

May 1, 1997

R&M No. 751030

Ken Flynn Alaska
1502 Juneau Street
Anchorage, Alaska 99501

ATTN: Mr. Ken Flynn
President

RE: Results of Supplemental Environmental Site Investigation
1410 Rudakof Circle, Anchorage, Alaska

Dear Mr. Flynn:

R&M Consultants, Inc. (R&M) is pleased to report the findings of our supplemental Environmental Site Investigation at 1410 Rudakof Circle as planned in our proposal dated March 27, 1997. During our previous investigation, reported March 24, 1997, contamination which may be in excess of regulatory limits was encountered. Laboratory analyses detected 84 to 204 ppm Total Petroleum Hydrocarbons (TPH) in soils located between 4 and 6 feet below ground surface. The purpose of this supplemental investigation was to obtain additional samples from which it would be possible to determine the specific range of petroleum contamination, i.e. Gasoline, Diesel, or Residual Range Organics, which was detected in our previous investigation. A site plan, the Logs of Test Boring, and laboratory analytical results are attached herewith.

This supplemental Environmental Site Investigation is limited in scope to one shallow borehole located in the vicinity of a previous boring, and drilled only through the depths at which contamination was previously detected. No conclusions concerning other areas of the property can be inferred from the information obtained in this and our previous investigations. Therefore, the results of this investigation do not represent a thorough characterization of the site or a Phase II Environmental Site Assessment. In addition to

Ken Flynn Alaska
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sites which were discussed in our previous report, there may be additional sites with ascertainable environmental conditions within the recommended search areas prescribed in ASTM Practice E 1527. Therefore, this report does not constitute a Phase I or Phase II Environmental Site Assessment.

BACKGROUND INFORMATION

The legal description of the property is Lot 5A, DeBarr-Bragaw Subdivision, Anchorage, Alaska. A one-story building is located along the northern property boundary. Environmental concerns for the property, based on site history, are as follows: the DeBarr-Bragaw Subdivision was an oval-shaped, vehicle race track, which may have been paved, between at least 1959 and the late 1970's. The subject property is located in the northwest portion of the open area at the center of the oval track. The area appears to have been cleared and graded prior to 1980. The building on the subject property, as well as the gas station, car wash, and former auto repair shop located on lots adjacent to the subject property, were constructed between 1980 and 1985. These three properties adjacent to the subject site have documented petroleum contamination. A brief description of known conditions at these sites obtained through review of Alaska Department of Environmental Conservation (ADEC) files was presented in our previous report.

Review of known conditions at adjacent sites suggested that the area of the subject property most likely to have contamination which may have migrated from adjacent sites was the northwestern quadrant. Therefore, our first borehole was located as close to the northwestern corner of the property as possible while avoiding utility lines. R&M supervised the installation of one borehole/temporary monitoring well by Discovery Drilling on March 7, 1997. Here, R&M performed field screening and collection of soil and groundwater samples for laboratory analyses using procedures outlined in the Alaska Department of Environmental Conservation (ADEC) Standard Sampling Procedures Manual. The panel of laboratory analyses included Total Petroleum Hydrocarbons (TPH) by EPA Method 418.1 and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by EPA Method 8020. Samples were submitted to Columbia Analytical Services (CAS) on March 7, 1997.

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Laboratory analyses detected 84 to 204 ppm TPH in soils located between 4 and 6 feet below ground surface. No BTEX contamination was detected, and soil contamination at further depths and groundwater contamination appeared absent. Soil cleanup levels established by ADEC are based upon Gasoline, Diesel, and Residual Range Organics contamination, which cannot be distinguished by EPA Method 418.1 (TPH analysis). Therefore, further samples were obtained on April 2, 1997 in order to clarify the type of contamination present.

SUPPLEMENTAL FIELD INVESTIGATION

The borehole sampled during this supplemental investigation, designated RM-02, was located as close as possible to the previous boring, RM-01, while avoiding utility conflicts and soils which were disturbed during the previous investigation. It is important to note that Boring RM-02 was located in a paved area, while Boring RM-01 was located at the edge of the pavement. Both boreholes appear on the site plan, attached as Drawing A-02. Logs of Test Boring are presented as Drawings A-03 and A-04, respectively.

No petroleum odor was observed in soils from Borehole RM-02. The green staining of soils returned from the 2.5 to 4.5 feet below ground surface (bgs) interval present in Boring RM-01 was absent in RM-02. The zone of saturated soil which occurred between approximately 4 and 5.5 feet bgs in RM-01 also was not apparent in RM-02. Sample 1410-T2-01 was taken at an identical depth to Sample 1410-01 (March 7, 1997). Sample 1410-T2-02 was taken from soils located about 6.5 to 7 feet bgs, slightly deeper than sample 1410-02 (March 7, 1997).

SUPPLEMENTAL FIELD SCREENING

The Log of Test Boring for RM-02 is presented as Drawing A-04. The table below summarizes soil field screening results.

SAMPLE ID	1410-T2-1	1410-T2-2
Depth (ft)	4-4.5	6.5-7
PID reading (ppm)	0.8	0.6

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Samples 1410-T2-01 and 1410-T2-02 were submitted to Columbia Analytical Services on April 3, 1997 for analysis. Field screening did not detect volatile hydrocarbons in soil from this area.

LABORATORY ANALYTICAL RESULTS

Laboratory analytical results detected minor soil contamination within seven feet bgs. The following tables summarize laboratory analytical results for each borehole. The laboratory analytical reports for each boring appears in Attachment B.

SOIL ANALYTICAL RESULTS, RM-02

SAMPLE ID	DEPTH (ft)	RESIDUAL RANGE ORGANICS (AK 103) (ppm)	DIESEL RANGE ORGANICS (AK 102) (ppm)	GASOLINE RANGE ORGANICS (AK 101) (ppm)	BENZENE BY EPA 5030A (ppm)	TOLUENE BY EPA 5030A (ppm)	ETHYL-BENZENE BY EPA 5030A (ppm)	TOTAL XYLENES BY EPA 5030A (ppm)
1410-RM2-1	4-4.5	ND	ND	ND	ND	ND	ND	ND
1410-RM2-2	6.5-7	ND	ND	ND	0.11	ND	ND	ND

ND indicates that the analyte was not detected at the Minimum Detection Limit (MDL) for the analysis requested.

