

# **APPENDIX A**

---

## **Site Photographs – Characterization**



1. 6/2/06 – Northwest Corner (NWC) prior to investigation, looking west; note 35 staked boring locations.



3. 6/2/06 – “Silly putty” material and green-colored soil in sample NWC-1-39.



2. 6/2/06 – NWC soil characterization sample collection, looking west.



4. 7/20/06 – NWC prior to excavation, looking west.

# **APPENDIX B**

---

## **Manifests and Disposal Tickets**

**PROTECH SYSTEMS, INC.**

**WORK ORDER**

1121st STREET SW  
 YNNWOOD, WA 98087  
 (206) 353-9000

FOR ACCOUNT

WORK ORDER NUMBER:  
 71010

WORK ORDER DATE:  
 Jul 27, 2006

Page:  
 1

**SOLD TO:**  
 GEOMATRIX CONSULTANTS INC.  
 ONE UNION SQUARE  
 600 UNIVERSITY ST, STE. 102D  
 SEATTLE, WA 98101

**SITE:**  
 FORMER BASF RHONE POULENC  
 9229 EAST MARGINAL WAY  
 SEATTLE, WA 98108

PHONE: 206-342-1772

SITE PHONE: 206-550-3781

<b>CUSTOMER</b> GEOCONSWA	<b>PO NUMBER</b>	<b>ESIJOB #</b> 06-152-15	<b>ACCOUNT REP</b> ROGER
<b>CUSTOMER CONTACT</b> JOE MORRICE	<b>EPA ID #</b>	<b>DATE ORDERED</b> 7/27/06	<b>DATE COMPLETED</b> 7/28/06

DESCRIPTION /	MANIFEST #	QUANTITY	SIZE	TAX	UNIT PRICE	EXTENSION
REMOVE, TRANSPORT AND REUSE/RECYCLE/DISPOSE OF:						
DM WASTE FILTERS & WATER FROM TREATMENT SYSTEM/71010		1.00	5 GAL	N *		ON ACCOUNT
DM CHEVRON GST OIL ISO 68 FOR RECYCLE/64890 A		1.00	55 GAL	N		
BOX SPENT CARBON / 71012		1.00	BOXES	N		
DM OIL CONTAM. DEBRIS/PPE/71013A		1.00	55 GAL	N **		
DM DRILL CUTTINGS FROM NW CORNER / 71013B		1.00	80 GAL	N		
DM S SOIL CUTTINGS / 71013C (E. PARCEL, EASTERN PARCEL DRUM #1,2,3,4, W.PARCEL#6)		5.00	55 GAL	N XXX		
DM SOIL CUTTINGS - DRUM #6/71013D (WESTERN PARCEL)		1.00	55 GAL	N XXXX		
UN1A2 NEW DRUM		1.00	80 GAL	Y		
5.2% FUEL & INSUR. SURCHARGE		1.00	EA	N		
Sgal Drum Hydraulic oil / 64890-B		1.00	5gal	N		
<b>CUSTOMER CHANGES</b>						

\* not a un container need 4610 Box to pack into  
 \*\* Drum not trans bent 10 and ring will not fit.  
 \*\*\* Drum #6 soil with liquid Full ±5gal

XXXX Drum soil HAZ/Liquid WORK AUTHORIZATION 2-1125 for Future WASTE

The undersigned hereby authorizes and acknowledges receipt of the materials and/or commencement of services described above on behalf of the party indicated as "SOLD TO" above (Generator). On behalf of Generator, I hereby make and appoint Envirotech Systems, Inc. Generator's true and lawful agent for the purpose of managing the above waste responsibilities. I understand that this does not relieve Generator of its responsibilities as a generator even though title of the waste transfers to Envirotech Systems, Inc.. Prices quoted herein are subject to the waste's inspection and acceptance at the destination waste management facility.

BY: Pat Hoiser

DATE: 7/28/06

V64

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>W A D D 0 9 2 8 2 3 0 2</b>	Manifest Document No. <b>71013</b>	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address <b>CONTAINER PROPERTIES LLC PO BOX 1043 KENT, WA 98035</b>		SITE ADDRESS: <b>FORMER BASF RHONE POULENC 9229 EAST MARGINAL WAY S. TUKWILA, WA 98108</b>		A. State Manifest Document Number	
4. Generator's Phone		ATTN:		B. State Generator's ID	
5. Transporter 1 Company Name <b>ENVIROTECH SYSTEMS, INC.</b>		6. US EPA ID Number <b>W A H 0 0 0 0 1 2 4 5 0</b>		C. State Transporter's ID	
7. Transporter 2 Company Name <b>TRI STATE MOTOR TRANSIT</b>		8. US EPA ID Number <b>M. O. D. 8. 9. 5. 8. 3. 8. 9. 9. 8</b>		D. Transporter's Phone <b>(208) 363-9000</b>	
9. Designated Facility Name and Site Address <b>CHEMICAL WASTE MANAGEMENT OF THE NW 17829 CEDAR SPRINGS LANE ARLINGTON, OR 97812</b>		10. US EPA ID Number <b>1 0 R D 0 8 9 4 5 2 3 5 3</b>		E. State Transporter's ID	
				F. Transporter's Phone <b>(800) 234-8788</b>	
				G. State Facility ID	
				H. Facility's Phone <b>(541) 454-2643</b>	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)			12. Containers	13. Total Quantity	14. Unit Wt/Vol
			No.	Type	Waste No.
a. <del>HM</del> MATERIAL NOT REGULATED BY D.O.T. (OIL CONTAMINATED DEBRIS)					X004
b. MATERIAL NOT REGULATED BY D.O.T. (DRILL CUTTINGS)			001	DM	003.25 P
c. MATERIAL NOT REGULATED BY D.O.T. (SOIL CUTTINGS)			004	DM	021.00 P
d. HAZARDOUS WASTE SOLID, N.O.S. 9 NA3077 PG III (TOLUENE)			000		0.0-0.00
J. Additional Descriptions of Materials Listed Above A. CWM# 15804 ES# 06-152-15 PPE B. CWM# 22255 ES# 06-152-15 CUTTINGS - NW CORNER C. CWM# 22256 ES# 06-152-15 EASTERN PARCEL - Drum #1, 2, 3, 4, 6 D. CWM# 22257 ES# 06-152-15 WESTERN PARCEL / 1526 + 171 - Drum #5			K. Handling Codes for Wastes Listed Above <b>CERTIFICATE OF DISPOSAL REQUIRED</b>		
15. Special Handling Instructions and Additional Information					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable International and national governmental regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.					
Printed/Typed Name <i>on behalf of container properties</i> <b>Steve A. La France</b>			Signature <i>Steve A. La France</i>		Month Day Year <b>17 28 06</b>
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name <b>Steve A. La France</b>			Signature <i>Steve A. La France</i>		Month Day Year <b>10 7 29 06</b>
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name <b>Nona HARTER</b>			Signature <i>Nona Harter</i>		Month Day Year <b>07 31 06</b>
19. Discrepancy Indication Space <b>IIA. none Shipped IID. none Shipped</b>					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.					
Printed/Typed Name <b>Tamara Strand</b>			Signature <i>Tamara Strand</i>		Month Day Year <b>09 11 06</b>

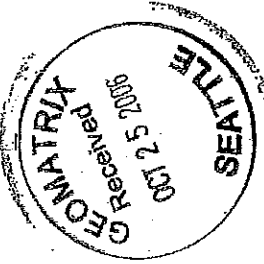
GENERATOR

TRANSPORTER

FACILITY

1

**DEMOLITION WASTE SHIPMENT LOG**  
Former Rhone-Poulenc Site  
Tukwila, Washington



Date	Quantity	Material	Source Area	Facility	Manifest/Ticket No.	Weight/Volume
10-3-06	T/T	DIRT	NW	RBSANCO	2412489	39.4 TON
10-2-06	T/T	DIRT	NW	RBSANCO	2412522	34.8 TON
10-2-06	T/T	DIRT	NW	RBSANCO	2412546	34.9 TON
10-2-06	T/T	DIRT	NW	RBSANCO	2412480	37.5 TON
10-2-06	T/T	DIRT	NW	RBSANCO	2412552	30.2 TON
10-5-06	3 LADS	NSPH	EAST MAIN	RBSANCO	122235	60 CY
10-5-06	4 LADS	CONC	EAST MAIN	RBSANCO	122235	60 CY
10-4-06	6 LADS	CONC/WR	CORRIDOR	RBSANCO	122301	96 CY
10-13-06	T/T	DIRT	EAST MAIN	RBSANCO	2418082	29.4 TON
10-13-06	T/T	DIRT		RBSANCO	2418040	20.5 TON
10-13-06	T/T	DIRT		RBSANCO	2418090	27.6 TON
10-13-06	T/T	DIRT		RBSANCO	2418051	31.2 TON
10-13-06	T/T	DIRT			2417983	28.8 TON
10-13-06	T/T	DIRT			2417980	27.6 TON
10-13-06	T/T	DIRT			2417914	30.8 TON
10-13-06	T/T	DIRT			2417973	30.6 TON
10-13-06	T/T	DIRT			2418275	31.5 TON
10-13-06	T/T	DIRT			2418185	30.2 TON
10-13-06	T/T	DIRT			2418146	31.7 TON
10-13-06	T/T	DIRT			2418104	25.3 TON
10-13-06	T/T	DIRT			2418059	32.9 TON
10-13-06	T/T	DIRT			2418010	28.0 TON
10-13-06	T/T	DIRT			2417879	30.6 TON
10-13-06	T/T	DIRT			2417941	24.2 TON
10-13-06	T/T	DIRT			2417912	31.2 TON
10-13-06	T/T	DIRT			2417969	31.3 TON
10-13-06	T/T	DIRT			2418218	32.6 TON
10-13-06	T/T	DIRT			2418167	28.1 TON
10-13-06	T/T	DIRT			2418224	26.6 TON
10-13-06	T/T	DIRT			2418079	31.4 TON
10-13-06	T/T	DIRT			2418044	31.9 TON
10-13-06	T/T	DIRT			2417999	27.7 TON
10-13-06	T/T	DIRT			2417964	28.0 TON
10-13-06	T/T	DIRT			2417921	30.0 TON
10-13-06	T/T	DIRT			2417984	27.7 TON

# **APPENDIX C**

---

## **Analytical Results and Data Validation Memorandum**

## Memorandum

**TO:** John Long **DATE:** July 11, 2006  
**FROM:** Tasya Gray **PROJ. NO.:** 8769  
**CC:** Project File **PROJ. NAME:** Former Rhone-Poulenc Site  
**SUBJECT:** **Western Parcel Redevelopment Soil Sampling  
Summary Data Quality Review – SDGs K0604573, K0604574, and K0604601**

This memorandum presents Geomatrix Consultants, Inc. (Geomatrix's), summary data quality review of 61 primary samples and three composite samples (composed by the laboratory from 117 original discrete samples) collected on June 2 and 5, 2006. The samples were submitted to Columbia Analytical Services (CAS), a Washington State Department of Ecology (Ecology)-accredited laboratory, located in Kelso, Washington. The three composite samples were initially analyzed and reported by CAS as sample delivery group (SDG) K0604573. Subsequently, 50 of the original 117 samples submitted to CAS for K0604573 were analyzed and reported by CAS as discrete samples in SDG K0604601. The samples were analyzed for one or more of the following organic and/or inorganic analyses:

- Metals (copper, arsenic, barium, cadmium, chromium, lead, and/or selenium) by EPA Method 6020,
- Mercury by EPA Method 7471A,
- Silver by EPA Method 200.8,
- Flashpoint by Method 1020,
- Total Petroleum Hydrocarbons (TPH) diesel range by Method NWTPH-Dx,
- TPH gasoline range by Method NWTPH-Gx,
- TPH hydrocarbon identification screen (HCID) by Method NWTPH-HCID,
- Semivolatile organic compounds (SVOCs) by EPA Method 8270C.

The analyses were performed in general accordance with methods specified in U.S. Environmental Protection Agency's (EPA) Test Methods for Evaluating Solid Waste (SW-846), January 1995 and associated revisions.

Laboratory SDGs associated with the June 2006 sampling event are listed below:



Memorandum  
July 11, 2006  
Page 2 of 9

<u>Laboratory SDG</u>	<u>Date(s) Collected</u>
K0604573	June 2 and 5, 2006
K0604574	June 2 and 5, 2006
K0604601	June 2 and 5, 2006

The samples associated with each SDG are tabulated at the end of this memorandum. Upon receipt by CAS, the sample jar information was compared to the chain-of-custody form. Discrepancies were noted by CAS and addressed with Geomatrix personnel prior to sample analyses. The temperatures of the coolers were recorded as part of the check-in procedure. The temperatures of the coolers were within the acceptable range of 4 +/- 2 °C.

Data review is based on method performance criteria and QC criteria as documented in the Soil Sampling Quality Assurance Project Plan (QAPP), May 2006. The laboratory provided validatable packages containing summarized sample results and associated QA/QC data as well as instrument printouts and sample preparation and injection log pages as required by the QAPP. The data review conducted on these SDGs included a review of summarized results and QA/QC data per the requirements set forth in Section D.1 of the QAPP. The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used. Hold times, calibration verification, method blanks, surrogate recoveries, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, laboratory duplicate results, field QC results, and reporting limits were reviewed to assess compliance with applicable methods and the QAPP. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999, and USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review, October 2004.

The following qualifiers may be added to the data:

- U: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J: The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ: The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Memorandum  
July 11, 2006  
Page 3 of 9

- R: The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## ORGANIC ANALYSES

Samples were analyzed for TPH diesel and gasoline range, TPH HCID, and SVOCs by the methods identified in the introduction to this report and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Calibration Verification – Acceptable except as noted:

SVOCs by EPA Method 8270C: The laboratory noted in the case narrative that the initial calibration verification exceeded the hold time by one day. Since all analytes were within the method specified criteria, the laboratory determined that the calibration was still valid and no associated data were qualified.

3. Blanks – Acceptable except as noted:

A method blank was prepared with each laboratory sample batch. The laboratory inadvertently did not collect an equipment blank from the grinding equipment as specified in the QAPP.

TPH diesel range by Method NWTPH-Dx: Residual range organics were detected at a concentration between the MDL and the MRL in the method blank for SDG K0604574, at 4.7 mg/kg. This is considered reportable as non-detect (U) at the MRL.

TPH gasoline range by Method NWTPH-Gx: Gasoline was detected at a concentration between the MDL and the MRL in the method blank for SDG K0604574, at 4.5 mg/kg. This is considered reportable as non-detect (U) at the MRL.

SVOCs by EPA Method 8270C: Di-n-butyl phthalate and bis(2-ethylhexyl) phthalate were detected at concentrations between the MDL and the MRL in the method blank for SDG K0604574. These are considered reportable as non-detect (U) at the MRL.

4. Surrogates – Acceptable except as noted:

TPH diesel range by Method NWTPH-Dx: The o-terphenyl surrogate recovery for NWC-2-36W was 49%, slightly below the 50% control limit. Since all other surrogate recoveries were within control limits, no associated data were qualified.

Memorandum  
July 11, 2006  
Page 4 of 9

TPH gasoline range by Method NWTPH-Gx: The 4-bromofluorobenzene surrogate recoveries for samples NWC-2-6W, NWC-2-7W, NWC-2-8W, NWC-2-36W, and NWC-2-42W in SDG K0604574 were all above the control limit. The laboratory reported in the case narrative that these elevated recoveries are due to dilutions required by the analyte concentrations in the sample, which resulted in surrogate concentrations below the calibration range.

TPH HCID by Method NWTPH-HCID: One surrogate recovery was outside the control limits for samples NWC-2-6W, NWC-2-36W, and NWC-2-42W. Since each of these samples was additionally run for full TPH analysis by NWTPH-Dx and NWTPH-Gx and all other surrogates were within control limits, associated results were not qualified.

5. Laboratory Control Samples (LCS or Blank Spike) – Acceptable except as noted:

The LCS recovery for benzoic acid in SDG K0604574 was 9%, below the 10% control limit, and the associated relative percentage difference (RPD) for the LCS/LCSD was 56%, above the 40% limit. Since benzoic acid is not a required LCS analyte and is used for advisory purposes only, associated results were not qualified. The RPD for the LCS/LCSD was also above the 40% limit for 2,4-dimethylphenol, at 53%. Since neither benzoic acid nor 2,4-dimethylphenol was detected in the associated samples, data were not qualified based on the RPD exceedances.

6. Laboratory Duplicates – Acceptable except as noted:

A laboratory duplicate was performed on 10% of samples, as specified in the QAPP, with the exception of SVOCs. A LCS duplicate was reported for SVOCs, but not a laboratory project duplicate. The RPDs for all duplicates were below the project-specific control limit of 30%.

7. Field Duplicates – Acceptable:

Field duplicates were not collected in the field. They were collected in the laboratory after the composite samples were ground and homogenized. A field duplicate was collected by the laboratory for this sampling event for sample NWC-2-42W and was given the sample ID, NWC-2-42WDUP. The RPDs for all duplicates were below the project specific control limit of 30%, as shown in the table below.

Memorandum  
 July 11, 2006  
 Page 5 of 9

Sample ID/ Lab Duplicate ID	SDG	Analyte	Primary Result (mg/kg)	Duplicate Result (mg/kg)	RPD (%)
NWC-2-42W/NWC-2-42WDUP	K0604574	diesel	1500	1400	7
		residual range	210	190	7
		gasoline	71	74	5

8. Matrix Spike (MS) – Acceptable except as noted:

A matrix spike was not reported with SDG K0604574. Data were reviewed based on the lab control spike, which was within control limits and no associated data were qualified.

9. Reporting Limits – Acceptable except as noted:

TPH diesel range by Method NWTPH-Dx: The laboratory flagged all results in SDG K0604574 for the chromatographic fingerprint not resembling a petroleum product. This result should be evaluated during use of the data.

TPH gasoline range by Method NWTPH-Gx: The laboratory flagged all results in SDG K0604574 as resembling a petroleum product, but the elution pattern does not match the calibration standard.

SVOCs by EPA Method 8270C: The reporting limits for many SVOCs reported in SDG K0604574 are elevated due to high levels of non-target analytes requiring dilution of the samples prior to analysis.

## INORGANIC ANALYSES

Samples were analyzed for metals by the methods identified in the introduction to this report and were evaluated for the following criteria.

1. Holding Times – Acceptable.
2. Calibration Verification – Acceptable.
3. Blanks – Acceptable except as noted:

Memorandum  
 July 11, 2006  
 Page 6 of 9

A method blank was prepared with each laboratory sample batch. Copper was detected at concentrations between the MDL and the MRL in all of the method blanks, ranging from 0.09 to 0.12 mg/kg. Chromium was also detected at a concentration between the MDL and the MRL in the method blank for SDG K0604574. These are considered reportable as non-detect (U) at the MRL. The laboratory inadvertently did not collect an equipment blank from the grinding equipment as specified in the QAPP.

4. Laboratory Control Samples (LCS or Blank Spike) – Acceptable.
5. Laboratory Duplicates – Acceptable except as noted:

Metals by EPA 6020: A laboratory duplicate was performed on 10% of samples, as specified in the QAPP. The relative percent differences (RPDs) were below the project-specific control limit of 30%, except for copper in NWC-2-1A and duplicate NWC-2-1AD, and in NWC-1-22W and duplicate NWC-1-22WD, as shown in bold type in the table below. The results for copper in these samples were qualified as estimated and flagged with a “J” because the duplicate RPD was greater than 30 percent.

Sample ID/ Lab Duplicate ID	SDG	Analyte	Primary Result (mg/kg)	Duplicate Result (mg/kg)	RPD (%)
NWC-1 Composite/NWC-1 CompositeD	K0604573	copper	1200	1340	11
NWC-1-22W/NWC-1-22WD	K0604574	arsenic	3.63	4.34	18
		barium	46.2	49.6	7
		cadmium	0.160	0.207	25
		chromium	14.4	16.9	16
		<b>copper</b>	<b>2150</b>	<b>2940</b>	<b>31</b>
		lead	23.3	27.9	18
		mercury	1.910	1.630	16
		selenium	0.3	0.4	9
		silver	0.129	0.146	12
NWC-1-37A/NWC-1-37AD	K0604601	copper	3880	3610	7
NWC-2-11A/NWC-2-11AD	K0604601	copper	32.9	36.5	10
NWC-2-1A/NWC-2-1AD	K0604601	copper	<b>14.7</b>	<b>23.8</b>	<b>47</b>
NWC-2-20A/NWC-2-20AD	K0604601	copper	45.5	38	18
NWC-2-30A/NWC-2-30AD	K0604601	copper	28	22.9	20

Memorandum  
July 11, 2006  
Page 7 of 9

6. Matrix Spike (MS) – Acceptable except as noted:

Metals by EPA 6020: Matrix spikes were performed on samples NWC-1 Composite (SDG K0604573), NWC-1-22-W (SDG K0604574), and NWC-1-37AS (SDG K0604601). The percentage recoveries for copper and mercury are not applicable, because the spike concentrations were much lower than the sample analyte concentrations.

The recovery for the spike sample performed on sample NWC-2-30AS (SDG K0604601) was 5%, below the control limit of 52%. A post-digest spike was performed on other samples in the SDG, but not on NWC-2-30AS. The associated result is qualified as estimated low and flagged “J-“. Since all other spike recoveries were within control, no other results are qualified based on the spike results.

7. Field Duplicates – Acceptable

Field duplicates were not collected in the field. They were collected in the laboratory after the composite samples were ground and homogenized. The composite samples are evaluated under separate SDGs, though they are a part of this sampling event. The field duplicate frequency of 10% was achieved for this sampling event, though field duplicates were not submitted for inorganic analysis with the samples evaluated in these SDGs.

