ND	0.01

ND = Not detected at or above the reporting limit.

TR = Total Recoverable Fraction

DS = Dissolved Fraction

00008

**TOTAL RECOVERABLE METALS
MATRIX SPIKE**

Lab Name: Paragon Analytics, Inc.
 Client Name: NMED DOE Oversight Bureau
 Lab Sample ID: 0005141-1

Sample ID
Shared QC

Sample Matrix: Water

Prep Date: 05/31/00
 Date Analyzed: 06/06/00

Analyte	Spike Added mg/L	Sample Conc. mg/L	MS Conc. mg/L	% Rec. (limits 80-120%)	Flags
Manganese	0.50	0.056	0.521	93	

Analyte	MSD Conc. mg/L	MSD % Rec. (limits 80-120%)	Relative % Difference (limits 0-20%)	Flags
Manganese	0.528	94	1	