SOIL ANALYTICAL RESULTS, RM-01

SAMPLE ID	DEPTH (ft)	TOTAL PETROLEUM HYDROCARBONS BY EPA 418.1 (ppm)	BENZENE BY EPA 5030A (ppm)	TOLUENE BY EPA 5030A (ppm)	ETHYLBENZENE BY EPA 5030A (ppm)	TOTAL XYLENES BY EPA 5030A (ppm)
1410-01	4-4.5	204	ND	ND	ND	ND
1410-02	5-6	84	ND	ND	ND	ND
1410-06	16-16.5	ND	ND	ND	ND	ND

ND indicates that the analyte was not detected at the Minimum Detection Limit (MDL) for the analysis requested.

Ken Flynn Alaska
 Mr. Ken Flynn
 May 1, 1997
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FINDINGS AND CONCLUSIONS

Detection of Total Petroleum Hydrocarbons (Boring RM-01) and Benzene (Boring RM-02) in soil samples indicates that the site has been impacted by activities and contamination from the subject site or adjacent site or sites. Based upon current field observations and laboratory analytical results, the impacted area of the property appears to be small.

On the basis of agency file information for adjacent sites, the ADEC Site Matrix Score for the subject property would most likely be at or below 40, which corresponds to Level B cleanup guidelines. Therefore, assuming Level B cleanup guidelines, ADEC may not require any clean-up efforts, based on the currently available information. Soil regulatory limits from the ADEC Site Matrix Sheet appear below. However, the actual score could be increased or reduced upon further clarification of site conditions. Variables which could be evaluated include volume of impacted soil, range of contamination, and current information on area wells.

ADEC CLEANUP GUIDELINES

MATRIX SCORE FOR EACH CATEGORY	CLEANUP LEVEL IN mg/kg				
	GASOLINE RANGE ORGANICS	DIESEL RANGE ORGANICS	RESIDUAL RANGE ORGANICS	BENZENE	TOTAL BTEX
Category A: More than 40	50	100	2,000	0.1	10
Category B: 27-40	100	200	2,000	0.5	15
Category C: 21-26	500	1,000	2,000	0.5	50
Category D: Less than 21	1,000	2,000	2,000	0.5	100

CLOSURE

This letter report has been prepared for the exclusive use of Ken Flynn Alaska and their representatives in the study of this site.

Ken Flynn Alaska
Mr. Ken Flynn
May 1, 1997
Page 6

The findings we have presented within this report are based on limited research in accordance with standard practices for site assessment. Since opinions of conditions prevailing on a particular site must be based on the work authorized by the client, all findings/data must be construed as representative of the site at a particular moment in time and the result of services performed within the scope, limitations, and cost of the work requested.


Changes in the conditions of individual sites may occur with the passage of time and may be due to natural processes or the works of man. In addition, changes in government codes, either State or Federal regulations and laws, may occur. Due to such changes, which are beyond our control, observations, and recommendations applicable to this site may need to be revised wholly or in part from time to time. R&M Consultants, Inc., performed this work in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No warranty, express or implied, beyond exercise of reasonable care and professional diligence is made.

You are advised that various State and Federal agencies (ADEC, EPA, etc.) may require the reporting of portions of this information. R&M Consultants, Inc. does not assume the responsibility for reporting these findings and has not disclosed the results of the study.

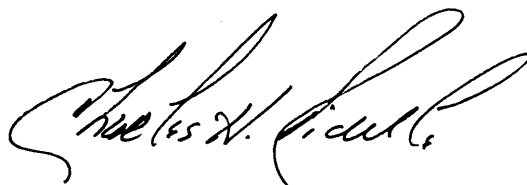
We appreciate the opportunity to perform this Environmental Site Investigation. Should you require further information concerning the investigation or this report, please contact us at your convenience.

Very truly yours,

R&M CONSULTANTS, INC.


for.

Kay Z. Parker
Environmental Engineer



Charles H. Riddle, C.P.G.
Manager, Earth Sciences

CHR:KZP:rh

Ken Flynn Alaska
Mr. Ken Flynn
May 1, 1997
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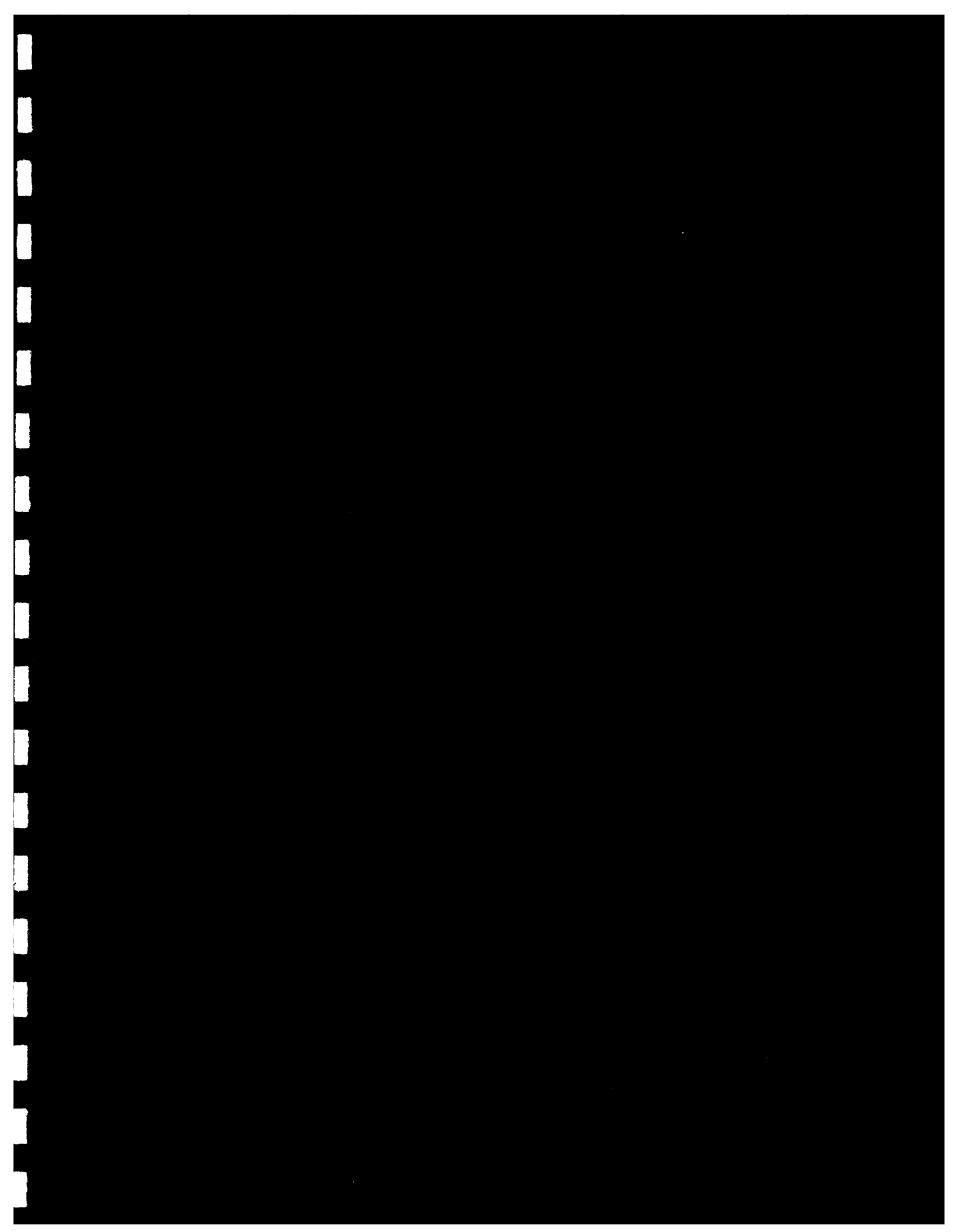
ATTACHMENTS