8. Reporting Limits – Acceptable except as noted:

Selenium was detected at levels between the MDL and the MRL in samples collected as part of SDG 0604574. Associated results are qualified as estimated and flagged “J” (replacing the laboratory qualifier “B”).

## **OVERALL ASSESSMENT OF DATA**

The CAS SDGs K0604573, K0604574, and K0604601 are 100 percent complete. The data usability is based on EPA’s guidance documents and the QAPP referenced in the introduction to this report. Few problems were identified and analytical performance was generally within specified limits. The data, as qualified, are acceptable and meet the project’s data quality objectives.

Memorandum  
 July 11, 2006  
 Page 8 of 9

Sample	SDG	Qualified Analyte	Qualified Result	Units	Qualifier Reason
NWC-1 Composite	K0604573	none			
NWC-2 Composite	K0604573	none			
NWC-3 Composite	K0604573	none			
NWC-2-1A	K0604601	copper	14.7 J	mg/kg	elevated duplicate RPD
NWC-2-3A	K0604601	none			
NWC-2-4A	K0604601	none			
NWC-2-5A	K0604601	none			
NWC-2-6A	K0604601	none			
NWC-2-7A	K0604601	none			
NWC-1-8A	K0604601	none			
NWC-2-8A	K0604601	none			
NWC-2-9A	K0604601	none			
NWC-2-10A	K0604601	none			
NWC-2-11A	K0604601	none			
NWC-1-13A	K0604601	none			
NWC-2-13A	K0604601	none			
NWC-2-14A	K0604601	none			
NWC-2-15A	K0604601	none			
NWC-1-16A	K0604601	none			
NWC-2-16A	K0604601	none			
NWC-2-17A	K0604601	none			
NWC-2-18A	K0604601	none			
NWC-2-19A	K0604601	none			
NWC-2-20A	K0604601	none			
NWC-2-21	K0604601	none			
NWC-2-22A	K0604601	none			
NWC-2-23A	K0604601	none			
NWC-2-24A	K0604601	none			
NWC-2-25A	K0604601	none			
NWC-2-26A	K0604601	none			
NWC-2-27A	K0604601	none			
NWC-2-28A	K0604601	none			
NWC-2-29A	K0604601	none			
NWC-2-30A	K0604601	copper	28.0 J-	mg/kg	low spike recovery
NWC-2-31A	K0604601	none			
NWC-1-32A	K0604601	none			
NWC-2-32A	K0604601	none			
NWC-2-33A	K0604601	none			
NWC-2-34A	K0604601	none			
NWC-1-35A	K0604601	none			
NWC-2-35A	K0604601	none			
NWC-1-36A	K0604601	none			
NWC-2-36A	K0604601	none			
NWC-1-37A	K0604601	none			
NWC-2-37A	K0604601	none			

Memorandum  
 July 11, 2006  
 Page 9 of 9

Sample	SDG	Qualified Analyte	Qualified Result	Units	Qualifier Reason
NWC-1-38A	K0604601	none			
NWC-2-38A	K0604601	none			
NWC-1-40A	K0604601	none			
NWC-2-40A	K0604601	none			
NWC-1-41A	K0604601	none			
NWC-2-41A	K0604601	none			
NWC-1-42A	K0604601	none			
NWC-2-42A	K0604601	none			
NWC-2-5W	K0604574	none			
NWC-2-6W	K0604574	none			
NWC-2-7W	K0604574	none			
NWC-3-24W	K0604574	none			
NWC-1-22W	K0604574	copper	2150 J	mg/kg	elevated duplicate RPD
		selenium	0.3 J	mg/kg	between MDL and MRL
NWC-1-2W	K0604574	selenium	0.8 J	mg/kg	between MDL and MRL
NWC-2-8W	K0604574	none			
NWC-2-36W	K0604574	none			
NWC-1-12W	K0604574	selenium	0.4 J	mg/kg	between MDL and MRL
NWC-2-39W	K0604574	selenium	0.3 J	mg/kg	between MDL and MRL
NWC-2-42W	K0604574	none			



June 16, 2006

Service Request No: K0604573



John Long  
Geomatrix Consultants, Incorporated  
One Union Square  
600 University Street, Suite 1020  
Seattle, WA 98101

**RE: NW Corner - FRP/8769.005/4**

Dear John:


Enclosed are the results of the rush sample(s) submitted to our laboratory on June 06, 2006. For your reference, these analyses have been assigned our service request number K0604573.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

  
Gregory Salata, Ph.D. *for*  
Project Chemist

GS/lmb

Page 1 of 91

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  - i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
  - i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- \* The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
  - i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

00003

## Case Narrative

00004

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geomatrix Consultants, Inc.  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Soil

Service Request No.: K0604573  
Date Received: 06/06/06

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One hundred seventeen soil samples were received for analysis at Columbia Analytical Services on 06/06/06. As instructed, the discreet samples were composited at the laboratory to create 3 composite samples, NWC-1 Composite, NWC-2 Composite, and NWC-3 Composite. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

**Matrix Spike Recovery Exceptions:**

The control criteria for matrix spike recovery of Copper for sample NWC-1 Composite is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Date

6/16/06

00005

**Chain of Custody  
Documentation**

00006



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222X07 • FAX (360) 636-1088

SR#: K0604573  
PAGE 1 OF 123 COC # 243

PROJECT NAME: New Corner - FRP  
 PROJECT NUMBER: 8769.005/4  
 PROJECT MANAGER: John Long  
 COMPANY/ADDRESS: Geomatix  
 CITY/STATE/ZIP: 600 University St, Suite 1020 Seattle, WA 98101  
 E-MAIL ADDRESS: jlong@geomatix.com  
 PHONE # 206 342 1779 FAX 206 342 1761  
 SAMPLER'S SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB.I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS
NWC-1-1	6/2/06	0903	S			
NWC-2-1		0924				
NWC-3-1		0927				
NWC-1-2						
NWC-2-2						
NWC-3-2						
NWC-1-3		1033				
NWC-2-3		1035				
NWC-3-3		1037				
NWC-1-4		1117				

Circle which metals are to be analyzed:  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr **Cu** Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 \*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

REPORT REQUIREMENTS  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

INVOICE INFORMATION  
 P.O. # 8769.005/4  
 Bill To: Geomatix (John Long)

TURNAROUND REQUIREMENTS  
 24 hr. 48 hr.  
 5 Day 72 hr.  
 Standard (10-15 working days)  
 Provide FAX Results

Requested Report Date \_\_\_\_\_

SPECIAL INSTRUCTIONS/COMMENTS: Please composite all samples into three multi-incremental samples (NWC-1-1 + NWC-1-2 + NWC-1-3 + NWC-1-4 + ...) (NWC-2-1 + NWC-2-2 + NWC-2-3 + NWC-2-4 + ...). Please grind composite samples in accordance w/ QAPP + Grinding SOP.

RELIQUISHED BY: [Signature] Date/Time 6/6/06 0125 Firm Geomatix  
 RECEIVED BY: [Signature] Date/Time 6/6/06 0125 Firm Geomatix



# CHAIN OF CUSTODY

SR#: K0604573

PAGE 2 OF 3 COC # 243

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222X07 • FAX (360) 696-1068

PROJECT NAME: NW Corner-ERP

PROJECT NUMBER: \_\_\_\_\_

PROJECT MANAGER: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

PHONE #: \_\_\_\_\_

FAX #: \_\_\_\_\_

SAMPLER'S SIGNATURE: ZAS

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS		REMARKS
					1	2	
8 NWC-2-4	6/2/06	1118		S			
9 NWC-3-4	6/2/06	1120					
10 NWC-1-5	6/2/06	1155					
11 NWC-2-5	6/2/06	1158					
12 NWC-3-5	6/2/06	1200					
13 NWC-1-6	6/2/06	1303					
14 NWC-2-6	6/2/06	1305					
15 NWC-3-6	6/2/06	1304					
16 NWC-1-7	6/2/06	1339					
17 NWC-2-7	6/2/06	1341					

REPORT REQUIREMENTS

I. Routine Report: Method Blank, Surrogate, as required

II. Report Dup., MS, MSD as required

III. Data Validation Report (includes all raw data)

IV. CLP Deliverable Report

V. EDD

INVOICE INFORMATION

P.O. # 8769.05/4

Bill To: John Long, G4X

TURNAROUND REQUIREMENTS

24 hr.

5 Day

72 hr.

Standard (40-16-working days)

Provide FAX Results

Requested Report Date: \_\_\_\_\_

RELIQUISHED BY:

Signature: Anna Semanick Date/Time: 6/2/06 705

Printed Name: Anna Semanick Firm: \_\_\_\_\_

RECEIVED BY:

Signature: John Long Date/Time: 6/2/06 1500

Printed Name: John Long Firm: \_\_\_\_\_

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

See p.1





Columbia Analytical Services, Inc.  
An Employee-Owned Company

# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1088

SR#: 16064573  
PAGE 3 OF 3 COC.# 183 245

PROJECT NAME	PROJECT NUMBER	NUMBER OF CONTAINERS			
		DATE	TIME	LAB I.D.	MATRIX
PROJECT MANAGER PROJECT ADDRESS CITY/STATE/ZIP E-MAIL ADDRESS PHONE # FAX # SAMPLER'S SIGNATURE <u>[Signature]</u>		18	6/2/06	1343	S
		19	6/5/06	0807	L
		20	6/5/06	0809	
		21	6/5/06	0810	
		22	6/5/06	0838	
		23	6/5/06	0837	
		24	6/5/06	0839	
		25	6/5/06	0908	
		26	6/5/06	0909	
		27	6/5/06	0910	

*Circle which metals are to be analyzed.*

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS: See p.1

INVOICE INFORMATION  
P.O.# 870900514  
Bill To: State Army, GUX

TURNAROUND REQUIREMENTS  
 24 hr.  
 5 Day  
 Standard (10-15 working days)  
 Provide FAX Results  
 Requested Report Date \_\_\_\_\_

REPORT REQUIREMENTS

I. Routine Report: Method Blank, Surrogate, as required

II. Report Dup., MS, MSD as required

III. Data Validation Report (includes all raw data)

IV. CLP Deliverable Report

V. EDD

RELINQUISHED BY:  
Signature: [Signature] Date/Time: 6/6/06 705  
Printed Name: Genevieve Semprich Firm: \_\_\_\_\_

RECEIVED BY:  
Signature: [Signature] Date/Time: 6.6.06 0725  
Printed Name: Robert Shocky Firm: Mc Delivery

PROJECT NAME	PROJECT NUMBER	DATE/TIME RECEIVED	FIRM
NW Comer-FRP		6/6/06 0725	Mc Delivery



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 895-7222x07 • FAX (360) 636-1088

SR#: K0604573  
 PAGE 4 OF 13 COC # ZAS

PROJECT NAME: NW Corner - FRT  
 PROJECT NUMBER: \_\_\_\_\_  
 PROJECT MANAGER: \_\_\_\_\_  
 COMPANY ADDRESS: \_\_\_\_\_  
 CITY/STATE/ZIP: \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_  
 PHONE #: \_\_\_\_\_  
 FAX#: \_\_\_\_\_  
 SAMPLER'S SIGNATURE: ZAS

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS
<u>28</u> NWC-1-11	<u>6/4/09</u>	<u>0915</u>		<u>S</u>		
<u>29</u> NWC-2-11		<u>0916</u>				
<u>30</u> NWC-3-11		<u>0920</u>				
<u>31</u> NWC-1-12						
<u>32</u> NWC-2-12						
<u>33</u> NWC-3-12						
<u>34</u> NWC-1-13						
<u>35</u> NWC-2-13						
<u>36</u> NWC-3-13						
<u>37</u> NWC-1-14						

**REPORT REQUIREMENTS**  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (Includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

**INVOICE INFORMATION**  
 P.O. # 876905/4  
 Bill To: Jehk Lang, Search

**TURNAROUND REQUIREMENTS**  
 24 hr. \_\_\_\_\_  
 5 Day \_\_\_\_\_  
 Standard (10-15 working days) \_\_\_\_\_  
 Provide FAX Results \_\_\_\_\_  
 Requested Report Date \_\_\_\_\_

**RELIQUISHED BY:**  
 Signature: Robert Shockley  
 Date/Time: 6.6.09  
 Printed Name: Robert Shockley  
 Firm: \_\_\_\_\_

**RECEIVED BY:**  
 Signature: Robert Shockley  
 Date/Time: 6.6.09  
 Printed Name: Robert Shockley  
 Firm: \_\_\_\_\_

**SPECIAL INSTRUCTIONS/COMMENTS:**  
See p.1

**INDICATE STATE HYDROCARBON PROCEDURE:** AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

**Circle which metals are to be analyzed:**  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

**RELIQUISHED BY:**  
 Signature: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_  
 Firm: \_\_\_\_\_

**RECEIVED BY:**  
 Signature: Robert Shockley  
 Date/Time: 6.6.09  
 Printed Name: Robert Shockley  
 Firm: \_\_\_\_\_



# CHAIN OF CUSTODY

SR#: K0604573

PAGE 5 OF 13 COC # 2K

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1088

PROJECT NAME: NW Center-FRF

PROJECT NUMBER: \_\_\_\_\_

PROJECT MANAGER: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

PHONE #: \_\_\_\_\_

FAX#: \_\_\_\_\_

SAMPLE I.D.	DATE	TIME	LAB. I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS	
						1	2
36 NWC-2-14	4/5/06	0857		S	1		
36 NWC-3-14		0859					
37 NWC-1-15		0826					
38 NWC-2-15		0827					
39 NWC-3-15		0829					
40 NWC-1-16		0800					
41 NWC-2-16		0801					
42 NWC-3-16		0802					
43 NWC-1-17		1334					
44 NWC-2-17		1333					

- TOX 9020
- AOX 1650
- 506
- DOC (circle)
- NO<sub>2</sub>+NO<sub>3</sub>
- NH<sub>3</sub>-N, COD, Total-P, TKN, TOC
- NO<sub>3</sub>, BOD, TSS, TDS (circle)
- PH, Cond, Cl, SO<sub>4</sub>, PO<sub>4</sub>, F, NO<sub>2</sub>
- Hex-Chrom
- Cyanide
- Metals, Total or Dissolved (See list below)
- PAHS 8310
- SIM
- Tl
- Tetra
- PCP
- Chlrophenolics - 8151M
- 8141A
- 8151A
- Pesticides/Herbicides
- 608
- 8081A
- Congeners
- Aroclors
- PCB's
- 1664 HEM
- Oil & Grease/RPH
- 1664 SGT
- Fuel Fingerprint (FIO)
- NW/HClD Screen
- Gas
- Diesel
- Oil
- Hydrocarbons (\*see below)
- 8021
- BTEX
- 8260
- 8270L
- 8270LL
- Semivolatile Organics by GC/MS
- 625
- 8250
- 8270

Circle which metals are to be analyzed.

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:  
 See p.1

**REPORT REQUIREMENTS**

I. Routine Report: Method Blank, Surrogate, as required

II. Report Dup., MS, MSD as required

III. Data Validation Report (Includes all raw data)

IV. CLP Deliverable Report

V. EDD

**INVOICE INFORMATION**

P.O. # 8769.0514

Bill To: Veltek Long Gearbox

**TURNAROUND REQUIREMENTS**

24 hr.

5 Day

Standard (10-15 working days)

Provide FAX Results

Requested Report Date \_\_\_\_\_

<b>REPORT REQUIREMENTS</b> I. Routine Report: Method Blank, Surrogate, as required II. Report Dup., MS, MSD as required III. Data Validation Report (Includes all raw data) IV. CLP Deliverable Report V. EDD	<b>INVOICE INFORMATION</b> P.O. # <u>8769.0514</u> Bill To: <u>Veltek Long Gearbox</u>	<b>TURNAROUND REQUIREMENTS</b> 24 hr. <input type="checkbox"/> 5 Day <input type="checkbox"/> Standard (10-15 working days) <input checked="" type="checkbox"/> Provide FAX Results <input type="checkbox"/> Requested Report Date _____
<b>RELIQUISHED BY:</b> Signature: <u>Anna Stettenhile</u> Date/Time: <u>6/6/06 705</u> Printed Name: <u>Anna Stettenhile</u> Firm: <u>Seematrix</u>	<b>RELIQUISHED BY:</b> Signature: <u>Robert Shooky</u> Date/Time: <u>6/6/06 6724</u> Printed Name: <u>Mc Delivery</u> Firm: <u>Mc Delivery</u>	<b>RECEIVED BY:</b> Signature: <u>Robert Shooky</u> Date/Time: <u>6/6/06 6724</u> Printed Name: <u>Mc Delivery</u> Firm: <u>Mc Delivery</u>
<b>RELIQUISHED BY:</b> Signature: _____ Date/Time: _____ Printed Name: _____ Firm: _____	<b>RELIQUISHED BY:</b> Signature: _____ Date/Time: _____ Printed Name: _____ Firm: _____	<b>RECEIVED BY:</b> Signature: <u>Robert Shooky</u> Date/Time: <u>6/6/06 6724</u> Printed Name: <u>Mc Delivery</u> Firm: <u>Mc Delivery</u>



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222X07 • FAX (360) 636-1068

SR#: 20604573

PAGE 6 OF 13 COC # 245

PROJECT NAME: NW Camer - FRP

PROJECT NUMBER: \_\_\_\_\_

PROJECT MANAGER: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

PHONE # \_\_\_\_\_

FAX: \_\_\_\_\_

SAMPLER SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS																	
						[Grid area for handwritten remarks]																	
45 NWC-3-17	6/2/06	1331		S	1																		
46 NWC-1-18	6/2/06	1253																					
47 NWC-2-18	6/2/06	1255																					
48 NWC-3-18	6/2/06	1257																					
49 NWC-1-19	6/2/06	1140																					
50 NWC-2-19	6/2/06	1143																					
51 NWC-3-19	6/2/06	1145																					
52 NWC-1-20	6/2/06	1105																					
53 NWC-2-20	6/2/06	1107																					
54 NWC-3-20	6/2/06	1109																					

**REPORT REQUIREMENTS**

I. Routine Report: Method Blank, Surrogate, as required

II. Report Dup., MS, MSD as required

III. Data Validation Report (includes all raw data)

IV. CLP Deliverable Report

V. EDD

**INVOICE INFORMATION**  
 P.O. # 8769, DS (4)  
 Bill To: John Long, GMAX

**TURNAROUND REQUIREMENTS**  
 24 hr. 48hr.  
 5 Day 72hr.  
 Standard (10/15 working days)  
 Provide FAX Results

Requested Report Date: \_\_\_\_\_

**RELIQUISHED BY:**  
 Signature: [Signature] Date/Time: 6/2/06 705  
 Printed Name: Samuel Dattena Firm: Samuel Dattena

**RECEIVED BY:**  
 Signature: [Signature] Date/Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Firm: \_\_\_\_\_

**RELIQUISHED BY:**  
 Signature: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Firm: \_\_\_\_\_

**RECEIVED BY:**  
 Signature: [Signature] Date/Time: 6/2/06 1500  
 Printed Name: [Name] Firm: \_\_\_\_\_

**SPECIAL INSTRUCTIONS/COMMENTS:**  
See p.1

**INDICATE STATE HYDROCARBON PROCEDURE:** AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

**Circle which metals are to be analyzed:**  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222 • FAX (360) 696-1068

SR#: 20604573

PAGE 7 OF 123 COC.# 245

PROJECT NAME: NW Corner - FRP

PROJECT NUMBER: \_\_\_\_\_

PROJECT MANAGER: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

PHONE # \_\_\_\_\_ FAX# \_\_\_\_\_

SAMPLER'S SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS
55 NWC-1-21	6/2/06	1024	S	S	1	
56 NWC-2-21	6/2/06	1025			1	
57 NWC-3-21	6/2/06	1026			1	
58 NWC-1-22	6/2/06	0946			1	
59 NWC-2-22	6/2/06	0955			1	
60 NWC-3-22	6/2/06	0958			1	
61 NWC-1-23	6/2/06	0914			1	
62 NWC-2-23	6/2/06	0915			1	
63 NWC-3-23	6/2/06	0916			1	
64 NWC-1-24	6/2/06	0831			1	

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS: See p. 1

REPORT REQUIREMENTS:

I. Routine Report; Method Blank, Surrogate, as required

II. Report Dup., MS, MSD as required

III. Data Validation Report (includes all raw data)

IV. CLP Deliverable Report

V. EDD

TURNAROUND REQUIREMENTS

24 hr. \_\_\_\_\_

5 Day \_\_\_\_\_

Standard (10-15 working days) \_\_\_\_\_

Provide FAX Results \_\_\_\_\_

Requested Report Date \_\_\_\_\_

INVOICE INFORMATION

P.O. # 87670514

Bill To: Tek Long, GMX

RELINQUISHED BY: Signature: <u>[Signature]</u> Printed Name: <u>James Satterfield</u> Date/Time: <u>6/2/06 705</u> Firm: <u>Geomatrix</u>	RECEIVED BY: Signature: <u>[Signature]</u> Printed Name: <u>Robert Strickley</u> Date/Time: <u>6-6-06 0720</u> Firm: <u>PC Delivery</u>
RELINQUISHED BY: Signature: _____ Printed Name: _____ Date/Time: _____ Firm: _____	RECEIVED BY: Signature: <u>[Signature]</u> Printed Name: <u>Robert Strickley</u> Date/Time: <u>6/6/06 1500</u> Firm: <u>PC Delivery</u>