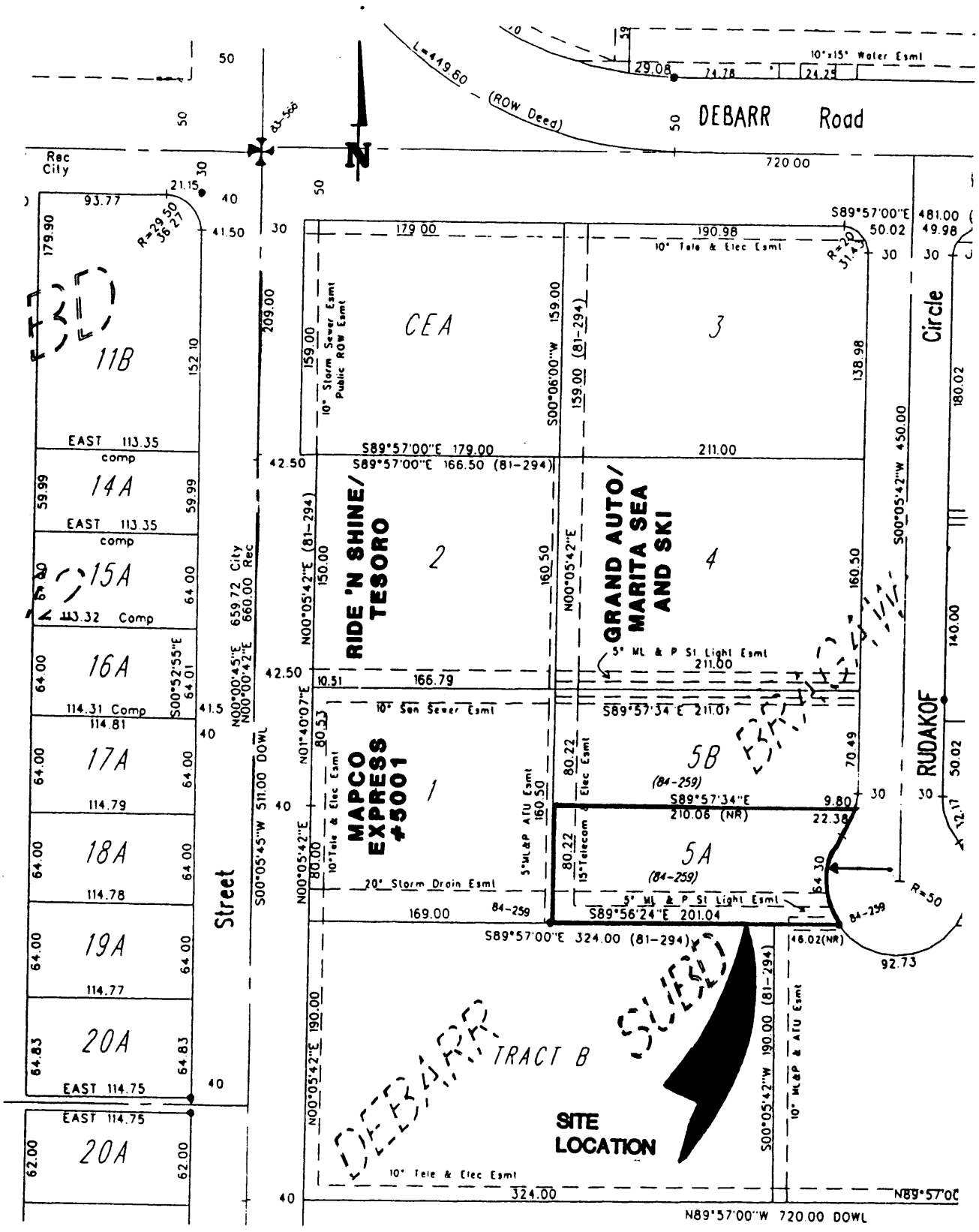
ATTACHMENT A

Vicinity Plan A-01
Site Plan A-02
Logs of Test Boring A-03 and A-04

ATTACHMENT B

Laboratory Analytical Results (Test Boring RM-01) . 13 Pages
Laboratory Analytical Results (Test Boring RM-02) . 18 Pages