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1088

SR#: 10664573  
 PAGE 8 OF 13 COC.# ZAS

PROJECT NAME: NW Corner - FRP  
 PROJECT NUMBER: \_\_\_\_\_  
 PROJECT MANAGER: \_\_\_\_\_  
 COMPANY/ADDRESS: \_\_\_\_\_  
 CITY/STATE/ZIP: \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_  
 PHONE #: \_\_\_\_\_  
 FAX#: \_\_\_\_\_  
 SAMPLER'S SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB.I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS
65 NWC-2-24	6/2/06	0837		S		
66 NWC-3-24	6/2/06	0838				
67 NWC-1-25	6/2/06	0856				
68 NWC-2-25	6/2/06	0900				
69 NWC-3-25	6/2/06	0908				
70 NWC-1-26	6/2/06	0924				
71 NWC-2-26	6/2/06	0935				
72 NWC-3-26	6/2/06	0939				
73 NWC-1-27	6/2/06	1013				
74 NWC-2-27	6/2/06	1014				

Circle which metals are to be analyzed:  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)  
 SPECIAL INSTRUCTIONS/COMMENTS: See p. 1

REPORT REQUIREMENTS  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

TURNAROUND REQUIREMENTS  
 24 hr. \_\_\_\_\_  
 5 Day \_\_\_\_\_  
 Standard (10-15 working days) \_\_\_\_\_  
 Provide FAX Results \_\_\_\_\_  
 Requested Report Date \_\_\_\_\_

INVOICE INFORMATION  
 P.O.# 276408514  
 Bill To: Telco Long, GUX

RECEIVED BY: [Signature] Date/Time 6/6/06 1500  
 Signature [Signature] Date/Time 6/6/06 1500  
 Printed Name [Name] Firm \_\_\_\_\_

RECEIVED BY: [Signature] Date/Time 6/6/06 0700  
 Signature [Signature] Date/Time 6/6/06 0700  
 Printed Name Mc Delaney Firm \_\_\_\_\_

RECEIVED BY: [Signature] Date/Time 6/6/06 0700  
 Signature [Signature] Date/Time 6/6/06 0700  
 Printed Name Mc Delaney Firm \_\_\_\_\_



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 696-7222x07 • FAX (360) 696-1088

SR#: K0604573  
 PAGE 9 OF 13 COC # 243

PROJECT NAME: NW Corner - FRP  
 PROJECT NUMBER: \_\_\_\_\_  
 PROJECT MANAGER: \_\_\_\_\_  
 COMPANY/ADDRESS: \_\_\_\_\_  
 CITY/STATE/ZIP: \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_  
 PHONE # \_\_\_\_\_ FAX# \_\_\_\_\_

SAMPLE I.D.	DATE	TIME	LAB.I.D.	MATRIX	NUMBER OF CONTAINERS
75 NWC-3-27	6/2/06	1017		S	1
76 NWC-1-28	6/2/06	1052			1
77 NWC-2-28	6/2/06	1053			1
78 NWC-3-28	6/2/06	1056			1
79 NWC-1-29	6/2/06	1128			1
80 NWC-2-29	6/2/06	1129			1
81 NWC-3-29	6/2/06	1130			1
82 NWC-1-30	6/2/06	1244			1
83 NWC-2-30	6/2/06	1245			1
84 NWC-3-30	6/2/06	1247			1

REPORT REQUIREMENTS  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

INVOICE INFORMATION  
 P.O. # 876905/4  
 Bill To: Tekla Long  
Galt

TURNAROUND REQUIREMENTS  
 24 hr.  
 5 Day 72 hr  
 Standard (10-15 working days)  
 Provide FAX Results  
 Requested Report Date \_\_\_\_\_

SPECIAL INSTRUCTIONS/COMMENTS:  
See p.1

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

RELINQUISHED BY: Signature: <u>[Signature]</u> Printed Name: <u>Wanda Sattelmire</u> Date/Time: <u>6/2/06 7:05</u> Firm: _____	RECEIVED BY: Signature: <u>[Signature]</u> Printed Name: <u>Robert Sheets</u> Date/Time: <u>6-6-06 07:26</u> Firm: _____
--	--

REMARKS
TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>
DPC (circle) NO <sub>2</sub> +NO <sub>3</sub>
NH <sub>3</sub> -N COD, Total-P, TKN, TOC,
NO <sub>3</sub> , BOD, TSS, TDS (circle)
PH Cond., Cl, SO <sub>4</sub> , PO <sub>4</sub> , F, NO <sub>2</sub>
Hex-Chrom <input type="checkbox"/>
Cyanide <input type="checkbox"/>
Metals, Total or Dissolved (See list below)
PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/>
TH <input type="checkbox"/> Teta <input type="checkbox"/> SIM <input type="checkbox"/>
Chlorophenolics - 8151M
608 <input type="checkbox"/> 8081A <input type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>
Pesticides/Herbicides
608 <input type="checkbox"/> 8081A <input type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>
Congeners <input type="checkbox"/>
PCBs <input type="checkbox"/>
1664 SGT <input type="checkbox"/>
Oil & Grease/TPH <input type="checkbox"/>
1664 HEM <input type="checkbox"/>
NW-HCID Screen <input type="checkbox"/>
Fuel Fingerprint (FIG) <input type="checkbox"/>
Oil <input type="checkbox"/>
Gas <input type="checkbox"/> Diesel <input type="checkbox"/>
Hydrocarbons (see below) <input type="checkbox"/>
8021 <input type="checkbox"/> BTEX <input type="checkbox"/>
624 <input type="checkbox"/> 8260 <input type="checkbox"/>
Volatiles Organics by GC/MS
625 <input type="checkbox"/> 8270 <input type="checkbox"/> 8270L <input type="checkbox"/>

Circle which metals are to be analyzed:  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg



# CHAIN OF CUSTODY

SR#: 60604573

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 10 OF 173 COC # 24

PROJECT NAME: Nw Comer - FRP

PROJECT NUMBER: \_\_\_\_\_

PROJECT MANAGER: \_\_\_\_\_

COMPANY/ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

PHONE # \_\_\_\_\_ FAX# \_\_\_\_\_

SAMPLER'S SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS	
						TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>	
85 NWC-1-31	6/2/06	1316		S			
86 NWC-2-31	6/2/06	1317					
87 NWC-3-31	6/2/06	1318					
88 NWC-1-32	6/5/06	0751					
89 NWC-2-32		0752					
90 NWC-3-32		0755					
91 NWC-1-33		0819					
92 NWC-2-33		0820					
93 NWC-3-33		0822					
94 NWC-1-34		0849					

**REPORT REQUIREMENTS**

i. Routine Report: Method: Blank, Surrogate, as required

ii. Report Dup., MS, MSD as required

iii. Data Validation Report (includes all raw data)

iv. CLP Deliverable Report

v. EDD

**INVOICE INFORMATION**

P.O. # 8769 DUS 14

Bill To: John Long (SM)

**TURNAROUND REQUIREMENTS**

24 hr.

5 Day

Standard (10-15 working days)

Provide FAX Results

Requested Report Date: \_\_\_\_\_

**RELINQUISHED BY:**

Signature: [Signature] Date/Time: 6/6/06 0730

Printed Name: Robert Shook Firm: M.C. Delivery

**RECEIVED BY:**

Signature: [Signature] Date/Time: 6/6/06 1500

Printed Name: [Signature] Firm: [Signature]

See p. 1

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:





# CHAIN OF CUSTODY

SR#: K0604573

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222X07 • FAX (360) 636-1068

PAGE 11 OF 153 COC # ZAC

PROJECT NAME: NW Cancer-FRP  
 PROJECT NUMBER: \_\_\_\_\_  
 PROJECT MANAGER: \_\_\_\_\_  
 COMPANY ADDRESS: \_\_\_\_\_  
 CITY/STATE/ZIP: \_\_\_\_\_  
 E-MAIL ADDRESS: \_\_\_\_\_  
 PHONE # \_\_\_\_\_  
 FAX# \_\_\_\_\_  
 SAMPLER'S SIGNATURE: CS

NUMBER OF CONTAINERS	SAMPLE I.D.	DATE	TIME	LAB.I.D.	MATRIX	REMARKS
	NWC-2-34	6/5/06	0858	S	S	
95	NWC-3-34	0853				
96	NWC-1-35	0955				
97	NWC-2-35	0957				
98	NWC-3-35	1001				
99	NWC-1-36	0930		S	S	
100	NWC-2-36	0932				
101	NWC-3-36	0934				
102	NWC-1-37	1019				
103						

REPORT REQUIREMENTS:

- I. Routine Report: Method Blank, Surrogate, as required
- II. Report Dup., MS, MSD as required
- III. Data Validation Report (includes all raw data)
- IV. CLP Deliverable Report
- V. EDD

INVOICE INFORMATION  
 P.O. # 8769 005/4  
 Bill To: Taku Long, GMX

TURNAROUND REQUIREMENTS  
 24 hr.   
 5 Day   
 Standard (10-15 working days)   
 Provide FAX Results

Requested Report Date: \_\_\_\_\_

RELIQUISHED BY: CS Date/Time 6/6/06 705  
 Signature Tanna Sattenski Firm Greenstarix

RELIQUISHED BY: MS Date/Time 6-6-06 0700  
 Signature Mary Shady Firm Mc Delivery

RELIQUISHED BY: CS Date/Time 6/6/06 1500  
 Signature CS Firm CS

Circle which metals are to be analyzed:  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)  
 SPECIAL INSTRUCTIONS/COMMENTS: See p.1



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: 106604573

PAGE 12 OF 13 COC #

PROJECT NAME: NW Corner - FRP  
 PROJECT NUMBER: 97690051A  
 PROJECT MANAGER: John Long  
 COMPANY/ADDRESS:  
 CITY/STATE/ZIP:  
 E-MAIL ADDRESS:  
 PHONE #:  
 FAX #:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS
104 NWC-2-37	6/5/06	1020		S		
105 NWC-3-37		1021				
106 NWC-1-36		1024				
107 NWC-2-38		1030				
108 NWC-3-38		1037				
109 NWC-1-40		1054				
110 NWC-2-40		1100				
111 NWC-3-40		1101				
112 NWC-1-A1		1106				
113 NWC-2-A1		1108				

**REPORT REQUIREMENTS**  
 I. Routine Report Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

**INVOICE INFORMATION**  
 P.O. # 97690051A  
 Bill To: John Long  
GP&K

**TURNAROUND REQUIREMENTS**  
 24 hr. 48<sup>th</sup>  
 5 Day  
 Standard (90-15 working days)  
 Provide FAX Results  
 Requested Report Date

**RELINQUISHED BY:**  
 Signature: Anna Satterwhite  
 Printed Name: Anna Satterwhite  
 Date/Time: 6/5/06 705  
 Firm: GP&K

**RECEIVED BY:**  
 Signature: Robert Shroy  
 Printed Name: Robert Shroy  
 Date/Time: 6/6/06 0708  
 Firm: GP&K

**RELINQUISHED BY:**  
 Signature: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Firm: \_\_\_\_\_

**RECEIVED BY:**  
 Signature: CP  
 Printed Name: \_\_\_\_\_  
 Date/Time: 6/6/06 1500  
 Firm: \_\_\_\_\_

**SPECIAL INSTRUCTIONS/COMMENTS:**  
see pg 1

**INDICATE STATE HYDROCARBON PROCEDURE:** AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

**Circle which metals are to be analyzed:**  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg



# CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222X07 • FAX (360) 696-1068

SR#: 20604573  
 PAGE 13 OF 13 COC #

PROJECT NAME: NW Corner - FRP  
 PROJECT NUMBER: 8709-005/4  
 PROJECT MANAGER: John Long  
 COMPANY ADDRESS:  
 CITY/STATE/ZIP:  
 E-MAIL ADDRESS:  
 PHONE #:  
 SAMPLE'S SIGNATURE: [Signature]  
 NUMBER OF CONTAINERS:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	REMARKS
NWL-3-A	6/5/06	1100	S	↓	
NWL-1-A2	11/8			↓	
NWL-2-A2	11/0			↓	
NWL-3-A2	11/2			↓	

**REPORT REQUIREMENTS**  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD  
 Requested Report Date: \_\_\_\_\_

**INVOICE INFORMATION**  
 P.O. # 6769-005/A  
 Bill To: John Long  
[Signature]

**TURNAROUND REQUIREMENTS**  
 24 hr. \_\_\_\_\_  
 5 Day 7pm  
 Standard (10-15 working days)  
 Provide FAX Results  
 Requested Report Date: \_\_\_\_\_

**REPORT REQUIREMENTS**  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD  
 Requested Report Date: \_\_\_\_\_

**INVOICE INFORMATION**  
 P.O. # 6769-005/A  
 Bill To: John Long  
[Signature]

**TURNAROUND REQUIREMENTS**  
 24 hr. \_\_\_\_\_  
 5 Day 7pm  
 Standard (10-15 working days)  
 Provide FAX Results  
 Requested Report Date: \_\_\_\_\_

<input type="checkbox"/> TOX 9020	<input type="checkbox"/> AOX 1650	<input type="checkbox"/> 506
<input type="checkbox"/> DBC (circle) NO <sub>2</sub> +NO <sub>3</sub>		
<input type="checkbox"/> NH <sub>3</sub> -N, COD, Total-P, TKN, TOC		
<input type="checkbox"/> NO <sub>3</sub> , BOD, TSS, TDS (circle)		
<input type="checkbox"/> pH Cond, Cl, SO <sub>4</sub> , PO <sub>4</sub> , F, NO <sub>2</sub>		
<input type="checkbox"/> Hex-Chrom		
<input type="checkbox"/> Cyanide		
<input type="checkbox"/> Metals, Total or Dissolved (see list below)		
<input type="checkbox"/> PAHS 8310	<input type="checkbox"/> SIM	
<input type="checkbox"/> Tetra	<input type="checkbox"/> PCP	
<input type="checkbox"/> Chlorophenolics - 8151M	<input type="checkbox"/> 8151A	
<input type="checkbox"/> 8081A	<input type="checkbox"/> 8141A	
<input type="checkbox"/> Pesticides/Herbicides		
<input type="checkbox"/> 608		
<input type="checkbox"/> Congeners		
<input type="checkbox"/> PCBs		
<input type="checkbox"/> 1664 HEM	<input type="checkbox"/> 1664 SGT	
<input type="checkbox"/> Oil & Grease/TRPH		
<input type="checkbox"/> Oil & Grease Screen		
<input type="checkbox"/> Fuel Fingerprint (FO)		
<input type="checkbox"/> Fuel Fingerprint (FO)		
<input type="checkbox"/> Oil		
<input type="checkbox"/> Diesel		
<input type="checkbox"/> Gas		
<input type="checkbox"/> Hydrocarbons (*see below)		
<input type="checkbox"/> 8021	<input type="checkbox"/> BTEX	
<input type="checkbox"/> 8260		
<input type="checkbox"/> Volatile Organics by GC/MS		
<input type="checkbox"/> 825	<input type="checkbox"/> 8270	
<input type="checkbox"/> 8270	<input type="checkbox"/> 8270LL	

**SPECIAL INSTRUCTIONS/COMMENTS:**  
 see page 1.

**INDICATE STATE HYDROCARBON PROCEDURE:** AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

**Total Metals:** Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
**Dissolved Metals:** Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

**RECEIVED BY:** [Signature] Date/Time 6/6/06 1500  
 Firm AS

**RELINQUISHED BY:** [Signature] Date/Time \_\_\_\_\_  
 Firm \_\_\_\_\_

**Columbia Analytical Services Inc.  
Cooler Receipt and Preservation Form**

PC \_\_\_\_\_

Project/Client GEOMATRIX Service Request K06

Cooler received on 6/6/6 and opened on 6/6/6 by Ag

1. Were custody seals on outside of coolers? MCD Y  N  
If yes, how many and where? \_\_\_\_\_
2. Were custody seals intact? ~~Y~~ N
3. Were signature and date present on the custody seals? ~~Y~~ N
4. Is the shipper's airbill available and filed? If no, record airbill number: \_\_\_\_\_  N
5. COC# \_\_\_\_\_
- Temperature of cooler(s) upon receipt: (°C) 

5.4	3.5	3.7	4.4	3.5
-----	-----	-----	-----	-----
- Temperature Blank: (°C) 

5.1	2.6	2.1	N/A	5.8
-----	-----	-----	-----	-----
- Were samples hand delivered on the same day as collection? ~~Y~~ N
6. Were custody papers properly filled out (ink, signed, etc.)?  N
7. Type of packing material present FOAM, CARDBOARD, ICE
8. Did all bottles arrive in good condition (unbroken)?  N
9. Were all bottle labels complete (i.e analysis, preservation, etc.)?  N
10. Did all bottle labels and tags agree with custody papers?  N
11. Were the correct types of bottles used for the tests indicated?  N
12. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y~~ N
13. Were VOA vials checked for absence of air bubbles, and if present, noted below?  N
14. Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below? ~~Y~~ N
15. Did the bottles originate from CAS/K or a branch laboratory? Y
16. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? ~~Y~~ N
17. Was C12/Res negative? ~~Y~~ N

Explain any discrepancies: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

RESOLUTION: \_\_\_\_\_

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

## **Metals**

00020

METALS

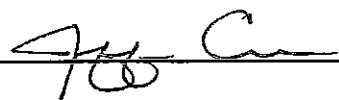
- Cover Page -  
INORGANIC ANALYSIS DATA PACKAGE

Client: Geomatrix Consultants, Incorporated Service Request: K0604573  
Project No.: 8769.005/4  
Project Name: NW Corner - FRP

<u>Sample No.</u>	<u>Lab Sample ID.</u>
NWC-1 Composite	K0604573-118
NWC-1 CompositeD	K0604573-118D
NWC-1 CompositeS	K0604573-118S
NWC-2 Composite	K0604573-119
NWC-3 Composite	K0604573-120
Method Blank	K0604573-MB

Were ICP interelement corrections applied? Yes/No YES  
Were ICP background corrections applied? Yes/No YES  
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: 

Date: 6/13/06

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: NW Corner - FRE

Date Received: 06/06/06

Matrix: SOIL

Units: mg/kg

Basis: Dry

Sample Name: NWC-1 Composite

Lab Code: K0604573-118

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	1.91	0.38	100	6/9/06	06/13/06	1200		

Comments:

00022

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: NW Corner - FRP

Date Received: 06/06/06

Matrix: SOIL

Units: mg/kg

Basis: Dry

Sample Name: NWC-2 Composite

Lab Code: K0604573-119

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	1.71	0.34	100	6/9/06	06/13/06	181		

Comments:

00023



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: NW Corner - FRP

Date Received: 06/06/06

Matrix: SOIL

Units: mg/kg

Basis: Dry

Sample Name: NWC-3 Composite

Lab Code: K0604573-120

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	1.71	0.34	100	6/9/06	06/13/06	21.0		

Comments:

00024

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Date Collected: NA

Project Name: NW Corner - FRP

Date Received: NA

Matrix: SOIL

Units: mg/kg

Basis: Dry

Sample Name: Method Blank

Lab Code: K0604573-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.10	0.02	5	6/9/06	06/13/06	0.09	B	

Comments:

00025

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration				Method	
	True	Found	%R(1)	True	Found	%R(1)	Found		%R(1)
Copper	12.5	12.2	98	25.0	24.9	100	25.1	100	6020

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Copper				25.0	25.3	101	24.9	100	6020

METALS

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

Concentration Units: ug/I

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial			Final	
				True	Found	%R	Found	%R
Copper				0.20	0.28	142		

METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
			1	C	2	C	3	C		
Copper	0.04	U	0.04	U	0.04	U	0.08	B		6020

00029

METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	Method
			1	C	2	C	3	C			
Copper			0.05	B							6020

00030

METALS

-4-

ICP INTERFERENCE CHECK SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

ICP ID Number: PQ-S

ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Copper		20	0.33	18.0	90			



METALS

- 5a -

SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Units: mg/kg

Project Name: NW Corner - FRP

Basis: Dry

Matrix: SOIL

Sample Name: NWC-1 CompositeS

Lab Code: K0604573-118S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Copper		1340		1200		49.2	285		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

- 5b -

POST DIGEST SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated      Service Request: K0604573  
 Project No.: 8769.005/4      Units: ug/L  
 Project Name: NW Corner - FRP  
 Matrix: SOIL

Sample Name: NWC-1 CompositeA      Lab Code: K0604573-118A

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Copper	75-125	153	126	25.0	108		MS

Comments: \_\_\_\_\_

METALS  
- 6 -  
DUPLICATES

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Units: mg/kg

Project Name: NW Corner - FRP

Basis: Dry

Matrix: SOIL

Sample Name: NWC-1 Composite

Lab Code: K0604573-118D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Copper	30	1200		1340		11		6020

An empty field in the Control Limit column indicates the control limit is not applicable. 00034

METALS

- 7 -

LABORATORY CONTROL SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source: ERA Lot No. D045540

Analyte	Aqueous mg/L			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Copper				67.0	66.8		53.8	80.2	100

00035

METALS

-9-

ICP SERIAL DILUTIONS

Client: Geomatrix Consultants, Incorporated      Service Request: K0604573  
 Project No.: 8769.005/4      Units: ug/L  
 Project Name: NW Corner - FRP

Sample Name: NWC-1 CompositeL

Lab Code: K0604573-118L

Analyte	Initial Sample Result (I)      C	Serial Dilution Result (S)      C	% Differ-	Q	Method
Copper	126	141	12	E	6020

00036

METALS

-10-

METHOD DETECTION LIMITS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604573

Project No.: 8769.005/4

Project Name: NW Corner - FRP

ICP/ICP-MS ID #: PQ-S

GFAA ID #:

AA ID #:

Analyte	Mass	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Copper	65		0.20	0.04	6020

Comments

---

---

---

METALS

-12-

ICP LINEAR RANGES (QUARTERLY)

Client: Geomatrix Consultants, Incorporated      Service Request: K0604573  
Project No.: 8769.005/4  
Project Name: NW Corner - FRP

ICP ID Number: PQ-S

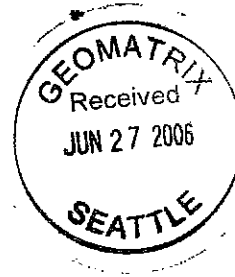
Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Copper	15.00	400.0	6020

Comments: \_\_\_\_\_

June 26, 2006

Service Request No: K0604574

John Long  
Geomatrix Consultants, Incorporated  
One Union Square  
600 University Street, Suite 1020  
Seattle, WA 98101

**RE: NW Corner-FRP/8769.005/4**

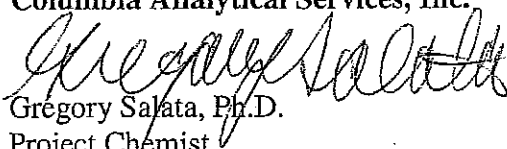
Dear John:

Enclosed are the results of the rush sample(s) submitted to our laboratory on June 06, 2006. For your reference, these analyses have been assigned our service request number K0604574.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

Gregory Salata, Ph.D.  
Project Chemist

GS/afs

Page 1 of 1675



## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- \* The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## **Case Narrative**

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geomatrix Consultants, Inc.  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Water and soil

Service Request No.: K0604574  
Date Received: 06/06/06

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water and twelve soil samples were received for analysis at Columbia Analytical Services on 06/06/06. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

**Matrix Spike Recovery Exceptions:**

The control criteria for matrix spike recoveries of Copper and Mercury for sample NWC-1-22W are not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

**Relative Percent Difference Exceptions:**

The Relative Percent Difference (RPD) for the replicate analysis of Copper in sample NWC-1-22W was outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

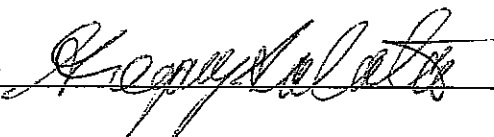
Hydrocarbon Identification by EPA Method 8015B

**Surrogate Exceptions:**

The control criteria were exceeded for the surrogate 4-Bromofluorobenzene in samples NWC-2-42W and NWC-2-6W due to chromatographic matrix interferences. Accurate quantitations of the surrogate were not possible because the surrogate peaks were not sufficiently resolvable from petroleum product responses. No further corrective action was appropriate.

The control criteria were exceeded for the surrogate o-Terphenyl in sample NWC-2-36W due to chromatographic matrix interferences. Accurate quantitation of the surrogate was not possible because the surrogate peak was not sufficiently resolvable from petroleum product responses. No further corrective action was appropriate.

Approved by



Date

6/26/06

**Calibration Range Exceedence:**

The results for Gasoline Range Organics has been estimated in samples NWC2-36W, NWC-2-6W and NWC-2-7W because the concentrations exceeded the instrument calibration range. The sample extracts were not (further) diluted because the results are for screening purposes only, and as such are semiquantitative. See NWTPH-GX analyses of the samples for quantitative results.

**Diesel Range Organics by EPA Method 8015B**

**Elevated Method Reporting Limits:**

Samples NWC-2-8W, NWC2-36W, NWC-2-6W and NWC-2-7W required dilutions due to the presence of elevated levels of target analytes. The reporting limits are adjusted to reflect the dilutions.

**Surrogate Exceptions:**

The control criteria were exceeded for the surrogate o-Terphenyl in sample NWC-2-36W due to chromatographic matrix interferences. Accurate quantitation of the surrogate was not possible because the surrogate peak was not sufficiently resolvable from petroleum product responses. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

**Gasoline Range Organics by EPA Method 8015B**

**Elevated Method Reporting Limits:**

Samples NWC-3-24W, NWC-2-5W, NWC-2-6W, NWC-2-7W, NWC-2-8W, NWC-2-36W, and NWC-2-42W required dilutions due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilutions.

**Surrogate Exceptions:**

The control criteria for the 4-Bromofluorobenzene surrogate in samples NWC-3-24W, NWC-2-5W, NWC-2-6W, NWC-2-7W, NWC-2-8W, NWC-2-36W, and NWC-2-42W are not applicable. The analyses of the samples required dilutions which resulted in surrogate concentrations below its calibration range. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

**Semivolatile Organic Compounds by EPA Method 8270C**

**Second Source Exceptions:**

The ICV analyzed for CAL5348 had exceeded the hold time by one day. All analytes were within method specified criteria, indicating that the standard had not degraded significantly and that the ICAL was still valid. No further corrective action was appropriate.

**Lab Control Sample Exceptions:**

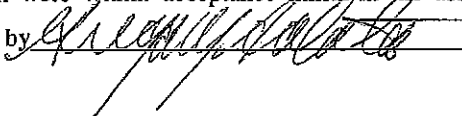
The advisory criterion was exceeded for Benzoic Acid in Laboratory Control Sample (LCS) KWG0609161-10. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

**Relative Percent Difference Exceptions:**

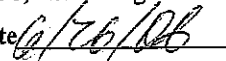
The Relative Percent Difference (RPD) for Benzoic Acid in the replicate Laboratory Control Sample (LCS) analyses (KWG0609161-10 and KWG0609161-11) was outside control criteria. The analyte in question was not detected in the associated field samples. The data quality is not significantly affected. No further corrective action was appropriate.

The Relative Percent Difference (RPD) for 2,4-Dinitrophenol in the replicate Laboratory Control Sample (LCS) analyses (KWG0609161-10 and KWG0609161-11) was outside control criteria. All spike recoveries for the analyte in question were within acceptance limits in the associated LCS/DLCS, indicating the analytical batch was in

Approved by



Date



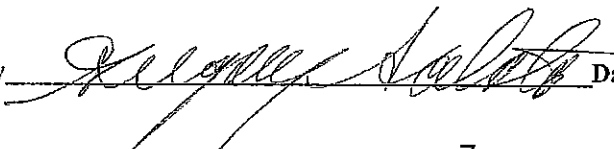
control. The analyte in question was not detected in the associated field samples. The data quality is not significantly affected. No further corrective action was appropriate.

**Elevated Method Reporting Limits:**

The reporting limits are elevated for all samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

No other anomalies associated with the analysis of these samples were observed.

Approved by

 Date 6/26/06

**Chain of Custody  
Documentation**







# CHAIN OF CUSTODY

SR#: 16104574

PAGE 2 OF 2 COC.#

1317 South 13th Ave. • Kelso, WA 98626 • (800) 695-7222x07 • FAX (360) 636-1068

PROJECT NAME: NW Corner - FRP  
 PROJECT NUMBER: 9769.005/4  
 PROJECT MANAGER: John Long  
 COMPANY ADDRESS: Geomatrix  
600 University St Suite 1020  
 CITY/STATE/ZIP: Seattle WA 98101  
 E-MAIL ADDRESS: John.Long@geomatrix.com  
 PHONE: 206-242-1779 FAX: 206-342-176  
 SAMPLER'S SIGNATURE: [Signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	REMARKS
<u>NWL-2-39W</u>	<u>6/5/06</u>	<u>1650</u>	<u>11 S</u>	<u>1</u>		
<u>NWC-2-42W</u>	<u>6/5/06</u>	<u>1100</u>	<u>12 S</u>	<u>5</u>		
<u>*</u>						

Circle which metals are to be analyzed:  
 Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg  
 Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:  
\* Sample NWC-2-39W contains unknown substance.  
Please test small amount first.  
"pretty like"  
\* Trip Blank (2) pp 6/6/6

INVOICE INFORMATION:  
 P.O. # 9769.005/4  
 Bill To: John Long

TURNAROUND REQUIREMENTS:  
 24 hr. \_\_\_\_\_ 48 hr.  
 5 Day \_\_\_\_\_  
 Standard (10-15 working days)  
 Provide FAX Results  
 Requested Report Date \_\_\_\_\_

REPORT REQUIREMENTS:  
 I. Routine Report: Method Blank, Surrogate, as required  
 II. Report Dup., MS, MSD as required  
 III. Data Validation Report (includes all raw data)  
 IV. CLP Deliverable Report  
 V. EDD

RELINQUISHED BY:  
 Signature: [Signature] Date/Time: 6/6/06  
 Printed Name: Robert Shook Firm: Geomatrix

RECEIVED BY:  
 Signature: [Signature] Date/Time: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_ Firm: \_\_\_\_\_

## Greg Salata

---

**From:** John Long [jlong@geomatrix.com]  
**Sent:** Wednesday, June 07, 2006 9:57 AM  
**To:** Greg Salata  
**Cc:** Larry McGaughey  
**Subject:** FW: SKonica506060707360.pdf

Greg:

Larry would like us to resolve the ignitability relatively quickly for the NWC-1-22W, NWC-1-2W, and NWC-1-12W samples so we can get them in the queue. Also, could you please let me know what the turnaround times will be for the organic analyses, or what TA times are available?

- John

-----Original Message-----

**From:** Larry McGaughey  
**Sent:** Wednesday, June 07, 2006 9:54 AM  
**To:** John Long  
**Subject:** RE: SKonica506060707360.pdf

John -

We should probably ask him to do the ignitability testing quickly so we can make decisions on the rest.

-----Original Message-----

**From:** John Long  
**Sent:** Wednesday, June 07, 2006 9:33 AM  
**To:** 'Greg Salata'  
**Cc:** Larry McGaughey; Zanna Satterwhite; Patrick Hsieh  
**Subject:** RE: SKonica506060707360.pdf

For this batch (and only this batch):

The specific metals are RCRA 8 plus Copper. Please run 8270 full suite, no SIMs.

Samples NWC-1-22W, NWC-1-2W, and NWC-1-12W contain the viscoelastic, silly-putty like, material. Please test a small portion of one of these samples following EPA Method 1030, preceding with the safety procedure outlined in section 7.0 before continuing (Method 1020 is an ASTM method, and I cannot access it without paying a fee -- I assume it also has a similar precaution; if so CAS can substitute Method 1020 instead.)

Once we have the results of this test, we will determine if other analyses are required; please hold these three samples pending analysis for the methods specified on the chain of custody.

- John

-----Original Message-----

**From:** Greg Salata [mailto:gsalata@kelso.caslab.com]  
**Sent:** Wednesday, June 07, 2006 7:47 AM  
**To:** John Long  
**Subject:** SKonica506060707360.pdf

<<SKonica506060707360.pdf>> John,

For this batch of samples I need to know 1) the specific metals list and 2) whether the 8270 is the entire suite of analytes or just the PAHs. I wasn't sure from the QAPP. Also, this is marked for low level analysis. Do we have any idea what we are expecting in these samples?

I hate to charge for the low level if the standard will meet your needs.

Greg

-----  
Gregory Salata, Ph.D.  
Project Chemist  
Columbia Analytical Services  
Phone: 360-577-7222  
FAX: 360-636-1068  
www.caslab.com

IMPORTANT NOTE: Documents accompanying this email may contain information which is legally privileged and/or confidential. The information is intended only for the use of the individual or entity named above. If you are not the intended recipient, or the person responsible for giving it to the intended recipient, you are hereby notified that any disclosure, copying, distribution, or use of any of the information provided in this transmission is strictly PROHIBITED. If you have received this email in error, please immediately notify us.  
Thank you for your cooperation and assistance.

**Greg Salata**

---

**From:** Zanna Satterwhite [zsatterwhite@geomatrix.com]  
**Sent:** Monday, June 19, 2006 11:53 AM  
**To:** Greg Salata  
**Cc:** Larry McGaughey; John Long  
**Subject:** FRP sample receipts - review

Greg,

I just reviewed all the confirmations of sample receipt that you sent John. They list all the samples we've submitted for this project. I noted the following issues that you may or may not already be aware of:

- K0604601 (NWC archives): please make sure you analyze selected samples for copper only.
- K0604574 (NWC suspects): please add a column for VOCs, and put an "H" for "hold" next to samples NWC-2-5W, NWC-2-6W, NWC-2-7W, NWC-2-25W, NWC-2-8W, NWC-2-36W, and NWC-2-42W. I realize the hold time is 14 days for extraction for VOCs; if Larry or John feel there is a need to extract these just in case we want to analyze, they will let you know soon, because I know we've already exceeded the hold times for some of these samples. WP-1-5W and WP-1-6W (K0604885) are the only other samples which we collected VOCs kits for but decided not to analyze – those samples expire on 6/27/06.
- K0604786 (Maint primary): make sure you analyzed both Composite 1 and Composite 1 (dup) for As, Cu, and Hg, not just As and Cu.
- K0604852 (Sulf primary): in our work plan, we specified EPA 9045B for pH analysis; is EPA 9045C a very different method?

Please make sure you hang onto any extra soil volume for all samples that we've submitted so far.

Thank you,

Zanna Satterwhite, L.G.  
Geologist  
Geomatrix Consultants  
600 University Street, Suite 1020  
Seattle, WA 98101  
Ph: (206) 342-1772  
Fax: (206) 342-1761  
Cell: (206) 550-3781

The materials transmitted by this electronic mail are confidential, are only for the use of the intended recipient, and may also be subject to applicable privileges. Any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify the sender. Please also remove this message from your hard drive, diskette, and any other storage device.

Columbia Analytical Services Inc.  
Cooler Receipt and Preservation Form

PC GREEN

Project/Client GEOMATRIX Service Request K06 04574

Cooler received on 6/6/6 and opened on 6/6/6 by AP

1. Were custody seals on outside of coolers? MCD Y  N  
If yes, how many and where? \_\_\_\_\_
2. Were custody seals intact? ~~Y~~ N
3. Were signature and date present on the custody seals? ~~Y~~ N
4. Is the shipper's airbill available and filed? If no, record airbill number: \_\_\_\_\_  N
5. COC# \_\_\_\_\_
- Temperature of cooler(s) upon receipt: (°C) 

5.4	3.5	3.7	4.4	3.5
5.1	2.6	2.1	N/A	5.8
- Temperature Blank: (°C) \_\_\_\_\_
- Were samples hand delivered on the same day as collection? ~~Y~~ N
6. Were custody papers properly filled out (ink, signed, etc.)?  N
7. Type of packing material present FOAM, CARDBOARD, ICE
8. Did all bottles arrive in good condition (unbroken)?  N
9. Were all bottle labels complete (i.e analysis, preservation, etc.)?  N
10. Did all bottle labels and tags agree with custody papers?  N
11. Were the correct types of bottles used for the tests indicated?  N
12. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y~~ N
13. Were VOA vials checked for absence of air bubbles, and if present, noted below?  N
14. Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below? ~~Y~~ N
15. Did the bottles originate from CAS/K or a branch laboratory? Y  N
16. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? ~~Y~~ N
17. Was C12/Res negative? ~~Y~~ N

Explain any discrepancies: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESOLUTION: \_\_\_\_\_

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

**Total Solids**

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574

Total Solids

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
NWC-2-5W	K0604574-001	06/02/2006	06/06/2006	06/07/2006	76.3	
NWC-2-6W	K0604574-002	06/02/2006	06/06/2006	06/07/2006	73.4	
NWC-2-7W	K0604574-003	06/02/2006	06/06/2006	06/07/2006	79.8	
NWC-3-24W	K0604574-004	06/02/2006	06/06/2006	06/07/2006	81.4	
NWC-1-22W	K0604574-006	06/02/2006	06/06/2006	06/07/2006	82.7	
NWC-1-2W	K0604574-007	06/02/2006	06/06/2006	06/07/2006	79.8	
NWC-2-8W	K0604574-008	06/05/2006	06/06/2006	06/07/2006	80.7	
NWC-2-36W	K0604574-009	06/05/2006	06/06/2006	06/07/2006	72.9	
NWC-1-12W	K0604574-010	06/05/2006	06/06/2006	06/07/2006	86.9	
NWC-2-39W	K0604574-011	06/05/2006	06/06/2006	06/07/2006	83.8	
NWC-2-42W	K0604574-012	06/05/2006	06/06/2006	06/07/2006	82.6	

QA/QC Report

Client: Geomatrix Consultants, Incorporated  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Soil

Service Request: K0604574  
Date Collected: 06/02/2006  
Date Received: 06/06/2006  
Date Analyzed: 06/07/2006

Duplicate Sample Summary  
Total Solids

Prep Method: NONE  
Analysis Method: 160.3M  
Test Notes:

Units: PERCENT  
Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
NWC-2-5W	K0604574-001	76.3	76.1	76.2	<1	



QA/QC Report

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Solid fuel

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006  
 Date Analyzed: 06/07/2006

Duplicate Sample Summary  
 Total Solids

Prep Method: NONE  
 Analysis Method: 160.3M  
 Test Notes:

Units: PERCENT  
 Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
NWC-1-12W	K0604574-010	86.9	87.3	87.1	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

EPA Method 160.3 - Total Solids

Group ID: KWG0609322  
 Analyst: RMcKee  
 Date Acquired: 06/07/2006 17:38  
 Date Completed: 06/08/2006 11:09  
 Oven TempStart: 104 DEG C  
 Oven TempEnd: 104 DEG C  
 Reviewed By: MA  
 Date Reviewed: 6/8/06

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
1	K0602878-006	G-5	SEDIMENT	1.2168g	6.6251g	2.5565g	24.8		
2	K0602878-009	M-9	SEDIMENT	1.2418g	4.1092g	2.0471g	28.1		
3	K0603851-001	005	SOLID	1.24g	2.67g	2.5373g	90.7		Air Dried & Ground
4	K0603917-001	Paperboard	FUEL	1.24g	5.21g	5.01g	95.0		
5	K0604252-008	Composite	PAPERBOA	1.24g	3.04g	2.94g	94.4		
6	K0604538-001	Morton Boiler Ash	ASH	1.24g	4.79g	2.96g	48.5		
7	K0604553-001	Rose Drain	SEDIMENT	1.24g	8.49g	6.16g	67.9		
8	K0604553-003	Central Drain	SEDIMENT	1.24g	13.48g	10.67g	77.0		
9	K0604553-005	Fig Drain	SEDIMENT	1.25g	9.23g	6.34g	63.8		
10	K0604553-006	New River @ Forresor	SEDIMENT	1.23g	10.62g	8.12g	73.4		
11	K0604553-007	New River @ Horley	SEDIMENT	1.25g	7.95g	5.89g	69.3		
12	K0604553-008	Alamo R. @ Worthington	SEDIMENT	1.24g	11.77g	8.72g	71.0		
13	K0604553-011	Worthington Pond Sed	SEDIMENT	1.24g	9.11g	7.28g	76.7		
14	K0604553-013	Alamo R @ Harris Sed	SEDIMENT	1.24g	7.88g	6.04g	72.3		
15	K0604553-014	Alamo R. @ Rutherford	SEDIMENT	1.24g	8.57g	6.36g	69.8		
16	K0604573-118	NWC-1 Composite	SOIL	1.24g	15.75g	14.18g	89.2		As Received
17	K0604573-119	NWC-2 Composite	SOIL	1.24g	25.19g	20.14g	78.9		As Received
18	K0604573-120	NWC-3 Composite	SOIL	1.24g	10.86g	8.73g	77.9		As Received
19	K0604574-001	NWC-2-5W	SOIL	1.25g	10.12g	8.02g	76.3		
20	K0604574-002	NWC-2-6W	SOIL	1.25g	7.07g	5.52g	73.4		
21	K0604574-003	NWC-2-7W	SOIL	1.23g	12.65g	10.34g	79.8		
22	K0604574-004	NWC-3-24W	SOIL	1.24g	8.12g	6.84g	81.4		
23	K0604574-006	NWC-1-22W	SOIL	1.24g	6.67g	5.73g	82.7		
24	K0604574-007	NWC-1-2W	SOIL	1.23g	7.77g	6.45g	79.8		

Group ID: KWG0609322

Analyst: RMcKee

Date Acquired: 06/07/2006 17:38

Date Completed: 06/08/2006 11:09

Oven TempStart: 104 DEG C

Oven TempEnd: 104 DEG C

Reviewed By: *RA*

Date Reviewed: *6/8/06*

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
25	K0604574-008	NWC-2-8W	SOIL	1.25g	7.27g	6.11g	80.7		
26	K0604574-009	NWC-2-36W	SOIL	1.23g	13.68g	10.30g	72.9		
27	K0604574-010	NWC-1-12W	SOIL	1.23g	9.40g	8.33g	86.9		
28	K0604574-011	NWC-2-39W	SOIL	1.25g	10.42g	8.93g	83.8		
29	K0604574-012	NWC-2-42W	SOIL	1.24g	8.90g	7.57g	82.6		
30	K0604597-001	Feed Belt	SOLID FUEL	10.24g	68.45g	38.25g	48.1		As Received
31	K0604597-002	Dewatered Sludge	SOLID FUEL	10.46g	63.16g	28.11g	33.5		As Received
32	K0604598-001	YRLLC Cleanup Fuel	SOLID FUEL	10.43g	123.12g	80.51g	62.2		As Received
33	KWG0609322-1	Duplicate Client Sample	SOLID FUEL	1.2412g	9.0974g	3.2470g	25.5	K0602878-006	
34	KWG0609322-2	Duplicate Client Sample	SOIL	1.24g	11.23g	8.02g	67.9	K0604553-001	
35	KWG0609322-3	Duplicate Client Sample	SOIL	1.24g	10.02g	7.92g	76.1	K0604574-001	
36	KWG0609322-4	Duplicate Client Sample	SOLID FUEL	1.25g	10.38g	9.22g	87.3	K0604574-010	
37	KWG0609322-5	Duplicate Client Sample	SOIL	1.25g	15.48g	12.29g	77.6	K0604573-120	

20

## **General Chemistry Parameters**

METALS

- 5b -

POST DIGEST SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Units: ug/L

Project Name: NW Corner-FRP

Matrix: SOIL

Sample Name: NWC-1-22WA

Lab Code: K0604574-006A

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	22.5	6.00	20.0	83		MS
Barium	75-125	101	76.4	20.0	123		MS
Cadmium	75-125	18.5	0.264	20.0	91		MS
Chromium	75-125	42.8	23.8	20.0	95		MS
Copper	75-125	198	178	20.0	100		MS
Lead	75-125	60.1	38.5	20.0	108		MS
Selenium	75-125	16.3	0.5 B	20.0	79		MS
Silver	75-125	23.8	0.213	25.0	94		MS

Comments: \_\_\_\_\_

METALS  
 - 5a -  
 SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: NW Corner-FRP  
 Matrix: SOIL

Service Request: K0604574  
 Units: mg/kg  
 Basis: Dry  
 % Solids: 82.7

Sample Name: NWC-1-22WS

Lab Code: K0604574-006S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Arsenic	74 - 120	119		3.63		121	95		6020
Barium	79 - 117	537		46.2		484	101		6020
Cadmium	63 - 136	12.1		0.160		12.1	98		6020
Chromium	53 - 147	60.7		14.4		48.4	96		6020
Copper		5940		2150		60.5	6275		6020
Lead	66 - 134	155		23.3		121	108		6020
Mercury		2.630		1.910		0.486	148		7471A
Selenium	74 - 119	109		0.3	B	121	90		6020
Silver	83 - 107	11.4		0.129		12.1	93		200.8

An empty field in the Control Limit column indicates the control limit is not applicable.