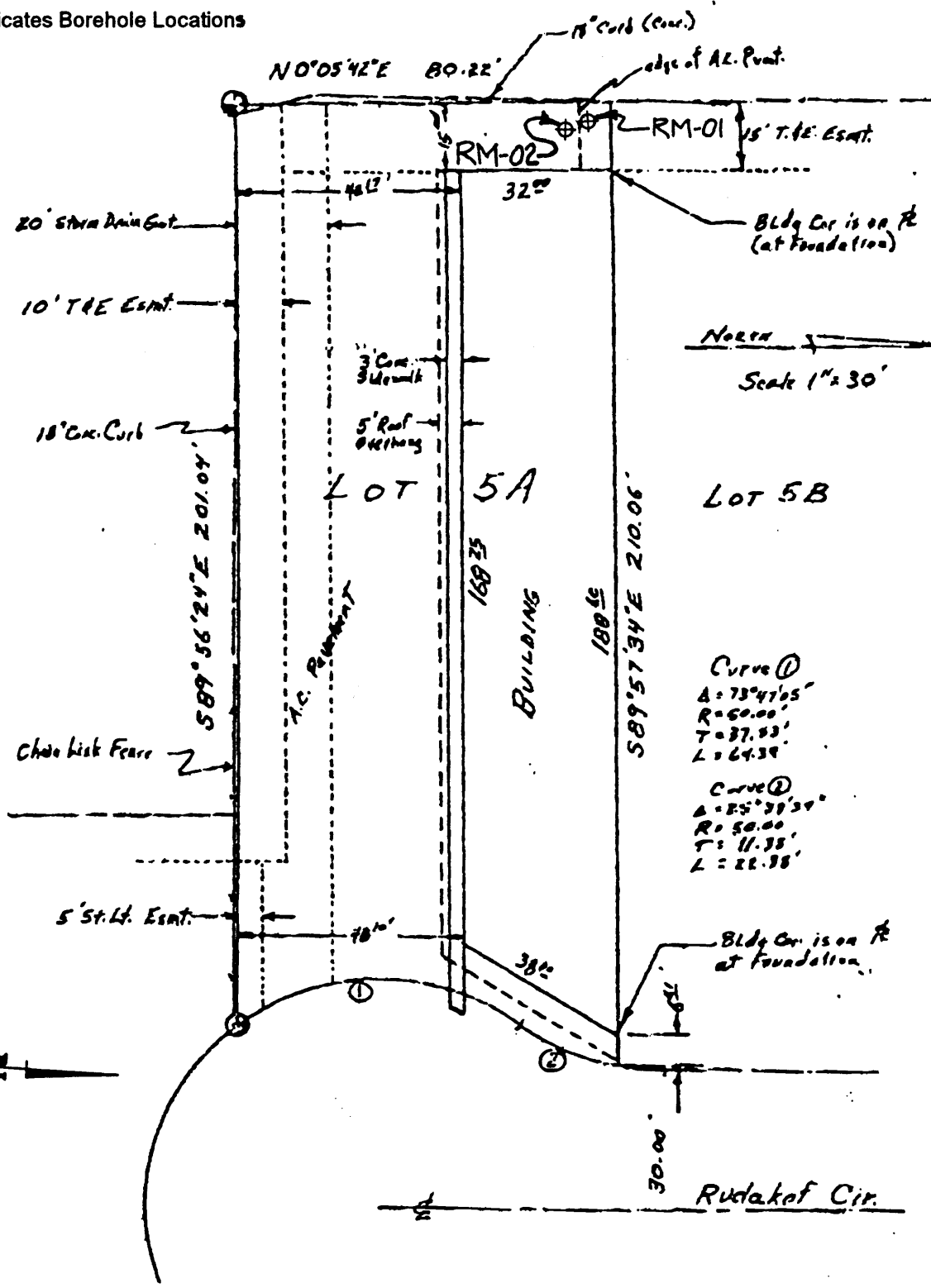


Adapted from Municipality of Anchorage (MOA), Department of Public Works, "Grid Maps 1435 and 1436", Scale 1" = 100', December 14, 1994.

VICINITY PLAN



⊕ Indicates Borehole Locations



Curve ①
 $\Delta = 73^{\circ}41'05''$
 $R = 60.00'$
 $T = 37.93'$
 $L = 64.38'$

Curve ②
 $\Delta = 25^{\circ}39'34''$
 $R = 50.00'$
 $T = 11.35'$
 $L = 22.38'$

ARMSTRONG & ASSOCIATES, INC.
 6657 GREENWOOD ST., ANCHORAGE, AK. 99502
 349-6877

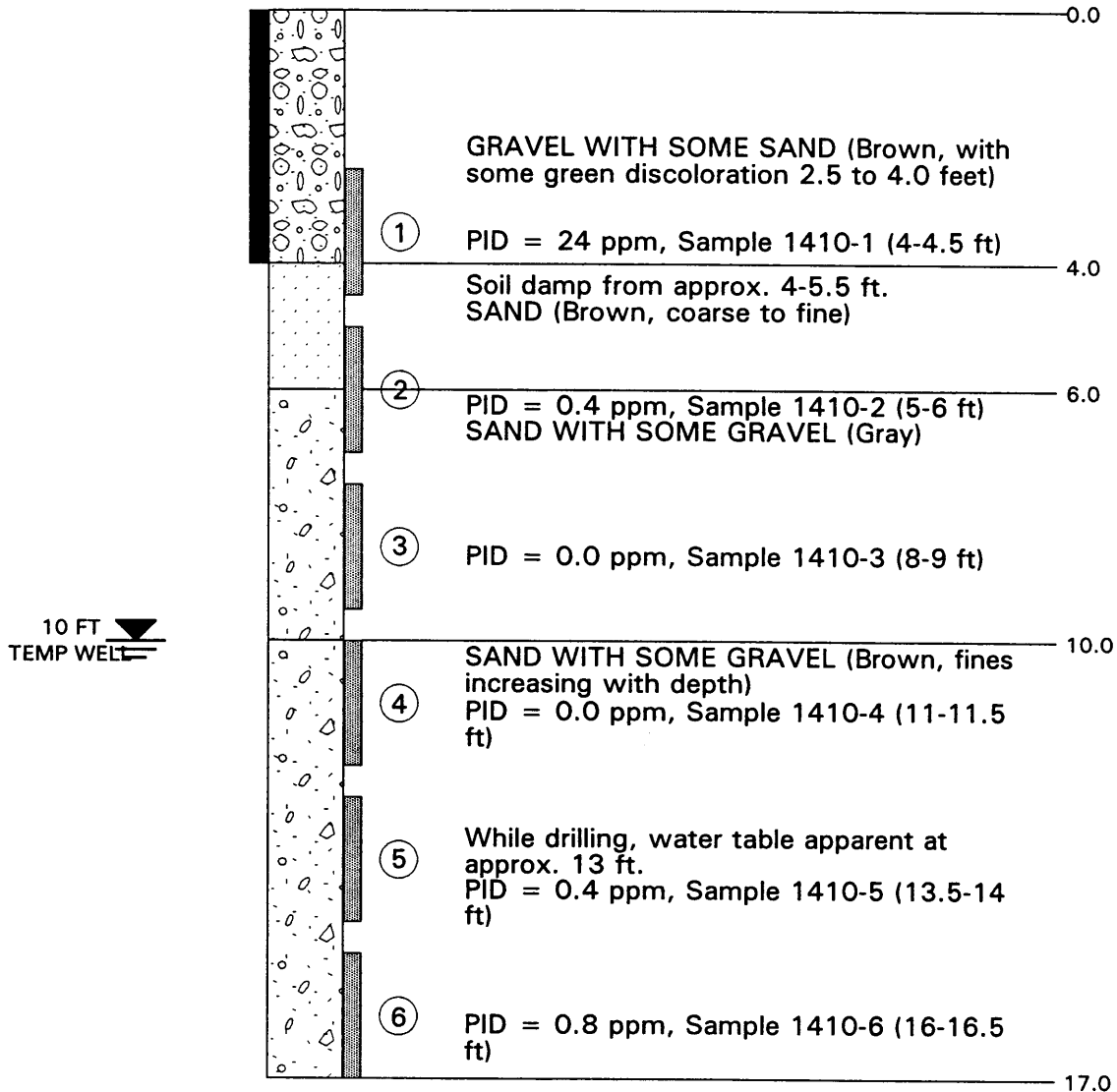
LOT 5A DEBARR-BRAGAW
 SUBDIVISION



RM-01

03-07-97

All Samples Sh



All drive samples were taken with an automatic hammer.

Temporary well installed, screened approx. 6-16 ft, water level measured at approx 10 ft prior to development and sampling.

DWN: K.Z.P.
CKD: C.H.R.
DATE: MAR 1997
SCALE: 1" = 3'

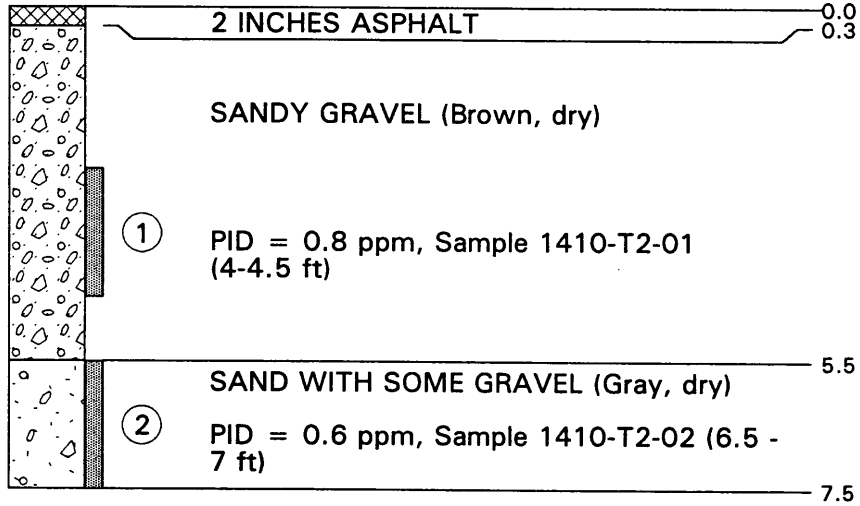
R&M
R&M CONSULTANTS, INC.
ENGINEERS GEOLOGISTS SURVEYORS TESTLAB
PLANNERS COMPUTER SERVICES
9101 Vanguard Drive, Anchorage, Alaska 99507 (907) 522-1707

Ken Flynn Alaska
1410 Rudakof Circle
LOG OF TEST BORING
RM-01

FB: N/A
GRID: 1436
PROJ.NO: 751030
DWG.NO: A-03

RM-02

04-03-97



All drive samples were taken with an automatic hammer.

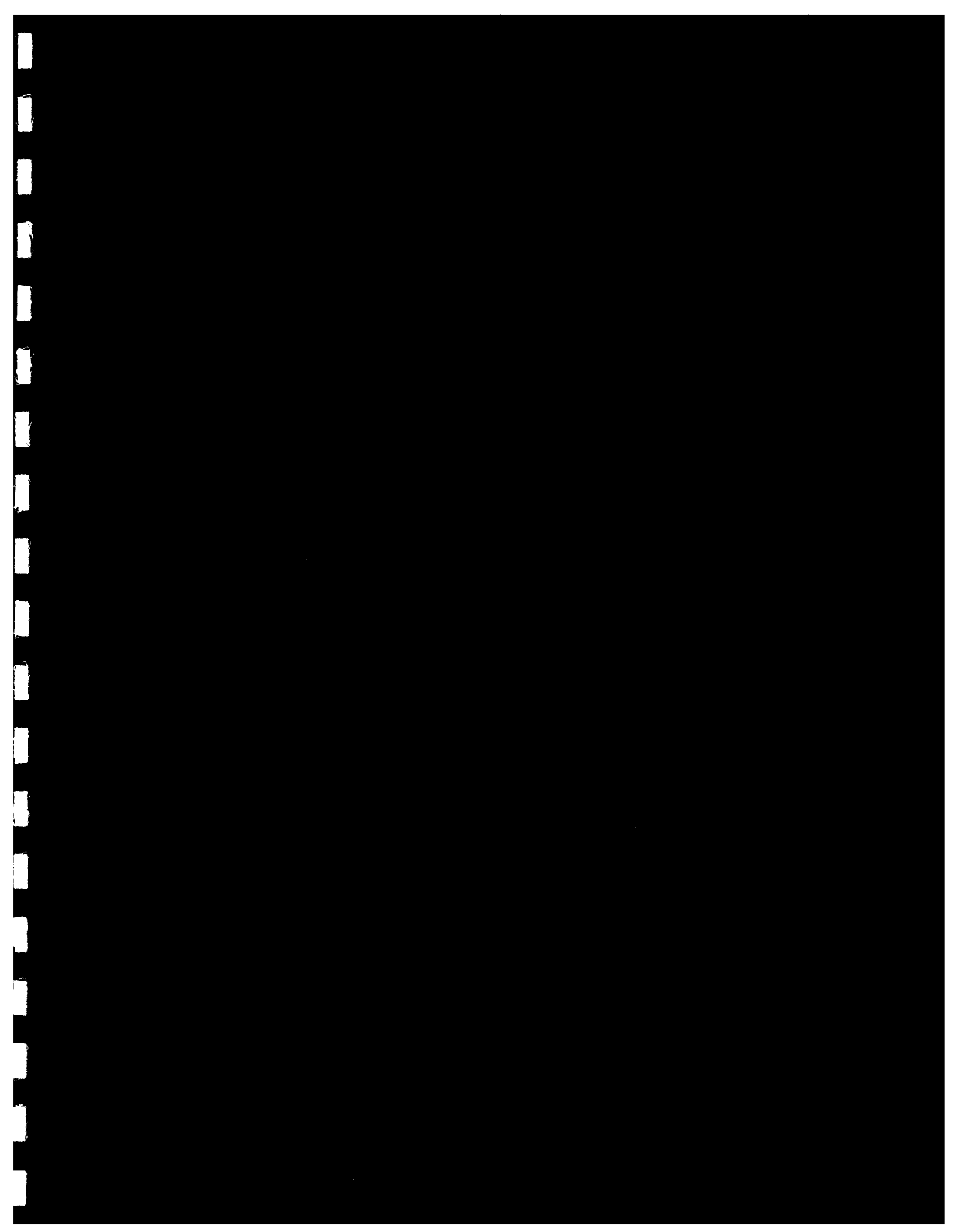
No groundwater was observed.