## METALS

- 4 -

## ICP INTERFERENCE CHECK SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICP ID Number: PQ-S

ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic		20	0.11	18.0	90			
Barium			-0.01	-0.01				
Cadmium		20	0.394	20.3	102			
Chromium		20	0.25	20.2	101			
Copper		20	0.33	18.0	90			
Lead			0.23	0.19				
Selenium			0.6	0.9				

METALS

- 4 -

ICP INTERFERENCE CHECK SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICP ID Number: Excell ICPMS

ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Silver		20	0.017	17.4	87			



METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	Method
			1	C	2	C	3	C			
Arsenic			0.10	U							6020
Barium			0.06	U							6020
Cadmium			0.040	U							6020
Chromium			0.06	U							6020
Copper			0.05	B							6020
Lead			0.04	U							6020
Selenium			0.2	U							6020
Silver			0.008	U	0.008	U					200.8

## METALS

-3-

## BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
		C	1	C	2	C	3	C		
Arsenic	0.10	U	0.10	U	0.10	U	0.10	U		6020
Barium	0.06	U	0.06	U	0.06	U	0.06	U		6020
Cadmium	0.040	U	0.040	U	0.04	U	0.040	U		6020
Chromium	0.06	U	0.06	U	0.06	U	0.06	U		6020
Copper	0.04	U	0.04	U	0.04	U	0.08	B		6020
Lead	0.04	U	0.04	U	0.04	U	0.04	U		6020
Mercury	0.008	U	0.008	U	0.008	U	0.008	U		7471A
Selenium	0.2	U	0.2	U	0.2	U	0.2	U		6020
Silver	0.015	B	0.008	U	0.008	U	0.008	U		200.8

METALS

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

Concentration Units: ug/l

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial			Final	
				True	Found	%R	Found	%R
Arsenic				1.0	1.03	103		
Barium				0.10	0.10	96		
Cadmium				0.04	0.018	45		
Chromium				0.40	0.41	103		
Copper				0.20	0.28	142		
Lead				0.04	0.04	111		
Mercury	0.20	0.170	85					
Selenium				2.0	1.99	100		
Silver				0.04	0.039	97		

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Silver				25.0	25.0	100			200.8

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration				Method	
	True	Found	%R(1)	True	Found	%R(1)	Found		%R(1)
Arsenic				25.0	25.0	100	24.0	96	6020
Barium				25.0	25.1	100	24.5	98	6020
Cadmium				25.0	25.0	100	25.0	100	6020
Chromium				25.0	25.2	101	24.3	97	6020
Copper				25.0	25.3	101	24.9	100	6020
Lead				25.0	25.3	101	25.2	101	6020
Mercury				5.0	5.07	101			7471A
Selenium				25.0	25.8	103	24.2	97	6020
Silver				25.0	25.3	101	25.0	100	200.8

## METALS

- 2a -

## INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25.0	25.6	102	25.0	25.1	100	24.9	100	6020
Barium	100	101	101	25.0	24.8	99	25.1	100	6020
Cadmium	12.5	12.8	102	25.0	24.9	99	25.1	100	6020
Chromium	10.0	10.1	101	25.0	25.2	101	25.0	100	6020
Copper	12.5	12.2	98	25.0	24.9	100	25.1	100	6020
Lead	25.0	25.3	101	25.0	24.9	100	24.6	98	6020
Mercury	5.0	5.26	105	5.0	4.82	96	5.02	100	7471A
Selenium	25.0	25.7	103	25.0	25.0	100	24.0	96	6020
Silver	12.5	12.0	96	25.0	25.0	100	25.1	100	200.8

## METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Date Collected:

Project Name: NW Corner-FRP

Date Received:

Matrix: SOIL

Units: MG/KG

Basis: Dry

Sample Name: Method Blank

Lab Code: K0604574-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6020	0.50	0.05	5	6/7/06	6/12/06	0.05	U	
Barium	6020	0.05	0.03	5	6/7/06	6/12/06	0.03	U	
Cadmium	6020	0.050	0.020	5	6/7/06	6/12/06	0.020	U	
Chromium	6020	0.20	0.03	5	6/7/06	6/12/06	0.05	B	
Copper	6020	0.10	0.02	5	6/7/06	6/13/06	0.06	B	*
Lead	6020	0.05	0.02	5	6/7/06	6/12/06	0.02	U	
Mercury	7471A	0.020	0.001	1	6/13/06	6/14/06	0.001	U	
Selenium	6020	1.0	0.1	5	6/7/06	6/12/06	0.1	U	
Silver	200.8	0.020	0.004	5	6/7/06	6/13/06	0.004	U	

\* Solids: 100.0

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: NW Corner-FRP

Date Received: 06/06/06

Matrix: SOIL

Units: MG/KG

Basis: Dry

Sample Name: NWC-2-39W

Lab Code: K0604574-011

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6020	0.60	0.06	5	6/7/06	6/12/06	2.32		
Barium	6020	0.06	0.04	5	6/7/06	6/12/06	169		
Cadmium	6020	0.060	0.024	5	6/7/06	6/12/06	0.288		
Chromium	6020	0.24	0.04	5	6/7/06	6/12/06	14.5		
Copper	6020	23.90	4.77	1000	6/7/06	6/13/06	18200		*
Lead	6020	0.06	0.02	5	6/7/06	6/12/06	28.2		
Mercury	7471A	0.020	0.001	1	6/13/06	6/14/06	0.745		
Selenium	6020	1.2	0.1	5	6/7/06	6/12/06	0.3	B	
Silver	200.8	0.024	0.005	5	6/7/06	6/13/06	0.099		

\* Solids: 83.8

Comments:

TG  
7/28/06



## METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: NW Corner-FRP

Date Received: 06/06/06

Matrix: SOIL

Units: MG/KG

Basis: Dry

Sample Name: NWC-1-12W

Lab Code: K0604574-010

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6020	0.57	0.06	5	6/7/06	6/12/06	4.53		
Barium	6020	0.06	0.03	5	6/7/06	6/12/06	78.2		
Cadmium	6020	0.057	0.023	5	6/7/06	6/12/06	0.234		
Chromium	6020	0.23	0.03	5	6/7/06	6/12/06	15.1		
Copper	6020	2.28	0.46	100	6/7/06	6/13/06	3290		*
Lead	6020	0.06	0.02	5	6/7/06	6/12/06	21.8		
Mercury	7471A	0.020	0.001	1	6/13/06	6/14/06	0.564		
Selenium	6020	1.1	0.1	5	6/7/06	6/12/06	0.4	B	
Silver	200.8	0.023	0.005	5	6/7/06	6/13/06	0.219		

\* Solids: 86.9

Comments:

TG  
2/25/06

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: NW Corner-FRP  
 Matrix: SOIL

Service Request: K0604574  
 Date Collected: 06/02/06  
 Date Received: 06/06/06  
 Units: MG/KG  
 Basis: Dry

Sample Name: NWC-1-2W

Lab Code: K0604574-007

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6020	1.04	0.10	10	6/7/06	6/12/06	3.90		
Barium	6020	0.10	0.06	10	6/7/06	6/12/06	65.7		
Cadmium	6020	0.104	0.042	10	6/7/06	6/12/06	0.181		
Chromium	6020	0.42	0.06	10	6/7/06	6/12/06	14.4		
Copper	6020	2.09	0.42	100	6/7/06	6/13/06	696		*
Lead	6020	0.10	0.04	10	6/7/06	6/12/06	13.0		
Mercury	7471A	0.020	0.001	1	6/13/06	6/14/06	0.787		
Selenium	6020	2.1	0.2	10	6/7/06	6/12/06	0.8	B	
Silver	200.8	0.021	0.004	5	6/7/06	6/13/06	0.204		

\* Solids: 79.8

Comments:

79  
2/29/06

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: NW Corner-FRP

Date Received: 06/06/06

Matrix: SOIL

Units: MG/KG

Basis: Dry

Sample Name: NWC-1-22W

Lab Code: K0604574-006

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	6020	0.61	0.06	5	6/7/06	6/12/06	3.63		
Barium	6020	0.06	0.04	5	6/7/06	6/12/06	46.2		
Cadmium	6020	0.061	0.024	5	6/7/06	6/12/06	0.160		
Chromium	6020	0.24	0.04	5	6/7/06	6/12/06	14.4		
Copper	6020	2.42	0.48	100	6/7/06	6/13/06	2150		*
Lead	6020	0.06	0.02	5	6/7/06	6/12/06	23.3		
Mercury	7471A	0.097	0.004	5	6/13/06	6/14/06	1.910		
Selenium	6020	1.2	0.1	5	6/7/06	6/12/06	0.3	B	
Silver	200.8	0.024	0.005	5	6/7/06	6/13/06	0.129		

% Solids: 82.7

Comments:

TG  
7/14/06

METALS

- Cover Page -

INORGANIC ANALYSIS DATA PACKAGE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

<u>Sample No.</u>	<u>Lab Sample ID.</u>
NWC-1-22W	K0604574-006
NWC-1-22WD	K0604574-006D
NWC-1-22WS	K0604574-006S
NWC-1-2W	K0604574-007
NWC-1-12W	K0604574-010
NWC-2-39W	K0604574-011
Method Blank	K0604574-MB

Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YES

If yes-were raw data generated before application of background corrections?

Yes/No NO

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: 

Date: 4/14/06

## Metals

Columbia Analytical Services

Service Request: \_\_\_\_\_

Analysis For: Flashpoint

Method: EPA 1020

Sample #: K4574-7

Sample #: K4574-10

Sample #:

Sample #:

Sample #:

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		X
95		X
100		X
105		X
110		X
Verification		
Obs. Flash = >110		
Flashpoint = >110		

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		X
95		X
100		X
105		X
110		X
Verification		
Obs. Flash = >110		
Flashpoint = >110		

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
105		
110		
Verification		
Obs. Flash =		
Flashpoint =		

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
105		
110		
Verification		
Obs. Flash =		
Flashpoint =		

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
105		
110		
Verification		
Obs. Flash =		
Flashpoint =		

Comments:

Analyst: <u>SP</u>	Date: <u>6/10/06</u>	Time: <u>0615</u>
Reviewed By: <u>TJ</u>	Date: <u>6/12/06</u>	

Service Request: K4574

Analysis For: Flashpoint

Method: EPA 1020

p-xylene STD 1

°C	Yes	No
20		X
25		X
30	X	
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
105		
110		
Verification		
26		X
27	X	
28		
29		
30		
Obs. Flash = 27		
Flashpoint = 27		

1-butanol STD 2

°C	Yes	No
20		
25		X
30		X
35		X
40	X	
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
105		
110		
Verification		
36		X
37		X
38	X	
39		
40		
Obs. Flash = 38		
Flashpoint = 38		

DI Water Blank

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		X
95		X
100		X
105		X
110		X
Verification		
Obs. Flash = >110		
Flashpoint = >110		

Sample #: K4574-6

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		X
95		X
100		X
105		X
110		X
Verification		
Obs. Flash = >110		
Flashpoint = >110		

Sample #: K4574-6D

°C	Yes	No
20		
25		
30		
35		
40		
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		X
95		X
100		X
105		X
110		X
Verification		
Obs. Flash = >110		
Flashpoint = >110		

Standard 1: p-xylene T.V. = 25.5 °C ± 0.5 °C

Standard 2: 1-butanol T.V. = 37.0 °C ± 1.0 °C

Actual Flashpoint (°C) = Observed flashpoint + 0.03 (760 - Avg. barometric pressure (mm Hg))

Lot #: A07444

Lot #: B21805

%REC = 106

%REC = 103

Barometric Pressure  
Beginning: 760  
End: 760

Comments:

K4574-6+6D X = >110 RPD = <1

Analyst: SP  
Reviewed By: ML

Date: 6/10/06  
Date: 6/12/06

Time: 0215

Work Request # <sup>Original</sup> (K4574)  
 Tier: III  
 Date Analyzed: 6/10/06  
 Analyst: SP  
 Analysis: F. Point

**DATA QUALITY REPORT  
INORGANICS**

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

- |     |   |   |
|-----|---|---|
| 1.  | Is the method name and number correct and appropriate?  | <input checked="" type="radio"/> yes/no/NA  |
| 2.  | Holding times met for all analyses and for all samples?   | <input checked="" type="radio"/> yes/no/NA  |
| 3.  | Are calculations correct?   | <input checked="" type="radio"/> yes/no/NA  |
| 4.  | Is the reporting basis correct? (Dry Weight)  | yes/no/ <input checked="" type="radio"/> NA |
| 5.  | All quality control criteria met?   | <input checked="" type="radio"/> yes/no/NA  |
| a.  | Is the calibration curve correlation coefficient $\geq 0.995$ ?   | yes/no/ <input checked="" type="radio"/> NA |
| b.  | MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?                                      | <input checked="" type="radio"/> yes/no/NA  |
| c.  | Are ICVs, CCVs, and CCBs all within acceptance limits?  | yes/no/ <input checked="" type="radio"/> NA |
| d.  | Are results for methods blanks all ND?  | <input checked="" type="radio"/> yes/no/NA  |
| e.  | Are all QC samples within acceptance criteria?<br>(LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)       | <input checked="" type="radio"/> yes/no/NA  |
| f.  | Are all exceptions explained?   | yes/no/ <input checked="" type="radio"/> NA |
| 6.  | Are all service requests that apply attached?   | <input checked="" type="radio"/> yes/no/NA  |
| 7.  | Are all samples labelled correctly?   | <input checked="" type="radio"/> yes/no/NA  |
| 8.  | Have all instructions on the service request been followed?<br>(e.g. Special MRLs, QC on a specific sample) | <input checked="" type="radio"/> yes/no/NA  |
| 9.  | Are detection limits and units reported correctly?  | <input checked="" type="radio"/> yes/no/NA  |
| 10. | Are proper Analysis/Extraction stickers included on report?   | <input checked="" type="radio"/> yes/no/NA  |
| 11. | Is the unused space on the benchsheet crossed out?  | <input checked="" type="radio"/> yes/no/NA  |
| 12. | Was analysis turned in by the due date? (n-2) (If not record SR#)   | <input checked="" type="radio"/> yes/no/NA  |

**COMMENTS:**

K4574- Rush due 6/13

Final Approved by: EL Date: 6/12/06

DQREPORT



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants, Incorporated  
Project Name : NW Corner-FRP  
Project Number : 8769.005/4  
Sample Matrix : SOIL

Service Request : K0604574  
Date Collected : NA  
Date Received : NA  
Date Prepared : NA  
Date Analyzed : 06/10/06

Laboratory Control Sample Summary  
Inorganic Parameters

Sample Name : Lab Control Sample  
Lab Code : K0604574-LCS  
Test Notes :

Units : DEG C  
Basis : NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS	Result Notes
						Percent Recovery Acceptance Limits	
Flashpoint	None	1020	26	27	96	85-115	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants, Incorporated  
Project Name : NW Corner-FRP  
Project Number : 8769.005/4  
Sample Matrix : SOIL

Service Request : K0604574  
Date Collected : 06/02/06  
Date Received : 06/06/06  
Date Prepared : NA  
Date Analyzed : 06/10/06

Duplicate Summary  
Inorganic Parameters

Sample Name : NWC-1-22W  
Lab Code : K0604574-006DUP  
Test Notes :

Units : DEG C  
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Flashpoint	1020	-	>110	>110	>110	-	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Geomatrix Consultants, Incorporated  
Project Name : NW Corner-FRP  
Project Number : 8769.005/4  
Sample Matrix : SOIL

Service Request : K0604574  
Date Collected : 06/02-05/06  
Date Received : 06/06/06

Flashpoint

Analysis Method : 1020  
Test Notes :

Units : DEG C  
Basis : NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Analyzed	Result	Result Notes
NWC-1-22W	K0604574-006	-	1	06/10/06	>110	
NWC-1-2W	K0604574-007	-	1	06/10/06	>110	
NWC-1-12W	K0604574-010	-	1	06/10/06	>110	
Method Blank	K0604574-MB	-	1	06/10/06	>110	

METALS  
- 6 -  
DUPLICATES

Client: Geomatrix Consultants, Incorporated      Service Request: K0604574  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: NW Corner-FRP      Basis: Dry  
 Matrix: SOIL      % Solids: 82.7

Sample Name: NWC-1-22WD

Lab Code: K0604574-006D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Arsenic	30	3.63		4.34		18		6020
Barium	30	46.2		49.6		7		6020
Cadmium		0.160		0.207		25		6020
Chromium	30	14.4		16.9		16		6020
Copper	30	2150		2940		31	*	6020
Lead	30	23.3		27.9		18		6020
Mercury	30	1.910		1.630		16		7471A
Selenium		0.3	B	0.4	B	9		6020
Silver	30	0.129		0.146		12		200.8

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

-7-

LABORATORY CONTROL SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source: ERA Lot No. D045540

Analyte	Aqueous mg/L			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Arsenic				146	137		112	180	94
Barium				339	356		266	412	105
Cadmium				92.8	93.5		73.9	112	101
Chromium				172	172		135	209	100
Copper				67.0	66.2		53.8	80.2	99
Lead				67.5	67.7		53.1	81.9	100
Mercury				1.77	1.88		1.21	2.34	106
Selenium				70.5	72.3		53.3	87.7	103
Silver				93.0	86.1		57.0	129	93

## METALS

-9-

## ICP SERIAL DILUTIONS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Units: ug/L

Project Name: NW Corner-FRP

Sample Name: NWC-1-22WL

Lab Code: K0604574-006L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ-	Q	Method
Arsenic	6.00	8.03	34	E	6020
Barium	76.4	89.5	17	E	6020
Cadmium	0.264	0.231	12	B	6020
Chromium	23.8	30.0	26	E	6020
Copper	178	172	3		6020
Lead	38.5	46.3	20	E	6020
Selenium	0.5	1.00		U	6020
Silver	0.213	0.225	5		200.8

METALS

-10-

METHOD DETECTION LIMITS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICP/ICP-MS ID #:

GFAA ID #:

AA ID #: CETAC-1

Analyte	Wave-length	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Mercury	253.70	BD	0.200	0.008	7471A

Comments

---

---

---

METALS

-10-

METHOD DETECTION LIMITS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICP/ICP-MS ID #: Excell ICPMS

GFAA ID #:

AA ID #:

Analyte	Mass	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Silver	107		0.040	0.008	200.8

Comments

---

---

---



METALS

-10-

METHOD DETECTION LIMITS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICP/ICP-MS ID #: PQ-S

GFAA ID #:

AA ID #:

Analyte	Mass	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Arsenic	75		1.00	0.10	6020
Barium	137		0.10	0.06	6020
Cadmium	111		0.100	0.040	6020
Chromium	52		0.40	0.06	6020
Copper	65		0.20	0.04	6020
Lead	208		0.10	0.04	6020
Selenium	77		2.0	0.2	6020

Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

METALS

-12-

ICP LINEAR RANGES (QUARTERLY)

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-FRP

ICP ID Number: Excell ICPMS

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Silver	15.00	300.0	200.8

Comments:

METALS

-12-

ICP LINEAR RANGES (QUARTERLY)

Client: Geomatrix Consultants, Incorporated

Service Request: K0604574

Project No.: 8769.005/4

Project Name: NW Corner-ERP

ICP ID Number: PQ-S

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Arsenic	15.00	200.0	6020
Barium	15.00	500.0	6020
Cadmium	15.00	300.0	6020
Chromium	15.00	200.0	6020
Copper	15.00	400.0	6020
Lead	15.00	400.0	6020
Selenium	15.00	200.0	6020

Comments:

Organic Analysis:  
Diesel and Residual Range Organics

Summary Package

Sample and QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574

Cover Page - Organic Analysis Data Package  
 Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
NWC-2-5W	K0604574-001	06/02/2006	06/06/2006
NWC-2-6W	K0604574-002	06/02/2006	06/06/2006
NWC-2-7W	K0604574-003	06/02/2006	06/06/2006
NWC-2-8W	K0604574-008	06/05/2006	06/06/2006
NWC-2-36W	K0604574-009	06/05/2006	06/06/2006
NWC-2-42W	K0604574-012	06/05/2006	06/06/2006
NWC-2-42W	KWG0609367-1	06/05/2006	06/06/2006