DWN:	K.Z.P.
CKD:	C.H.R.
DATE:	APR 1997
SCALE:	1" = 3'

R&M
R&M CONSULTANTS, INC.
ENGINEERS GEOLOGISTS SURVEYORS TESTLAB
PLANNERS COMPUTER SERVICES
9101 Vanguard Drive, Anchorage, Alaska 99507 (907) 522-1707

Ken Flynn Alaska 1410 Rudakof Circle
LOG OF TEST BORING RM-02

FB: N/A
GRID: 1436
PROJ.NO: 751030
DWG.NO: A-04



**Columbia
Analytical
Services^{INC.}**

RECEIVED
MAR 27 1997
R&M CONSULTANTS, INC

March 21, 1997

Kay Parker
R & M Consultants
9101 Vanguard Drive
Anchorage, AK 99507

Service Request No: A9700137

Re: **Flynn**

Dear Kay:

Attached are the results of the samples submitted to our lab on March 7, 1997. For your reference, our service request number for this work is A9700137.

All analyses were performed consistent with generally accepted analytical laboratory principles and practices. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.



Mike Shelton
Laboratory Director

COLUMBIA ANALYTICAL SERVICES, INC.

Client: R & M Consultants
Project: Flynn
Sample Matrix: Soil and Water

Date Received: 3/7/97
Work Order No: A9700137

CASE NARRATIVE

All analyses were performed consistent with generally accepted analytical principles and practices.

-Acronyms-

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
DRO Diesel Range Organics
GRO Gasoline Range Organics
RRO Residual Range Organics

Approved by _____ March 21, 1997

000002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn /
Sample Matrix: Soil


Service Request: A9700137
Date Collected: 3/7/97
Date Received: 3/7/97

Petroleum Hydrocarbons, Total Recoverable (TRPH418.1)

Prep Method: EPA 3550
Analysis Method: 418.1
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Method Blank	A970320-SB1	25	8	1	3/18/97	3/20/97	ND	
1410-01	A9700137-001	25	8	1	3/18/97	3/20/97	204	
1410-02	A9700137-002	25	8	1	3/18/97	3/20/97	84	
1410-06	A9700137-006	25	8	1	3/18/97	3/20/97	ND	

Approved By: 

Date: 3-21-97

1A/042895

000003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn /
Sample Matrix: Water

Service Request: A9700137
Date Collected: 3/7/97
Date Received: 3/7/97

Petroleum Hydrocarbons (TPH418.1)

Prep Method: EPA 3510
Analysis Method: 418.1
Test Notes:

Units: mg/L (ppm)
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
1410-W	A9700137-007	0.5	0.25	1	3/13/97	3/13/97	ND	
Method Blank	A970313-WB1	0.5	0.25	1	3/13/97	3/13/97	ND	

Approved By:



Date:

3-17-97

000004

1A/052595

00137PHC.GD1 - 418 Sample 3/17/97

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn
Sample Matrix: Soil

Service Request: A9700137
Date Collected: 3/7/97
Date Received: 3/7/97

Aromatic Volatile Organics

Sample Name: 1410-01
Lab Code: A9700137-001
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/14/97	ND	
Toluene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/14/97	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/14/97	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	3/13/97	3/14/97	ND	

Approved By: _____ Date: 3/19/97

IS22/020597p

00137PHC.KN2 - Sample 3/18/97

000005

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn
Sample Matrix: Soil


Service Request: A9700137
Date Collected: 3/7/97
Date Received: 3/7/97

Aromatic Volatile Organics

Sample Name: 1410-02
Lab Code: A9700137-002
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/13/97	ND	
Toluene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/13/97	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/13/97	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	3/13/97	3/13/97	ND	

Approved By: _____  Date: 3/19/97

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn
Sample Matrix: Soil

Service Request: A9700137
Date Collected: NA
Date Received: NA

Aromatic Volatile Organics

Sample Name: Method Blank
Lab Code: A970313-SB1
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/14/97	ND	
Toluene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/14/97	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	3/13/97	3/14/97	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	3/13/97	3/14/97	ND	

Approved By: _____



Date: 3/18/97

APPENDIX A
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: R & M Consultants
Project: Flynn
Sample Matrix: Soil

Service Request: A9700137
Date Collected: 3/7/97
Date Received: 3/7/97
Date Extracted: 3/13/97
Date Analyzed: 3/14/97

Surrogate Recovery Summary
Aromatic Volatile Organics

Prep Method: EPA 5030A
Analysis Method: 8020A

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 4-Bromofluorobenzene
1410-01	A9700137-001		77
1410-02	A9700137-002		79
1410-06	A9700137-006		76
Method Blank	A970313-SB1		84

CAS Acceptance Limits:

76-120

Approved By: _____



Date: 3/17/97

APPENDIX B
CHAIN OF CUSTODY INFORMATION
COOLER RECEIPT FORM

000011



19700157

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

PROJECT NAME Flynn #
 PROJECT MGR Kay Parker
 COMPANY/ADDRESS RYM Consultants
 9101 Vanoverland
 Anch, AK 99507 PHONE 522-1707
 FAX 522-3403

SAMPLERS SIGNATURE [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS
1410-01	3/7	1345	A9700137-001	S	2
1410-02	3/7	1415		S	2
1410-03	3/7	1430		S	2
1410-04	3/7	1440		S	2
1410-05	3/7	1455		S	2
1410-06	3/7	1515		S	2
1410-07	3/7			S	2
1410-W	3/7	1630		W	5
TRIP BLANK					

RELINQUISHED BY: [Signature] RECEIVED BY: [Signature]
 Printed Name: Kay Parker Printed Name: Sandy Bul
 Firm: RYM Firm: CAS
 Date/Time: 3/7/97 16:55 Date/Time: 3/7/97 16:55

RELINQUISHED BY: _____ RECEIVED BY: _____
 Signature _____ Signature _____
 Printed Name _____ Printed Name _____
 Firm _____ Firm _____
 Date/Time _____ Date/Time _____