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Mike Erickson

Name: Mike Erickson

Date: 6/21/06

Title: Supervisor

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/02/2006  
**Date Received:** 06/06/2006

**Diesel and Residual Range Organics**

**Sample Name:** NWC-2-5W  
**Lab Code:** K0604574-001  
**Extraction Method:** EPA 3550B  
**Analysis Method:** NWTPH-Dx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	120 Z	33	3.6	1	06/08/06	06/09/06	KWG0609367	
Residual Range Organics (RRO)	57 J	130	5.9	1	06/08/06	06/09/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	78	50-150	06/09/06	Acceptable
n-Triacontane	81	50-150	06/09/06	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/02/2006  
**Date Received:** 06/06/2006

**Diesel and Residual Range Organics**

**Sample Name:** NWC-2-6W  
**Lab Code:** K0604574-002  
**Extraction Method:** EPA 3550B  
**Analysis Method:** NWTPH-Dx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	1800 DZ	170	19	5	06/08/06	06/10/06	KWG0609367	
Residual Range Organics (RRO)	470 Z	140	6.2	1	06/08/06	06/09/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	62	50-150	06/09/06	Acceptable
n-Triacontane	65	50-150	06/09/06	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/02/2006  
**Date Received:** 06/06/2006

**Diesel and Residual Range Organics**

**Sample Name:** NWC-2-7W  
**Lab Code:** K0604574-003  
**Extraction Method:** EPA 3550B  
**Analysis Method:** NWTPH-Dx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	1400	DZ	160	17	5	06/08/06	06/10/06	KWG0609367	
Residual Range Organics (RRO)	380	Z	130	5.7	1	06/08/06	06/09/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	75	50-150	06/09/06	Acceptable
n-Triacontane	84	50-150	06/09/06	Acceptable

Comments: \_\_\_\_\_



**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/05/2006  
**Date Received:** 06/06/2006

**Diesel and Residual Range Organics**

**Sample Name:** NWC-2-8W  
**Lab Code:** K0604574-008  
**Extraction Method:** EPA 3550B  
**Analysis Method:** NWTPH-Dx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	820	DZ	160	17	5	06/08/06	06/12/06	KWG0609367	
Residual Range Organics (RRO)	130	Z	130	5.6	1	06/08/06	06/10/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	86	50-150	06/10/06	Acceptable
n-Triacontane	80	50-150	06/10/06	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/05/2006  
**Date Received:** 06/06/2006

**Diesel and Residual Range Organics**

**Sample Name:** NWC-2-36W  
**Lab Code:** K0604574-009  
**Extraction Method:** EPA 3550B  
**Analysis Method:** NWTPH-Dx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	2100	DZ	170	19	5	06/08/06	06/10/06	KWG0609367	
Residual Range Organics (RRO)	360	Z	140	6.2	1	06/08/06	06/12/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	49	50-150	06/12/06	Outside Control Limits
n-Triacontane	63	50-150	06/12/06	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/05/2006  
**Date Received:** 06/06/2006

**Diesel and Residual Range Organics**

**Sample Name:** NWC-2-42W  
**Lab Code:** K0604574-012  
**Extraction Method:** EPA 3550B  
**Analysis Method:** NWTPH-Dx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	1500	DZ	150	17	5	06/08/06	06/10/06	KWG0609367	
Residual Range Organics (RRO)	210	Z	120	5.5	1	06/08/06	06/12/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	95	50-150	06/12/06	Acceptable
n-Triacontane	74	50-150	06/12/06	Acceptable

Comments: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: NA  
 Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank  
 Lab Code: KWG0609367-3  
 Extraction Method: EPA 3550B  
 Analysis Method: NWTPH-Dx

Units: mg/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND U	25	2.7	1	06/08/06	06/09/06	KWG0609367	
Residual Range Organics (RRO)	4.7 J	100	4.5	1	06/08/06	06/09/06	KWG0609367	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	06/09/06	Acceptable
n-Triacontane	87	50-150	06/09/06	Acceptable

Comments:

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574

**Surrogate Recovery Summary  
 Diesel and Residual Range Organics**

Extraction Method: EPA 3550B  
 Analysis Method: NWTPH-Dx

Units: PERCENT  
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
NWC-2-5W	K0604574-001	78	81
NWC-2-6W	K0604574-002	62	65
NWC-2-7W	K0604574-003	75	84
NWC-2-8W	K0604574-008	86	80
NWC-2-36W	K0604574-009	49 *	63
NWC-2-42W	K0604574-012	95	74
NWC-2-42WDUP	KWG0609367-1	93	70
Method Blank	KWG0609367-3	82	87
Lab Control Sample	KWG0609367-2	90	90

**Surrogate Recovery Control Limits (%)**

---

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

---

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/08/2006  
 Date Analyzed: 06/10/2006 -  
 06/12/2006

**Duplicate Sample Summary  
 Diesel and Residual Range Organics**

Sample Name: NWC-2-42W  
 Lab Code: K0604574-012  
 Extraction Method: EPA 3550B  
 Analysis Method: NWTPH-Dx

Units: mg/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0609367

Analyte Name	MRL	MDL	Sample Result	NWC-2-42WDUP KWG0609367-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	150	17	1500	1400	1500	7	40
Residual Range Organics (RRO)	120	5.5	210	190	200	7 #	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/08/2006  
 Date Analyzed: 06/09/2006

Lab Control Spike Summary  
 Diesel and Residual Range Organics

Extraction Method: EPA 3550B  
 Analysis Method: NWTPH-Dx

Units: mg/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0609367

Analyte Name	Lab Control Sample KWG0609367-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Diesel Range Organics (DRO)	258	267	97	62-159
Residual Range Organics (RRO)	135	133	101	53-143

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Extracted:** 06/08/2006  
**Date Analyzed:** 06/09/2006  
**Time Analyzed:** 00:33

**Method Blank Summary**  
**Diesel and Residual Range Organics**

**Sample Name:** Method Blank **File ID:** J:\GC21\DATA\060806\0608F027.D  
**Lab Code:** KWG0609367-3 **Instrument ID:** GC21  
**Extraction Method:** EPA 3550B **Level:** Low  
**Analysis Method:** NWTPH-Dx **Extraction Lot:** KWG0609367

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0609367-2	J:\GC21\DATA\060806\0608F026.D	06/09/06	00:13
NWC-2-5W	K0604574-001	J:\GC21\DATA\060806\0608F028.D	06/09/06	00:53
NWC-2-6W	K0604574-002	J:\GC21\DATA\060806\0608F029.D	06/09/06	01:13
NWC-2-7W	K0604574-003	J:\GC21\DATA\060806\0608F030.D	06/09/06	01:33
NWC-2-8W	K0604574-008	J:\GC21\DATA\060906\0609F028.D	06/10/06	00:16
NWC-2-6W	K0604574-002	J:\GC21\DATA\060906\0609F029.D	06/10/06	00:36
NWC-2-7W	K0604574-003	J:\GC21\DATA\060906\0609F030.D	06/10/06	00:56
NWC-2-36W	K0604574-009	J:\GC21\DATA\060906\0609F031.D	06/10/06	01:16
NWC-2-42W	K0604574-012	J:\GC21\DATA\060906\0609F032.D	06/10/06	01:36
NWC-2-42WDUP	KWG0609367-1	J:\GC21\DATA\060906\0609F033.D	06/10/06	01:56
NWC-2-8W	K0604574-008	J:\GC21\DATA\061206\0612F007.D	06/12/06	22:02
NWC-2-36W	K0604574-009	J:\GC21\DATA\061206\0612F008.D	06/12/06	22:22
NWC-2-42W	K0604574-012	J:\GC21\DATA\061206\0612F009.D	06/12/06	22:43
NWC-2-42WDUP	KWG0609367-1	J:\GC21\DATA\061206\0612F010.D	06/12/06	23:03



Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/08/2006  
 Date Analyzed: 06/09/2006  
 Time Analyzed: 00:13

Lab Control Sample Summary  
 Diesel and Residual Range Organics

Sample Name: Lab Control Sample File ID: J:\GC21\DATA\060806\0608F026.D  
 Lab Code: KWG0609367-2 Instrument ID: GC21  
 Extraction Method: EPA 3550B Level: Low  
 Analysis Method: NWTPH-Dx Extraction Lot: KWG0609367

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG0609367-3	J:\GC21\DATA\060806\0608F027.D	06/09/06	00:33
NWC-2-5W	K0604574-001	J:\GC21\DATA\060806\0608F028.D	06/09/06	00:53
NWC-2-6W	K0604574-002	J:\GC21\DATA\060806\0608F029.D	06/09/06	01:13
NWC-2-7W	K0604574-003	J:\GC21\DATA\060806\0608F030.D	06/09/06	01:33
NWC-2-8W	K0604574-008	J:\GC21\DATA\060906\0609F028.D	06/10/06	00:16
NWC-2-6W	K0604574-002	J:\GC21\DATA\060906\0609F029.D	06/10/06	00:36
NWC-2-7W	K0604574-003	J:\GC21\DATA\060906\0609F030.D	06/10/06	00:56
NWC-2-36W	K0604574-009	J:\GC21\DATA\060906\0609F031.D	06/10/06	01:16
NWC-2-42W	K0604574-012	J:\GC21\DATA\060906\0609F032.D	06/10/06	01:36
NWC-2-42WDUP	KWG0609367-1	J:\GC21\DATA\060906\0609F033.D	06/10/06	01:56
NWC-2-8W	K0604574-008	J:\GC21\DATA\061206\0612F007.D	06/12/06	22:02
NWC-2-36W	K0604574-009	J:\GC21\DATA\061206\0612F008.D	06/12/06	22:22
NWC-2-42W	K0604574-012	J:\GC21\DATA\061206\0612F009.D	06/12/06	22:43
NWC-2-42WDUP	KWG0609367-1	J:\GC21\DATA\061206\0612F010.D	06/12/06	23:03

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 04/22/2006

Initial Calibration Summary  
 Diesel and Residual Range Organics

Calibration ID: CAL5295  
 Instrument ID: GC21

Column: Equity-1 15 m

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P005.D	H	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P019.D
B	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P007.D	I	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P021.D
C	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P009.D	J	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P023.D
D	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P011.D	K	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P025.D
E	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P013.D	L	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P027.D
F	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P015.D	M	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P029.D
G	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P017.D	N	J:\GC21\DATA\CALIBRAT\042306.SEC\0423P031.D

Analyte Name	Level			Level			Level			Level			
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	
Diesel Range Organics (DRO)	A	20	51400				C	50	48500		E	200	44500
				G	500	44800				I	2000	43200	
										N	1000	41900	
Residual Range Organics (RRO)										D	50	29800	
	F	200	26600				H	500	27200		J	2000	26400
							M	1000	25500				
o-Terphenyl	A	1.0	55100				C	2.5	56500		E	10	53800
				G	25	53600				I	100	52900	
	K	250	52900							N	50	51500	
n-Triacontane	A	1.0	44700				C	2.5	44100		E	10	43800
				G	25	43600				I	100	41800	
	K	250	39900							N	50	40600	

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Calibration Date:** 04/22/2006

**Initial Calibration Summary  
 Diesel and Residual Range Organics**

**Calibration ID:** CAL5295  
**Instrument ID:** GC21

**Column:** Equity-1 15 m

Analyte Name	Compound Type	Calibration Evaluation				Control Criteria
		Fit Type	Eval.	Eval. Result	Q	
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	7.8		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	6.1		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	3.0		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	4.4		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Calibration Date:** 04/22/2006  
**Date Analyzed:** 04/23/2006

**Second Source Calibration Verification  
 Diesel and Residual Range Organics**

**Calibration Type:** External Standard  
**Analysis Method:** NWTPH-Dx

**Calibration ID:** CAL5295  
**Units:** ppm

**File ID:** J:\GC2\DATA\CALIBRAT\042306.SEC\0423P035.D  
 J:\GC2\DATA\CALIBRAT\042306.SEC\0423P037.D  
 J:\GC2\DATA\CALIBRAT\042306.SEC\0423P039.D

**Column ID:** Equity-1 15 m

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	910	45700	41600	-9	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	930	27100	25300	-7	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/08/2006

**Continuing Calibration Verification Summary  
 Diesel and Residual Range Organics**

**Calibration Type:** External Standard  
**Analysis Method:** NWTPH-Dx

**Calibration Date:** 04/22/2006  
**Calibration ID:** CAL5295  
**Analysis Lot:** KWG0609516  
**Units:** ppm  
**Column ID:** Equity-1 15 m

**File ID:** J:\GC21\DATA\060806\0608F021.D  
 J:\GC21\DATA\060806\0608F022.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	940	45700	43000	-6	NA	±15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	27100	27500	1	NA	± 15 %	AverageRF
o-Terphenyl	50	48	53800	51500	-4	NA	± 15 %	AverageRF
n-Triacontane	50	50	42600	42400	-1	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/09/2006

**Continuing Calibration Verification Summary  
 Diesel and Residual Range Organics**

**Calibration Type:** External Standard  
**Analysis Method:** NWTPH-Dx

**Calibration Date:** 04/22/2006  
**Calibration ID:** CAL5295  
**Analysis Lot:** KWG0609516  
**Units:** ppm  
**Column ID:** Equity-1 15 m

**File ID:** J:\GC21\DATA\060806\0608F037.D  
 J:\GC21\DATA\060806\0608F038.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	930	45700	42500	-7	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1100	27100	30500	13	NA	± 15 %	AverageRF
o-Terphenyl	50	46	53800	49800	-7	NA	± 15 %	AverageRF
n-Triacontane	50	49	42600	41700	-2	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/09/2006

**Continuing Calibration Verification Summary  
 Diesel and Residual Range Organics**

**Calibration Type:** External Standard  
**Analysis Method:** NWTPH-Dx

**Calibration Date:** 04/22/2006  
**Calibration ID:** CAL5295  
**Analysis Lot:** KWG0609517  
**Units:** ppm  
**Column ID:** Equity-1 15 m

**File ID:** J:\GC2\DATA\060906\0609F024.D  
 J:\GC2\DATA\060906\0609F025.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	970	45700	44400	-3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	970	27100	26300	-3	NA	± 15 %	AverageRF
o-Terphenyl	50	50	53800	53300	-1	NA	± 15 %	AverageRF
n-Triacontane	50	48	42600	41300	-3	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/10/2006

**Continuing Calibration Verification Summary  
 Diesel and Residual Range Organics**

**Calibration Type:** External Standard  
**Analysis Method:** NWTPH-Dx

**Calibration Date:** 04/22/2006  
**Calibration ID:** CAL5295  
**Analysis Lot:** KWG0609517  
**Units:** ppm  
**Column ID:** Equity-1 15 m

**File ID:** J:\GC21\DATA\060906\0609F035.D  
 J:\GC21\DATA\060906\0609F036.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	970	45700	44200	-3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	960	27100	26000	-4	NA	± 15 %	AverageRF
o-Terphenyl	50	49	53800	52800	-2	NA	± 15 %	AverageRF
n-Triacontane	50	49	42600	41800	-2	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.



**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/12/2006

**Continuing Calibration Verification Summary  
 Diesel and Residual Range Organics**

**Calibration Type:** External Standard  
**Analysis Method:** NWTPH-Dx

**Calibration Date:** 04/22/2006  
**Calibration ID:** CAL5295  
**Analysis Lot:** KWG0609610  
**Units:** ppm  
**Column ID:** Equity-1 15 m

**File ID:** J:\GC2\DATA\061206\0612F005.D  
 J:\GC2\DATA\061206\0612F006.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	900	45700	41000	-10	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	940	27100	25500	-6	NA	± 15 %	AverageRF
o-Terphenyl	50	46	53800	49500	-8	NA	± 15 %	AverageRF
n-Triacontane	50	45	42600	38300	-10	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Date Analyzed: 06/13/2006

Continuing Calibration Verification Summary  
 Diesel and Residual Range Organics

Calibration Type: External Standard  
 Analysis Method: NWTPH-Dx

Calibration Date: 04/22/2006  
 Calibration ID: CAL5295  
 Analysis Lot: KWG0609610  
 Units: ppm  
 Column ID: Equity-1 15 m

File ID: J:\GC2\DATA\061206\0612F014.D  
 J:\GC2\DATA\061206\0612F015.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	910	45700	41600	-9	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	910	27100	24600	-9	NA	± 15 %	AverageRF
o-Terphenyl	50	47	53800	50300	-6	NA	± 15 %	AverageRF
n-Triacontane	50	44	42600	37700	-11	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

Organic Analysis:  
Gasoline Range Organics

Summary Package

Sample and QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574

Cover Page - Organic Analysis Data Package  
 Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
NWC-2-5W	K0604574-001	06/02/2006	06/06/2006
NWC-2-6W	K0604574-002	06/02/2006	06/06/2006
NWC-2-7W	K0604574-003	06/02/2006	06/06/2006
NWC-3-24W	K0604574-004	06/02/2006	06/06/2006
NWC-2-8W	K0604574-008	06/05/2006	06/06/2006
NWC-2-36W	K0604574-009	06/05/2006	06/06/2006
NWC-2-42W	K0604574-012	06/05/2006	06/06/2006
NWC-3-24W	KWG0609604-1	06/02/2006	06/06/2006

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Mike Erickson  
 Date: 6/20/06

Name: Mike Erickson  
 Title: Supervisor

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/02/2006  
**Date Received:** 06/06/2006

**Gasoline Range Organics**

**Sample Name:** NWC-2-5W  
**Lab Code:** K0604574-001  
**Extraction Method:** EPA 5035/5030B  
**Analysis Method:** NWTPH-Gx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Med

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	1500 Y	30	3.5	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	91	50-150	06/14/06	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/02/2006  
**Date Received:** 06/06/2006

**Gasoline Range Organics**

**Sample Name:** NWC-2-6W  
**Lab Code:** K0604574-002  
**Extraction Method:** EPA 5035/5030B  
**Analysis Method:** NWTPH-Gx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Med

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	13000	Y	140	16	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	673	50-150	06/14/06	Outside Control Limits

Comments: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

Gasoline Range Organics

Sample Name: NWC-2-7W  
 Lab Code: K0604574-003  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Units: mg/Kg  
 Basis: Dry  
 Level: Med

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	6800 Y	58	6.8	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	559	50-150	06/14/06	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

Gasoline Range Organics

Sample Name: NWC-3-24W  
 Lab Code: K0604574-004  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Units: mg/Kg  
 Basis: Dry  
 Level: Med

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	71	Y	31	3.6	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	88	50-150	06/14/06	Acceptable

Comments:



**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/05/2006  
**Date Received:** 06/06/2006

**Gasoline Range Organics**

**Sample Name:** NWC-2-8W  
**Lab Code:** K0604574-008  
**Extraction Method:** EPA 5035/5030B  
**Analysis Method:** NWTPH-Gx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Med

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	11000	Y	130	15	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	714	50-150	06/14/06	Outside Control Limits

Comments: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006

Gasoline Range Organics

Sample Name: NWC-2-36W  
 Lab Code: K0604574-009  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Units: mg/Kg  
 Basis: Dry  
 Level: Med

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	3500	Y	65	7.7	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	178	50-150	06/14/06	Outside Control Limits

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/05/2006  
**Date Received:** 06/06/2006

**Gasoline Range Organics**

**Sample Name:** NWC-2-42W  
**Lab Code:** K0604574-012  
**Extraction Method:** EPA 5035/5030B  
**Analysis Method:** NWTPH-Gx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Med

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	4800 Y	60	7.1	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	483	50-150	06/14/06	Outside Control Limits

Comments: \_\_\_\_\_

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: NA  
 Date Received: NA

Gasoline Range Organics

Sample Name: Method Blank  
 Lab Code: KWG0609604-3  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Units: mg/Kg  
 Basis: Dry  
 Level: Med

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	4.5 J	5.0	0.59	1	06/13/06	06/14/06	KWG0609604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	92	50-150	06/14/06	Acceptable

Comments:

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574

Surrogate Recovery Summary  
 Gasoline Range Organics

Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Units: PERCENT  
 Level: Med

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
NWC-2-5W	K0604574-001	91 #
NWC-2-6W	K0604574-002	673 #
NWC-2-7W	K0604574-003	559 #
NWC-3-24W	K0604574-004	88 #
NWC-2-8W	K0604574-008	714 #
NWC-2-36W	K0604574-009	178 #
NWC-2-42W	K0604574-012	483 #
NWC-3-24WDUP	KWG0609604-1	89 #
Method Blank	KWG0609604-3	92
Lab Control Sample	KWG0609604-2	96

---

Surrogate Recovery Control Limits (%)

Sur1 = 4-Bromofluorobenzene 50-150

---

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/13/2006  
 Date Analyzed: 06/14/2006

Duplicate Sample Summary  
 Gasoline Range Organics

Sample Name: NWC-3-24W  
 Lab Code: K0604574-004  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Units: mg/Kg  
 Basis: Dry  
 Level: Med  
 Extraction Lot: KWG0609604

Analyte Name	MRL	MDL	Sample Result	NWC-3-24WDUP KWG0609604-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Gasoline Range Organics-NWTPH	31	3.6	71	74	73	5	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Extracted:** 06/13/2006  
**Date Analyzed:** 06/14/2006

**Lab Control Spike Summary**  
**Gasoline Range Organics**

**Extraction Method:** EPA 5035/5030B  
**Analysis Method:** NWTPH-Gx

**Units:** mg/Kg  
**Basis:** Dry  
**Level:** Med  
**Extraction Lot:** KWG0609604

Analyte Name	Lab Control Sample KWG0609604-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Gasoline Range Organics-NWTPH	52.6	50.0	105	63-116

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/13/2006  
 Date Analyzed: 06/14/2006  
 Time Analyzed: 12:34