ANALYSIS REQUESTED

Base/New/Acid Organics GC/MS 625/8270	<input type="checkbox"/>
Volatile Organics GC/MS 624/8240	<input type="checkbox"/>
Halogenated or Aromatic Volatiles 601/8010	<input type="checkbox"/>
Pesticides/PCBs 608/8080	<input type="checkbox"/>
PCBs Only 608/8080	<input type="checkbox"/>
Total Petroleum Hydrocarbons EPA 418.1	<input checked="" type="checkbox"/>
GRO/8015M	<input type="checkbox"/>
BTEX/8020	<input checked="" type="checkbox"/>
Hydrocarbon Scan C10 - C40	<input type="checkbox"/>
AK101: GRO	<input type="checkbox"/>
BTEX	<input type="checkbox"/>
DRO/8100M	<input type="checkbox"/>
RRO/8100M	<input type="checkbox"/>
DRO/AK102	<input type="checkbox"/>
RRO/AK103	<input type="checkbox"/>
TCLP Metals	<input type="checkbox"/>
VOA	<input type="checkbox"/>
Semi Pest/VOA	<input type="checkbox"/>
Herb	<input type="checkbox"/>
pH, Cond, Cl, So ₄ , PO ₄ , F, Br	<input type="checkbox"/>
NH ₃ -N, NO ₂ , NO ₃ , (circle)	<input type="checkbox"/>
NH ₃ -N, COD, Total-P, TKN, TOC	<input type="checkbox"/>
Cyanide (circle)	<input type="checkbox"/>
Metals (total or dissolved) List Below	<input type="checkbox"/>

TURNAROUND REQUIREMENTS
 1 day 2 day 5 day
 Standard (10-15 working days)
 Provide Verbal Preliminary Results
 Provide FAX preliminary Results
 Requested Report Date _____

REPORT REQUIREMENTS
 I. Routine Report
 II. Report (includes DUP, MSD, as required, may be changed as samples)
 III. Data Validation Report (includes All Raw Data)
 IV. CLP Deliverable Report
 ADEC Deliverables
 ACOE Deliverables

INVOICE INFORMATION:
 P.O.# _____
 Bill To _____

SAMPLE RECEIPT:
 Temp: _____
 Airbill #: _____
 Shipping VIA: _____
 Shipping to: _____
 Condition: _____
 COC Seals: _____
 Lab No: _____

SPECIAL INSTRUCTIONS/COMMENTS:
 1 Custody seal intact
 12 202 jars
 2 Amber 1L.
 4 von

4.8°C

000012

RECEIVED

APR 23 1997

R&M CONSULTANTS, INC

**Columbia
Analytical
Services^{INC.}**

April 21, 1997

Charles Riddle & Kay Parker
R & M Consultants
9101 Vanguard Drive
Anchorage, AK 99507

Service Request No: A9700177

Re: **Flynn 2/Project No. 751030**

Dear Charles & Kay:

Attached are the results of the samples submitted to our lab on April 3, 1997. For your reference, our service request number for this work is A9700177.

All analyses were performed consistent with generally accepted analytical laboratory principles and practices. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.



Mike Shelton
Laboratory Director

COLUMBIA ANALYTICAL SERVICES, INC.

Client: R & M Consultants
Project: Flynn 2/751032
Sample Matrix: Soil

Service Request No.: A9700177
Date Received: 4/3/97

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for sample(s) designated for Tier I data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses.

All EPA recommended holding times have been met for analyses in this sample delivery group.

Approved by

Mike Shelton

Date

4/21/97

000002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97

Gasoline

Prep Method: Method
Analysis Method: AK101.0
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
1410-T2-01	A9700177-001	5	0.3	1	4/3/97	4/9/97	ND	
1410-T2-02	A9700177-002	5	0.3	1	4/3/97	4/9/97	ND	
Method Blank	A970409-SB1	5	0.3	1	4/9/97	4/9/97	ND	

Approved By:

Kelly Nokesby

Date:

4-21-97

1A/020597p

00177PHC.EC2 - Sample 4/10/97

Page No.

000003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97

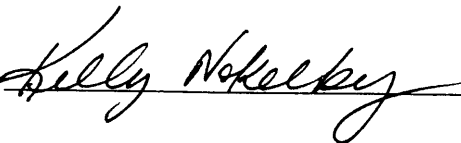
Aromatic Volatile Organics

Sample Name: 1410-T2-01
Lab Code: A9700177-001
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	4/3/97	4/9/97	ND	
Toluene	EPA 5030A	8020A	0.05	0.01	1	4/3/97	4/9/97	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	4/3/97	4/9/97	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	4/3/97	4/9/97	ND	

Approved By:



Date:

4-21-97

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97

Aromatic Volatile Organics

Sample Name: 1410-T2-02
Lab Code: A9700177-002
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	4/3/97	4/9/97	0.11	
Toluene	EPA 5030A	8020A	0.05	0.01	1	4/3/97	4/9/97	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	4/3/97	4/9/97	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	4/3/97	4/9/97	ND	

Approved By: *[Signature]*

Date: 4-21-97

1S22-02059-p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: NA
Date Received: NA

Aromatic Volatile Organics

Sample Name: Method Blank
Lab Code: A970409-SB1
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	4/9/97	4/9/97	ND	
Toluene	EPA 5030A	8020A	0.05	0.01	1	4/9/97	4/9/97	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	4/9/97	4/9/97	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	4/9/97	4/9/97	ND	

Approved By:

Kelly Nekelby

Date: 4-21-97

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil


Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97

Diesel Range Organics (DRO)

Prep Method: EPA 3540
Analysis Method: AK102.0
Test Notes:

Units: mg/Kg
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
1410-T2-01	A9700177-001	10	5	1	4/3/97	4/4/97	ND	
1410-T2-02	A9700177-002	10	5	1	4/3/97	4/4/97	ND	
Method Blank	A970403-SB1	10	5	1	4/3/97	4/4/97	ND	

Approved By: _____  Date: 04/10/97

1A/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97

Residual Range Organics (RRO)

Prep Method: EPA 3540
Analysis Method: AK103.0
Test Notes:

Units: mg/Kg
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
1410-T2-01	A9700177-001	40	10	1	4/3/97	4/4/97	ND	
1410-T2-02	A9700177-002	40	10	1	4/3/97	4/4/97	ND	
Method Blank	A970403-SB1	40	10	1	4/3/97	4/4/97	ND	

Approved By: _____



Date: _____

04/10/97

1A/020597p

00177PHC.GD2 - Sample 4/10/97

000008

APPENDIX A
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97
Date Extracted: 4/3/97
Date Analyzed: 4/9/97

Surrogate Recovery Summary
Gasoline Range Organics (GRO)

Prep Method: Method
Analysis Method: AK101.0

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 4-Bromofluorobenzene
1410-T2-01	A9700177-001		97
1410-T2-02	A9700177-002		95
Method Blank	A970409-SB1		96

CAS Acceptance Limits:

57-137

Approved By: *[Signature]*

Date: 4-21-97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97
Date Extracted: 4/3/97
Date Analyzed: 4/9/97

Surrogate Recovery Summary
Aromatic Volatile Organics

Prep Method: EPA 5030A
Analysis Method: 8020A

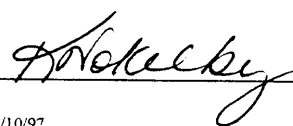
Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 4-Bromofluorobenzene
1410-T2-01	A9700177-001		95
1410-T2-02	A9700177-002		95
Method Blank	A970409-SB1		80

CAS Acceptance Limits:

76-120

Approved By: _____



Date: 4-21-97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97
Date Extracted: 4/3/97
Date Analyzed: 4/4/97

Surrogate Recovery Summary
Diesel Range Organics (DRO)

Prep Method: EPA 3540
Analysis Method: AK102.0

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery p-Terphenyl
1410-T2-01	A9700177-001		98
1410-T2-02	A9700177-002		87
Method Blank	A970403-SB1		82

CAS Acceptance Limits: 50-150

Approved By: _____  Date: 04/10/97

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: R & M Consultants
Project: Flynn2 / 751030
Sample Matrix: Soil

Service Request: A9700177
Date Collected: 4/3/97
Date Received: 4/3/97
Date Extracted: 4/3/97
Date Analyzed: 4/4/97

Surrogate Recovery Summary
Residual Range Organics (RRO)

Prep Method: EPA 3540
Analysis Method: AK103.0

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery n-Triacontane
1410-T2-01	A9700177-001		96
1410-T2-02	A9700177-002		86
Method Blank	A970403-SB1		80

CAS Acceptance Limits: 50-150

Approved By: _____ Date: 04/10/97

APPENDIX B

**CHAIN OF CUSTODY INFORMATION
COOLER RECEIPT FORM**



4710 Business Park Blvd., SUITE 24 • Anchorage, AK 99503 • (907) 563-0846 • FAX (907) 563-2973

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE 4/3/97 PAGE 1 OF 1

ANALYSIS REQUESTED

PROJECT NAME Flynn # 751030
 PROJECT MGR Charles Riddle/K. Parker
 COMPANY/ADDRESS R/M Consultants
9101 Vanguard Dr.
Anch. AK 99555 PHONE 522-1707 FAX 522-3405

SAMPLERS SIGNATURE [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 <input type="checkbox"/> 602/8020 <input type="checkbox"/>	Pesticides/PCBs 608/8080 <input type="checkbox"/> PCBs Only 608/8080 <input type="checkbox"/>	Total Petroleum Hydrocarbons EPA 418.1	GRO/8015M <input type="checkbox"/> BTEX/8020 <input type="checkbox"/>	Hydrocarbon Scan C10 - C40	AK101: GRO <input type="checkbox"/> BTEX <input type="checkbox"/> Both <input checked="" type="checkbox"/>	DRO/8100M <input type="checkbox"/> RRO/8100M <input type="checkbox"/> DRO/AK102 <input checked="" type="checkbox"/> RRO/AK103 <input checked="" type="checkbox"/>	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi Pest/ Herb <input type="checkbox"/>	pH, Cond, Cl, SO ₄ , PO ₄ , F, Br	NH ₃ -N, COD, Total-P, TKN, TOC	Cyanide (circle)	Metals (total or dissolved) List Below	
1410-T2-014/3/97	4/3/97	9:30	AK1700177-1	S	2								X	X						
1410-T2-02	4/3/97	9:45	-2	S	2								X	X						

REMARKS

report about something

RELINQUISHED BY:

[Signature]
 Signature
Karen Parker
 Printed Name
R/M
 Firm

RECEIVED BY:

[Signature]
 Signature
Shirley Kahlstrom
 Printed Name
CAS
 Firm

Date/Time 4/3/97 10:10A

Date/Time 4-3-97 10:10

RELINQUISHED BY:

RECEIVED BY:

Signature

Signature

Printed Name

Printed Name

Firm

Firm

Date/Time

Date/Time

TURNAROUND REQUIREMENTS

1 day 2 day 5 day
 Standard (10-15 working days)
 Provide Verbal Preliminary Results
 Provide FAX preliminary Results
 Requested Report Date 5 day

REPORT REQUIREMENTS

I. Routine Report
 II. Report (includes DUP, MAS, MSD, as required, may be charged as samples)
 III. Data Validation Report (includes All Raw Data)
 IV. CLP Deliverable Report
 ADEC Deliverables
 ACCE Deliverables

INVOICE INFORMATION:

P.O.# _____
 Bill To above

SPECIAL INSTRUCTIONS/COMMENTS:

Temp: 52°C
 Airbill #: _____
 Shipping VIA: _____
 Shipping to: _____
 Condition: _____
 COC Seal: one on front & one on the back
 Lab No: _____

000015

RAW DATA

**TOTAL SOLIDS
EPA METHOD 160.3**

000017

Time	Par#	Date	WT	Tare	WGT Tare	WGT Tare	TS%	In
10:00	L-1	A9700137-001	8.97	1.00	7.10	8.10	90.3	
	2	002	7.50	0.99	7.55	6.56	87.5	
	6	006	6.57	1.00	2.95	5.95	90.6	
97 9:15 AB	6d	006	11.36	1.00	11.40	10.40	91.5	
12 16:00	-1	A9700159-1	5.234	0.993	6.220	5.227	99.9	206
	-2	" -2	5.211	0.995	6.205	5.210	100	↓
	-2d	" -2d	5.250	0.994	6.245	5.251	100	↓
97 05:50	1	A9700160-7	5.424	1.004	4.461	3.157	63.7	206
	2	" -8	10.243	1.011	8.176	7.165	70.0	↓
	3	" -9	5.045	1.001	4.574	4.569	90.6	↓
	4	" -10	5.323	1.006	5.745	4.739	89.0	↓
	5	" -11	5.046	1.006	5.560	4.554	90.2	↓
	5d	" -11d	4.973	1.006	5.491	4.485	90.2	↓
97 1445	1	A9700177-001	13.07	1.00	13.67	12.67	92.9	206
	2	002	11.12	1.00	11.76	10.76	90.8	↓
	3	002D	14.53	1.00	15.12	14.12	97.2	↓

Continued on Page

Read and Understood By

000018

Signed

Date

Signed

Date