Method Blank Summary  
 Gasoline Range Organics

Sample Name: Method Blank  
 Lab Code: KWG0609604-3  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

File ID: J:\GC06\DATA\061406.FID\0614R004.D  
 Instrument ID: GC06  
 Level: Med  
 Extraction Lot: KWG0609604

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0609604-2	J:\GC06\DATA\061406.FID\0614R005.D	06/14/06	13:05
NWC-3-24W	K0604574-004	J:\GC06\DATA\061406.FID\0614R007.D	06/14/06	14:29
NWC-3-24WDUP	KWG0609604-1	J:\GC06\DATA\061406.FID\0614R008.D	06/14/06	15:00
NWC-2-5W	K0604574-001	J:\GC06\DATA\061406.FID\0614R009.D	06/14/06	15:32
NWC-2-42W	K0604574-012	J:\GC06\DATA\061406.FID\0614R011.D	06/14/06	16:35
NWC-2-7W	K0604574-003	J:\GC06\DATA\061406.FID\0614R013.D	06/14/06	17:38
NWC-2-36W	K0604574-009	J:\GC06\DATA\061406.FID\0614R015.D	06/14/06	18:41
NWC-2-8W	K0604574-008	J:\GC06\DATA\061406.FID\0614R017.D	06/14/06	19:44
NWC-2-6W	K0604574-002	J:\GC06\DATA\061406.FID\0614R019.D	06/14/06	20:47



Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/13/2006  
 Date Analyzed: 06/14/2006  
 Time Analyzed: 13:05

Lab Control Sample Summary  
 Gasoline Range Organics

Sample Name: Lab Control Sample  
 Lab Code: KWG0609604-2  
 Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

File ID: J:\GC06\DATA\061406.FID\0614R005.D  
 Instrument ID: GC06  
 Level: Med  
 Extraction Lot: KWG0609604

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG0609604-3	J:\GC06\DATA\061406.FID\0614R004.D	06/14/06	12:34
NWC-3-24W	K0604574-004	J:\GC06\DATA\061406.FID\0614R007.D	06/14/06	14:29
NWC-3-24WDUP	KWG0609604-1	J:\GC06\DATA\061406.FID\0614R008.D	06/14/06	15:00
NWC-2-5W	K0604574-001	J:\GC06\DATA\061406.FID\0614R009.D	06/14/06	15:32
NWC-2-42W	K0604574-012	J:\GC06\DATA\061406.FID\0614R011.D	06/14/06	16:35
NWC-2-7W	K0604574-003	J:\GC06\DATA\061406.FID\0614R013.D	06/14/06	17:38
NWC-2-36W	K0604574-009	J:\GC06\DATA\061406.FID\0614R015.D	06/14/06	18:41
NWC-2-8W	K0604574-008	J:\GC06\DATA\061406.FID\0614R017.D	06/14/06	19:44
NWC-2-6W	K0604574-002	J:\GC06\DATA\061406.FID\0614R019.D	06/14/06	20:47

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 11/11/2005

Initial Calibration Summary  
 Gasoline Range Organics

Calibration ID: CAL5090  
 Instrument ID: GC06

Column: DB-624

Level ID	File ID	Level ID	File ID
A	J:\GC06\DATA\111105.FID\1111R004.D	G	J:\GC06\DATA\111105.FID\1111R017.D
B	J:\GC06\DATA\111105.FID\1111R005.D	H	J:\GC06\DATA\012706A.FID\0127R003.D
C	J:\GC06\DATA\111105.FID\1111R006.D	I	J:\GC06\DATA\012706A.FID\0127R004.D
D	J:\GC06\DATA\111105.FID\1111R007.D	J	J:\GC06\DATA\012706A.FID\0127R005.D
E	J:\GC06\DATA\111105.FID\1111R008.D	K	J:\GC06\DATA\012706A.FID\0127R006.D
F	J:\GC06\DATA\111105.FID\1111R009.D	L	J:\GC06\DATA\012706A.FID\0127R007.D

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Gasoline Range Organics-NWTPH	A	100	6970	B	200	6050	C	500	5980	D	1000	6060	E	5000	5870
	F	10000	5830	G	50	7010									
4-Bromofluorobenzene							H	13	7780	I	25	7270	J	50	7740
				K	100	7930	L	150	7810						

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Calibration Date:** 11/11/2005

**Initial Calibration Summary  
 Gasoline Range Organics**

**Calibration ID:** CAL5090  
**Instrument ID:** GC06

**Column:** DB-624

Analyte Name	Compound Type	Calibration Evaluation				Control Criteria
		Fit Type	Eval.	Eval. Result	Q	
Gasoline Range Organics-NWTPH	MS	AverageRF	% RSD	8.1		≤20
4-Bromofluorobenzene	SURR	AverageRF	% RSD	3.3		≤20

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 11/11/2005  
 Date Analyzed: 11/12/2005

Second Source Calibration Verification  
 Gasoline Range Organics

Calibration Type: External Standard  
 Analysis Method: NWTPH-Gx

Calibration ID: CAL5090  
 Units: ug/L

File ID: J:\GC06\DATA\111105.FID\1111R018.D

Column ID: DB-624

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	560	6250	7030	12	NA	± 15 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Date Analyzed: 06/14/2006

Continuing Calibration Verification Summary  
 Gasoline Range Organics

Calibration Type: External Standard  
 Analysis Method: NWTPH-Gx

Calibration Date: 11/11/2005  
 Calibration ID: CAL5090  
 Analysis Lot: KWG0609800  
 Units: ug/L  
 Column ID: DB-624

File ID: J:\GC06\DATA\061406\FID\0614R001.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	560	6250	6960	11	NA	± 20 %	AverageRF
4-Bromofluorobenzene	100	92	7710	7090	-8	NA	± 20 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Date Analyzed: 06/14/2006

Continuing Calibration Verification Summary  
 Gasoline Range Organics

Calibration Type: External Standard  
 Analysis Method: NWTPH-Gx

Calibration Date: 11/11/2005  
 Calibration ID: CAL5090  
 Analysis Lot: KWG0609800  
 Units: ug/L  
 Column ID: DB-624

File ID: J:\GC06\DATA\061406.FID\0614R022.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Gasoline Range Organics-NWTPH	500	550	6250	6860	10	NA	± 20 %	AverageRF
4-Bromofluorobenzene	100	89	7710	6830	-11	NA	± 20 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574

Analysis Run Log  
 Gasoline Range Organics

Analysis Method: NWTPH-Gx

Analysis Lot: KWG0609800  
 Instrument ID: GC06  
 Column: DB-624

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0614R001.D	Continuing Calibration Verification	KWG0609800-3	6/14/2006	09:56		6/14/2006	10:12
0614R003.D	Instrument Blank	KWG0609800-1	6/14/2006	10:58		6/14/2006	11:14
0614R004.D	Method Blank	KWG0609604-3	6/14/2006	12:34		6/14/2006	12:50
0614R005.D	Lab Control Sample	KWG0609604-2	6/14/2006	13:05		6/14/2006	13:21
0614R007.D	NWC-3-24W	K0604574-004	6/14/2006	14:29		6/14/2006	14:45
0614R008.D	NWC-3-24WDUP	KWG0609604-1	6/14/2006	15:00		6/14/2006	15:16
0614R009.D	NWC-2-5W	K0604574-001	6/14/2006	15:32		6/14/2006	15:48
0614R011.D	NWC-2-42W	K0604574-012	6/14/2006	16:35		6/14/2006	16:51
0614R013.D	NWC-2-7W	K0604574-003	6/14/2006	17:38		6/14/2006	17:54
0614R015.D	NWC-2-36W	K0604574-009	6/14/2006	18:41		6/14/2006	18:57
0614R017.D	NWC-2-8W	K0604574-008	6/14/2006	19:44		6/14/2006	20:00
0614R019.D	NWC-2-6W	K0604574-002	6/14/2006	20:47		6/14/2006	21:03
0614R021.D	Instrument Blank	KWG0609800-2	6/14/2006	21:50		6/14/2006	22:06
0614R022.D	Continuing Calibration Verification	KWG0609800-4	6/14/2006	22:22		6/14/2006	22:38

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 6/13/2006

Extraction Prep Log  
 Gasoline Range Organics

Extraction Method: EPA 5035/5030B  
 Analysis Method: NWTPH-Gx

Extraction Lot: KWG0609604  
 Level: Med

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	MeOH Volume	MeOH Aliquot	Final Volume	% Solids	Note
NWC-2-5W	K0604574-001	06/02/06	06/06/06	5.53g	10.0ml	200uL	50ml	76.3	
NWC-2-6W	K0604574-002	06/02/06	06/06/06	5.15g	10.0ml	50uL	50ml	73.4	
NWC-2-7W	K0604574-003	06/02/06	06/06/06	5.44g	10.0ml	100uL	50ml	79.8	
NWC-3-24W	K0604574-004	06/02/06	06/06/06	5.08g	10.0ml	200uL	50ml	81.4	
NWC-2-8W	K0604574-008	06/05/06	06/06/06	5.14g	10.0ml	50uL	50ml	80.7	
NWC-2-36W	K0604574-009	06/05/06	06/06/06	5.28g	10.0ml	100uL	50ml	72.9	
NWC-2-42W	K0604574-012	06/05/06	06/06/06	5.05g	10.0ml	100uL	50ml	82.6	
NWC-3-24WDUP	KWG0609604-1	06/02/06	06/06/06	5.08g	10.0ml	200uL	50ml	81.4	
Method Blank	KWG0609604-3	NA	NA	5.00g	10.0ml	1000uL	50ml	NA	
Lab Control Sample	KWG0609604-2	NA	NA	5.00g	10.0ml	1000uL	50ml	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis



**NWTPH-HCID**



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants, Incorporated  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Soil

Service Request: K0604574  
Date Collected: 6/2/2006  
Date Received: 6/6/2006


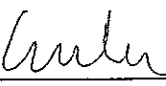
Hydrocarbon Identification Screen

Sample Name: NWC-2-6W  
Lab Code: K0604574-002  
Test Notes:

Units: mg/Kg (ppm)  
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Gasoline Range Organics	EPA 3550B	NWTPH-HCID	20	1	6/8/2006	6/9/2006	D	
Diesel Range Organics	EPA 3550B	NWTPH-HCID	50	1	6/8/2006	6/9/2006	D	
Residual Range Organics	EPA 3550B	NWTPH-HCID	100	1	6/8/2006	6/9/2006	D	

D Detected at or above the method reporting limit. Follow-up analyses are required for quantitative results.

Approved By:   Date: 6/21/06

1S22/020597p

K0604574phc.kel - 2/6/21/2006

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants, Incorporated  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Soil

Service Request: K0604574  
Date Collected: 6/2/2006  
Date Received: 6/6/2006

Hydrocarbon Identification Screen

Sample Name: NWC-2-7W  
Lab Code: K0604574-003  
Test Notes:

Units: mg/Kg (ppm)  
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Gasoline Range Organics	EPA 3550B	NWTPH-HCID	20	1	6/8/2006	6/9/2006	D	
Diesel Range Organics	EPA 3550B	NWTPH-HCID	50	1	6/8/2006	6/9/2006	D	
Residual Range Organics	EPA 3550B	NWTPH-HCID	100	1	6/8/2006	6/9/2006	D	

D Detected at or above the method reporting limit. Follow-up analyses are required for quantitative results.

Approved By: M. Curley Date: 6/21/06

1S22/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 6/2/2006  
**Date Received:** 6/6/2006

Hydrocarbon Identification Screen

**Sample Name:** NWC-3-24W  
**Lab Code:** K0604574-004  
**Test Notes:**

**Units:** mg/Kg (ppm)  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Gasoline Range Organics	EPA 3550B	NWTPH-HCID	20		6/8/2006	6/9/2006	D	
Diesel Range Organics	EPA 3550B	NWTPH-HCID	50		6/8/2006	6/9/2006	ND	
Residual Range Organics	EPA 3550B	NWTPH-HCID	100		6/8/2006	6/9/2006	ND	

D Detected at or above the method reporting limit. Follow-up analyses are required for quantitative results.

Approved By:                     *mm* *Curley*                     Date:                     6/21/06

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants, Incorporated  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Soil

Service Request: K0604574  
Date Collected: 6/5/2006  
Date Received: 6/6/2006

Hydrocarbon Identification Screen

Sample Name: NWC-2-8W  
Lab Code: K0604574-008  
Test Notes:

Units: mg/Kg (ppm)  
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Gasoline Range Organics	EPA 3550B	NWTPH-HCID	20	1	6/8/2006	6/10/2006	D	
Diesel Range Organics	EPA 3550B	NWTPH-HCID	50	1	6/8/2006	6/10/2006	D	
Residual Range Organics	EPA 3550B	NWTPH-HCID	100	1	6/8/2006	6/10/2006	D	

D Detected at or above the method reporting limit. Follow-up analyses are required for quantitative results.

Approved By: MM Curly Date: 6/21/06

1S22/020597p



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants, Incorporated  
Project: NW Corner-FRP/8769.005/4  
Sample Matrix: Soil

Service Request: K0604574  
Date Collected: 6/5/2006  
Date Received: 6/6/2006

Hydrocarbon Identification Screen

Sample Name: NWC-2-42W  
Lab Code: K0604574-012  
Test Notes:

Units: mg/Kg (ppm)  
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Gasoline Range Organics	EPA 3550B	NWTPH-HCID	20	1	6/8/2006	6/12/2006	D	
Diesel Range Organics	EPA 3550B	NWTPH-HCID	50	1	6/8/2006	6/12/2006	D	
Residual Range Organics	EPA 3550B	NWTPH-HCID	100	1	6/8/2006	6/12/2006	D	

D Detected at or above the method reporting limit. Follow-up analyses are required for quantitative results.

Approved By: MM      C.      C. Date: 6/21/06

1S22/020597p







Organic Analysis:  
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

Client: Geomatrix Consultants, Incorporated  
Project: NW Corner-FRP/8769.005/4

Service Request: K0604574

Cover Page - Organic Analysis Data Package  
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
NWC-1-22W	K0604574-006	06/02/2006	06/06/2006
NWC-1-2W	K0604574-007	06/02/2006	06/06/2006
NWC-1-12W	K0604574-010	06/05/2006	06/06/2006
NWC-2-39W	K0604574-011	06/05/2006	06/06/2006

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: 

Name: Carl Dagner

Date: 6/15/26

Title: SVA Supervisor

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-22W  
 Lab Code: K0604574-006  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	13	5.9	2	06/08/06	06/11/06	KWG0609161	
Phenol	17	JD	37	4.6	2	06/08/06	06/11/06	KWG0609161	
2-Chlorophenol	ND	U	13	4.2	2	06/08/06	06/11/06	KWG0609161	
1,3-Dichlorobenzene	ND	U	13	3.9	2	06/08/06	06/11/06	KWG0609161	
1,4-Dichlorobenzene	ND	U	13	4.6	2	06/08/06	06/11/06	KWG0609161	
1,2-Dichlorobenzene	ND	U	13	3.2	2	06/08/06	06/11/06	KWG0609161	
Benzyl Alcohol	ND	U	13	9.0	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroisopropyl) Ether	ND	U	13	3.0	2	06/08/06	06/11/06	KWG0609161	
2-Methylphenol	ND	U	13	8.3	2	06/08/06	06/11/06	KWG0609161	
Hexachloroethane	ND	U	13	5.4	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodi-n-propylamine	ND	U	13	7.8	2	06/08/06	06/11/06	KWG0609161	
4-Methylphenol†	ND	U	13	7.1	2	06/08/06	06/11/06	KWG0609161	
Nitrobenzene	ND	U	13	4.9	2	06/08/06	06/11/06	KWG0609161	
Isophorone	ND	U	13	3.9	2	06/08/06	06/11/06	KWG0609161	
2-Nitrophenol	ND	U	13	6.3	2	06/08/06	06/11/06	KWG0609161	
2,4-Dimethylphenol	ND	U	61	14	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroethoxy)methane	ND	U	13	3.2	2	06/08/06	06/11/06	KWG0609161	
2,4-Dichlorophenol	ND	U	13	4.4	2	06/08/06	06/11/06	KWG0609161	
Benzoic Acid	ND	U	250	240	2	06/08/06	06/11/06	KWG0609161	*
1,2,4-Trichlorobenzene	ND	U	13	3.7	2	06/08/06	06/11/06	KWG0609161	
Naphthalene	14	D	13	3.2	2	06/08/06	06/11/06	KWG0609161	
4-Chloroaniline	ND	U	13	5.1	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobutadiene	ND	U	13	3.4	2	06/08/06	06/11/06	KWG0609161	
4-Chloro-3-methylphenol	ND	U	13	5.1	2	06/08/06	06/11/06	KWG0609161	
2-Methylnaphthalene	13	D	13	3.0	2	06/08/06	06/11/06	KWG0609161	
Hexachlorocyclopentadiene	ND	U	61	37	2	06/08/06	06/11/06	KWG0609161	
2,4,6-Trichlorophenol	ND	U	13	4.4	2	06/08/06	06/11/06	KWG0609161	
2,4,5-Trichlorophenol	7.9	JD	13	7.3	2	06/08/06	06/11/06	KWG0609161	
2-Chloronaphthalene	ND	U	13	8.8	2	06/08/06	06/11/06	KWG0609161	
2-Nitroaniline	ND	U	25	6.6	2	06/08/06	06/11/06	KWG0609161	
Acenaphthylene	ND	U	13	3.4	2	06/08/06	06/11/06	KWG0609161	
Dimethyl Phthalate	ND	U	13	4.4	2	06/08/06	06/11/06	KWG0609161	
2,6-Dinitrotoluene	ND	U	13	6.8	2	06/08/06	06/11/06	KWG0609161	

Comments:

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-22W  
 Lab Code: K0604574-006  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	13	2.5	2	06/08/06	06/11/06	KWG0609161	
3-Nitroaniline	ND	U	25	6.3	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrophenol	ND	U	250	88	2	06/08/06	06/11/06	KWG0609161	
Dibenzofuran	ND	U	13	3.2	2	06/08/06	06/11/06	KWG0609161	
4-Nitrophenol	ND	U	130	73	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrotoluene	ND	U	13	6.8	2	06/08/06	06/11/06	KWG0609161	
Fluorene	ND	U	13	4.2	2	06/08/06	06/11/06	KWG0609161	
4-Chlorophenyl Phenyl Ether	ND	U	13	4.9	2	06/08/06	06/11/06	KWG0609161	
Diethyl Phthalate	ND	U	13	8.5	2	06/08/06	06/11/06	KWG0609161	
4-Nitroaniline	ND	U	25	8.3	2	06/08/06	06/11/06	KWG0609161	
2-Methyl-4,6-dinitrophenol	ND	U	130	4.2	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodiphenylamine	ND	U	13	5.4	2	06/08/06	06/11/06	KWG0609161	
4-Bromophenyl Phenyl Ether	ND	U	13	3.4	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobenzene	ND	U	13	5.1	2	06/08/06	06/11/06	KWG0609161	
Pentachlorophenol	550	D	130	21	2	06/08/06	06/11/06	KWG0609161	
Phenanthrene	15	D	13	3.2	2	06/08/06	06/11/06	KWG0609161	
Anthracene	ND	U	13	3.4	2	06/08/06	06/11/06	KWG0609161	
Di-n-butyl Phthalate	15	D	13	6.3	2	06/08/06	06/11/06	KWG0609161	
Fluoranthene	16	D	13	5.4	2	06/08/06	06/11/06	KWG0609161	
Pyrene	20	D	13	3.2	2	06/08/06	06/11/06	KWG0609161	
Butyl Benzyl Phthalate	ND	U	13	3.7	2	06/08/06	06/11/06	KWG0609161	
3,3'-Dichlorobenzidine	ND	U	130	9.0	2	06/08/06	06/11/06	KWG0609161	
Benz(a)anthracene	3.7	JD	13	3.4	2	06/08/06	06/11/06	KWG0609161	
Chrysene	8.7	JD	13	3.4	2	06/08/06	06/11/06	KWG0609161	
Bis(2-ethylhexyl) Phthalate	25	JD	250	4.2	2	06/08/06	06/11/06	KWG0609161	
Di-n-octyl Phthalate	ND	U	13	3.0	2	06/08/06	06/11/06	KWG0609161	
Benzo(b)fluoranthene	9.4	JD	13	6.1	2	06/08/06	06/11/06	KWG0609161	
Benzo(k)fluoranthene	ND	U	13	6.1	2	06/08/06	06/11/06	KWG0609161	
Benzo(a)pyrene	4.2	JD	13	3.9	2	06/08/06	06/11/06	KWG0609161	
Indeno(1,2,3-cd)pyrene	4.8	JD	13	4.6	2	06/08/06	06/11/06	KWG0609161	
Dibenz(a,h)anthracene	ND	U	13	5.4	2	06/08/06	06/11/06	KWG0609161	
Benzo(g,h,i)perylene	6.0	JD	13	5.6	2	06/08/06	06/11/06	KWG0609161	

\* See Case Narrative

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/02/2006  
**Date Received:** 06/06/2006

**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** NWC-1-22W  
**Lab Code:** K0604574-006

**Units:** ug/Kg  
**Basis:** Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	33	12-88	06/11/06	Acceptable
Phenol-d6	53	20-101	06/11/06	Acceptable
Nitrobenzene-d5	38	10-97	06/11/06	Acceptable
2-Fluorobiphenyl	53	10-107	06/11/06	Acceptable
2,4,6-Tribromophenol	55	16-122	06/11/06	Acceptable
Terphenyl-d14	60	28-135	06/11/06	Acceptable

† Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-2W  
 Lab Code: K0604574-007  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	13	6.1	2	06/08/06	06/11/06	KWG0609161	
Phenol	ND	U	38	4.8	2	06/08/06	06/11/06	KWG0609161	
2-Chlorophenol	ND	U	13	4.3	2	06/08/06	06/11/06	KWG0609161	
1,3-Dichlorobenzene	ND	U	13	4.1	2	06/08/06	06/11/06	KWG0609161	
1,4-Dichlorobenzene	ND	U	13	4.8	2	06/08/06	06/11/06	KWG0609161	
1,2-Dichlorobenzene	ND	U	13	3.3	2	06/08/06	06/11/06	KWG0609161	
Benzyl Alcohol	ND	U	13	9.3	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroisopropyl) Ether	ND	U	13	3.1	2	06/08/06	06/11/06	KWG0609161	
2-Methylphenol	ND	U	13	8.6	2	06/08/06	06/11/06	KWG0609161	
Hexachloroethane	ND	U	13	5.6	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodi-n-propylamine	ND	U	13	8.1	2	06/08/06	06/11/06	KWG0609161	
4-Methylphenol†	ND	U	13	7.3	2	06/08/06	06/11/06	KWG0609161	
Nitrobenzene	ND	U	13	5.1	2	06/08/06	06/11/06	KWG0609161	
Isophorone	ND	U	13	4.1	2	06/08/06	06/11/06	KWG0609161	
2-Nitrophenol	ND	U	13	6.6	2	06/08/06	06/11/06	KWG0609161	
2,4-Dimethylphenol	ND	U	63	14	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroethoxy)methane	ND	U	13	3.3	2	06/08/06	06/11/06	KWG0609161	
2,4-Dichlorophenol	ND	U	13	4.6	2	06/08/06	06/11/06	KWG0609161	
Benzoic Acid	ND	U	260	250	2	06/08/06	06/11/06	KWG0609161	*
1,2,4-Trichlorobenzene	ND	U	13	3.8	2	06/08/06	06/11/06	KWG0609161	
Naphthalene	6.2	JD	13	3.3	2	06/08/06	06/11/06	KWG0609161	
4-Chloroaniline	ND	U	13	5.3	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobutadiene	ND	U	13	3.6	2	06/08/06	06/11/06	KWG0609161	
4-Chloro-3-methylphenol	ND	U	13	5.3	2	06/08/06	06/11/06	KWG0609161	
2-Methylnaphthalene	5.6	JD	13	3.1	2	06/08/06	06/11/06	KWG0609161	
Hexachlorocyclopentadiene	ND	U	63	38	2	06/08/06	06/11/06	KWG0609161	
2,4,6-Trichlorophenol	ND	U	13	4.6	2	06/08/06	06/11/06	KWG0609161	
2,4,5-Trichlorophenol	ND	U	13	7.6	2	06/08/06	06/11/06	KWG0609161	
2-Chloronaphthalene	ND	U	13	9.1	2	06/08/06	06/11/06	KWG0609161	
2-Nitroaniline	ND	U	26	6.8	2	06/08/06	06/11/06	KWG0609161	
Acenaphthylene	ND	U	13	3.6	2	06/08/06	06/11/06	KWG0609161	
Dimethyl Phthalate	ND	U	13	4.6	2	06/08/06	06/11/06	KWG0609161	
2,6-Dinitrotoluene	ND	U	13	7.1	2	06/08/06	06/11/06	KWG0609161	

Comments:



## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-2W  
 Lab Code: K0604574-007  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	13	2.6	2	06/08/06	06/11/06	KWG0609161	
3-Nitroaniline	ND	U	26	6.6	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrophenol	ND	U	260	91	2	06/08/06	06/11/06	KWG0609161	
Dibenzofuran	ND	U	13	3.3	2	06/08/06	06/11/06	KWG0609161	
4-Nitrophenol	ND	U	130	76	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrotoluene	ND	U	13	7.1	2	06/08/06	06/11/06	KWG0609161	
Fluorene	ND	U	13	4.3	2	06/08/06	06/11/06	KWG0609161	
4-Chlorophenyl Phenyl Ether	ND	U	13	5.1	2	06/08/06	06/11/06	KWG0609161	
Diethyl Phthalate	ND	U	13	8.8	2	06/08/06	06/11/06	KWG0609161	
4-Nitroaniline	ND	U	26	8.6	2	06/08/06	06/11/06	KWG0609161	
2-Methyl-4,6-dinitrophenol	ND	U	130	4.3	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodiphenylamine	ND	U	13	5.6	2	06/08/06	06/11/06	KWG0609161	
4-Bromophenyl Phenyl Ether	ND	U	13	3.6	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobenzene	ND	U	13	5.3	2	06/08/06	06/11/06	KWG0609161	
Pentachlorophenol	36	JD	130	22	2	06/08/06	06/11/06	KWG0609161	
Phenanthrene	12	JD	13	3.3	2	06/08/06	06/11/06	KWG0609161	
Anthracene	ND	U	13	3.6	2	06/08/06	06/11/06	KWG0609161	
Di-n-butyl Phthalate	8.4	JD	13	6.6	2	06/08/06	06/11/06	KWG0609161	
Fluoranthene	14	D	13	5.6	2	06/08/06	06/11/06	KWG0609161	
Pyrene	12	JD	13	3.3	2	06/08/06	06/11/06	KWG0609161	
Butyl Benzyl Phthalate	ND	U	13	3.8	2	06/08/06	06/11/06	KWG0609161	
3,3'-Dichlorobenzidine	ND	U	130	9.3	2	06/08/06	06/11/06	KWG0609161	
Benz(a)anthracene	4.6	JD	13	3.6	2	06/08/06	06/11/06	KWG0609161	
Chrysene	15	D	13	3.6	2	06/08/06	06/11/06	KWG0609161	
Bis(2-ethylhexyl) Phthalate	34	JD	260	4.3	2	06/08/06	06/11/06	KWG0609161	
Di-n-octyl Phthalate	ND	U	13	3.1	2	06/08/06	06/11/06	KWG0609161	
Benzo(b)fluoranthene	11	JD	13	6.3	2	06/08/06	06/11/06	KWG0609161	
Benzo(k)fluoranthene	ND	U	13	6.3	2	06/08/06	06/11/06	KWG0609161	
Benzo(a)pyrene	5.6	JD	13	4.1	2	06/08/06	06/11/06	KWG0609161	
Indeno(1,2,3-cd)pyrene	ND	U	13	4.8	2	06/08/06	06/11/06	KWG0609161	
Dibenz(a,h)anthracene	ND	U	13	5.6	2	06/08/06	06/11/06	KWG0609161	
Benzo(g,h,i)perylene	7.3	JD	13	5.8	2	06/08/06	06/11/06	KWG0609161	

\* See Case Narrative

Comments:

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/02/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-2W  
 Lab Code: K0604574-007

Units: ug/Kg  
 Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	30	12-88	06/11/06	Acceptable
Phenol-d6	53	20-101	06/11/06	Acceptable
Nitrobenzene-d5	38	10-97	06/11/06	Acceptable
2-Fluorobiphenyl	56	10-107	06/11/06	Acceptable
2,4,6-Tribromophenol	54	16-122	06/11/06	Acceptable
Terphenyl-d14	70	28-135	06/11/06	Acceptable

## † Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

## Comments:

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-12W  
 Lab Code: K0604574-010  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	12	5.6	2	06/08/06	06/11/06	KWG0609161	
Phenol	7.8	JD	35	4.4	2	06/08/06	06/11/06	KWG0609161	
2-Chlorophenol	ND	U	12	4.0	2	06/08/06	06/11/06	KWG0609161	
1,3-Dichlorobenzene	ND	U	12	3.7	2	06/08/06	06/11/06	KWG0609161	
1,4-Dichlorobenzene	ND	U	12	4.4	2	06/08/06	06/11/06	KWG0609161	
1,2-Dichlorobenzene	ND	U	12	3.0	2	06/08/06	06/11/06	KWG0609161	
Benzyl Alcohol	ND	U	12	8.6	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroisopropyl) Ether	ND	U	12	2.8	2	06/08/06	06/11/06	KWG0609161	
2-Methylphenol	ND	U	12	7.9	2	06/08/06	06/11/06	KWG0609161	
Hexachloroethane	ND	U	12	5.1	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodi-n-propylamine	ND	U	12	7.4	2	06/08/06	06/11/06	KWG0609161	
4-Methylphenol†	ND	U	12	6.7	2	06/08/06	06/11/06	KWG0609161	
Nitrobenzene	ND	U	12	4.7	2	06/08/06	06/11/06	KWG0609161	
Isophorone	ND	U	12	3.7	2	06/08/06	06/11/06	KWG0609161	
2-Nitrophenol	ND	U	12	6.0	2	06/08/06	06/11/06	KWG0609161	
2,4-Dimethylphenol	ND	U	58	13	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroethoxy)methane	ND	U	12	3.0	2	06/08/06	06/11/06	KWG0609161	
2,4-Dichlorophenol	ND	U	12	4.2	2	06/08/06	06/11/06	KWG0609161	
Benzoic Acid	ND	U	240	230	2	06/08/06	06/11/06	KWG0609161	*
1,2,4-Trichlorobenzene	ND	U	12	3.5	2	06/08/06	06/11/06	KWG0609161	
Naphthalene	9.6	JD	12	3.0	2	06/08/06	06/11/06	KWG0609161	
4-Chloroaniline	ND	U	12	4.9	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobutadiene	ND	U	12	3.3	2	06/08/06	06/11/06	KWG0609161	
4-Chloro-3-methylphenol	ND	U	12	4.9	2	06/08/06	06/11/06	KWG0609161	
2-Methylnaphthalene	10	JD	12	2.8	2	06/08/06	06/11/06	KWG0609161	
Hexachlorocyclopentadiene	ND	U	58	35	2	06/08/06	06/11/06	KWG0609161	
2,4,6-Trichlorophenol	ND	U	12	4.2	2	06/08/06	06/11/06	KWG0609161	
2,4,5-Trichlorophenol	ND	U	12	7.0	2	06/08/06	06/11/06	KWG0609161	
2-Chloronaphthalene	ND	U	12	8.3	2	06/08/06	06/11/06	KWG0609161	
2-Nitroaniline	ND	U	24	6.3	2	06/08/06	06/11/06	KWG0609161	
Acenaphthylene	3.7	JD	12	3.3	2	06/08/06	06/11/06	KWG0609161	
Dimethyl Phthalate	ND	U	12	4.2	2	06/08/06	06/11/06	KWG0609161	
2,6-Dinitrotoluene	ND	U	12	5.5	2	06/08/06	06/11/06	KWG0609161	

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-12W  
 Lab Code: K0604574-010  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	12	2.4	2	06/08/06	06/11/06	KWG0609161	
3-Nitroaniline	ND	U	24	6.0	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrophenol	ND	U	240	83	2	06/08/06	06/11/06	KWG0609161	
Dibenzofuran	4.1	JD	12	3.0	2	06/08/06	06/11/06	KWG0609161	
4-Nitrophenol	ND	U	120	70	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrotoluene	ND	U	12	6.5	2	06/08/06	06/11/06	KWG0609161	
Fluorene	ND	U	12	4.0	2	06/08/06	06/11/06	KWG0609161	
4-Chlorophenyl Phenyl Ether	ND	U	12	4.7	2	06/08/06	06/11/06	KWG0609161	
Diethyl Phthalate	ND	U	12	8.1	2	06/08/06	06/11/06	KWG0609161	
4-Nitroaniline	ND	U	24	7.9	2	06/08/06	06/11/06	KWG0609161	
2-Methyl-4,6-dinitrophenol	ND	U	120	4.0	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodiphenylamine	ND	U	12	5.1	2	06/08/06	06/11/06	KWG0609161	
4-Bromophenyl Phenyl Ether	ND	U	12	3.3	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobenzene	ND	U	12	4.9	2	06/08/06	06/11/06	KWG0609161	
Pentachlorophenol	190	D	120	20	2	06/08/06	06/11/06	KWG0609161	
Phenanthrene	36	D	12	3.0	2	06/08/06	06/11/06	KWG0609161	
Anthracene	7.5	JD	12	3.3	2	06/08/06	06/11/06	KWG0609161	
Di-n-butyl Phthalate	9.6	JD	12	6.0	2	06/08/06	06/11/06	KWG0609161	
Fluoranthene	97	D	12	5.1	2	06/08/06	06/11/06	KWG0609161	
Pyrene	95	D	12	3.0	2	06/08/06	06/11/06	KWG0609161	
Butyl Benzyl Phthalate	23	D	12	3.5	2	06/08/06	06/11/06	KWG0609161	
3,3'-Dichlorobenzidine	ND	U	120	8.6	2	06/08/06	06/11/06	KWG0609161	
Benz(a)anthracene	55	D	12	3.3	2	06/08/06	06/11/06	KWG0609161	
Chrysene	79	D	12	3.3	2	06/08/06	06/11/06	KWG0609161	
Bis(2-ethylhexyl) Phthalate	29	JD	240	4.0	2	06/08/06	06/11/06	KWG0609161	
Di-n-octyl Phthalate	ND	U	12	2.8	2	06/08/06	06/11/06	KWG0609161	
Benzo(b)fluoranthene	97	D	12	5.8	2	06/08/06	06/11/06	KWG0609161	
Benzo(k)fluoranthene	31	D	12	5.8	2	06/08/06	06/11/06	KWG0609161	
Benzo(a)pyrene	75	D	12	3.7	2	06/08/06	06/11/06	KWG0609161	
Indeno(1,2,3-cd)pyrene	63	D	12	4.4	2	06/08/06	06/11/06	KWG0609161	
Dibenz(a,h)anthracene	13	D	12	5.1	2	06/08/06	06/11/06	KWG0609161	
Benzo(g,h,i)perylene	68	D	12	5.3	2	06/08/06	06/11/06	KWG0609161	

\* See Case Narrative

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006

Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-1-12W  
 Lab Code: K0604574-010

Units: ug/Kg  
 Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	28	12-88	06/11/06	Acceptable
Phenol-d6	51	20-101	06/11/06	Acceptable
Nitrobenzene-d5	37	10-97	06/11/06	Acceptable
2-Fluorobiphenyl	56	10-107	06/11/06	Acceptable
2,4,6-Tribromophenol	62	16-122	06/11/06	Acceptable
Terphenyl-d14	79	28-135	06/11/06	Acceptable

† Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-2-39W  
 Lab Code: K0604574-011  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	12	5.8	2	06/08/06	06/11/06	KWG0609161	
Phenol	ND	U	36	4.6	2	06/08/06	06/11/06	KWG0609161	
2-Chlorophenol	ND	U	12	4.1	2	06/08/06	06/11/06	KWG0609161	
1,3-Dichlorobenzene	ND	U	12	3.9	2	06/08/06	06/11/06	KWG0609161	
1,4-Dichlorobenzene	ND	U	12	4.6	2	06/08/06	06/11/06	KWG0609161	
1,2-Dichlorobenzene	ND	U	12	3.2	2	06/08/06	06/11/06	KWG0609161	
Benzyl Alcohol	ND	U	12	8.9	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroisopropyl) Ether	ND	U	12	2.9	2	06/08/06	06/11/06	KWG0609161	
2-Methylphenol	ND	U	12	8.2	2	06/08/06	06/11/06	KWG0609161	
Hexachloroethane	ND	U	12	5.3	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodi-n-propylamine	ND	U	12	7.7	2	06/08/06	06/11/06	KWG0609161	
4-Methylphenol†	ND	U	12	7.0	2	06/08/06	06/11/06	KWG0609161	
Nitrobenzene	ND	U	12	4.8	2	06/08/06	06/11/06	KWG0609161	
Isophorone	ND	U	12	3.9	2	06/08/06	06/11/06	KWG0609161	
2-Nitrophenol	ND	U	12	6.3	2	06/08/06	06/11/06	KWG0609161	
2,4-Dimethylphenol	ND	U	60	14	2	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroethoxy)methane	ND	U	12	3.2	2	06/08/06	06/11/06	KWG0609161	
2,4-Dichlorophenol	ND	U	12	4.3	2	06/08/06	06/11/06	KWG0609161	
Benzoic Acid	ND	U	240	230	2	06/08/06	06/11/06	KWG0609161	*
1,2,4-Trichlorobenzene	ND	U	12	3.6	2	06/08/06	06/11/06	KWG0609161	
Naphthalene	ND	U	12	3.2	2	06/08/06	06/11/06	KWG0609161	
4-Chloroaniline	ND	U	12	5.1	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobutadiene	ND	U	12	3.4	2	06/08/06	06/11/06	KWG0609161	
4-Chloro-3-methylphenol	ND	U	12	5.1	2	06/08/06	06/11/06	KWG0609161	
2-Methylnaphthalene	ND	U	12	2.9	2	06/08/06	06/11/06	KWG0609161	
Hexachlorocyclopentadiene	ND	U	60	36	2	06/08/06	06/11/06	KWG0609161	
2,4,6-Trichlorophenol	ND	U	12	4.3	2	06/08/06	06/11/06	KWG0609161	
2,4,5-Trichlorophenol	ND	U	12	7.2	2	06/08/06	06/11/06	KWG0609161	
2-Chloronaphthalene	ND	U	12	8.6	2	06/08/06	06/11/06	KWG0609161	
2-Nitroaniline	ND	U	24	6.5	2	06/08/06	06/11/06	KWG0609161	
Acenaphthylene	ND	U	12	3.4	2	06/08/06	06/11/06	KWG0609161	
Dimethyl Phthalate	ND	U	12	4.3	2	06/08/06	06/11/06	KWG0609161	
2,6-Dinitrotoluene	ND	U	12	6.7	2	06/08/06	06/11/06	KWG0609161	

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: 06/05/2006  
 Date Received: 06/06/2006

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: NWC-2-39W  
 Lab Code: K0604574-011  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	12	2.4	2	06/08/06	06/11/06	KWG0609161	
3-Nitroaniline	ND	U	24	6.3	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrophenol	ND	U	240	86	2	06/08/06	06/11/06	KWG0609161	
Dibenzofuran	ND	U	12	3.2	2	06/08/06	06/11/06	KWG0609161	
4-Nitrophenol	ND	U	120	72	2	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrotoluene	ND	U	12	6.7	2	06/08/06	06/11/06	KWG0609161	
Fluorene	ND	U	12	4.1	2	06/08/06	06/11/06	KWG0609161	
4-Chlorophenyl Phenyl Ether	ND	U	12	4.8	2	06/08/06	06/11/06	KWG0609161	
Diethyl Phthalate	ND	U	12	8.4	2	06/08/06	06/11/06	KWG0609161	
4-Nitroaniline	ND	U	24	8.2	2	06/08/06	06/11/06	KWG0609161	
2-Methyl-4,6-dinitrophenol	ND	U	120	4.1	2	06/08/06	06/11/06	KWG0609161	
N-Nitrosodiphenylamine	ND	U	12	5.3	2	06/08/06	06/11/06	KWG0609161	
4-Bromophenyl Phenyl Ether	ND	U	12	3.4	2	06/08/06	06/11/06	KWG0609161	
Hexachlorobenzene	ND	U	12	5.1	2	06/08/06	06/11/06	KWG0609161	
Pentachlorophenol	33	JD	120	21	2	06/08/06	06/11/06	KWG0609161	
Phenanthrene	4.1	JD	12	3.2	2	06/08/06	06/11/06	KWG0609161	
Anthracene	ND	U	12	3.4	2	06/08/06	06/11/06	KWG0609161	
Di-n-butyl Phthalate	11	JD	12	6.3	2	06/08/06	06/11/06	KWG0609161	
Fluoranthene	6.1	JD	12	5.3	2	06/08/06	06/11/06	KWG0609161	
Pyrene	6.9	JD	12	3.2	2	06/08/06	06/11/06	KWG0609161	
Butyl Benzyl Phthalate	ND	U	12	3.6	2	06/08/06	06/11/06	KWG0609161	
3,3'-Dichlorobenzidine	ND	U	120	8.9	2	06/08/06	06/11/06	KWG0609161	
Benz(a)anthracene	ND	U	12	3.4	2	06/08/06	06/11/06	KWG0609161	
Chrysene	5.6	JD	12	3.4	2	06/08/06	06/11/06	KWG0609161	
Bis(2-ethylhexyl) Phthalate	16	JD	240	4.1	2	06/08/06	06/11/06	KWG0609161	
Di-n-octyl Phthalate	ND	U	12	2.9	2	06/08/06	06/11/06	KWG0609161	
Benzo(b)fluoranthene	9.8	JD	12	6.0	2	06/08/06	06/11/06	KWG0609161	
Benzo(k)fluoranthene	ND	U	12	6.0	2	06/08/06	06/11/06	KWG0609161	
Benzo(a)pyrene	4.0	JD	12	3.9	2	06/08/06	06/11/06	KWG0609161	
Indeno(1,2,3-cd)pyrene	5.4	JD	12	4.6	2	06/08/06	06/11/06	KWG0609161	
Dibenz(a,h)anthracene	ND	U	12	5.3	2	06/08/06	06/11/06	KWG0609161	
Benzo(g,h,i)perylene	ND	U	12	5.5	2	06/08/06	06/11/06	KWG0609161	

\* See Case Narrative

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** 06/05/2006  
**Date Received:** 06/06/2006

**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** NWC-2-39W  
**Lab Code:** K0604574-011

**Units:** ug/Kg  
**Basis:** Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	33	12-88	06/11/06	Acceptable
Phenol-d6	55	20-101	06/11/06	Acceptable
Nitrobenzene-d5	44	10-97	06/11/06	Acceptable
2-Fluorobiphenyl	50	10-107	06/11/06	Acceptable
2,4,6-Tribromophenol	49	16-122	06/11/06	Acceptable
Terphenyl-d14	60	28-135	06/11/06	Acceptable

† Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:



**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** NA  
**Date Received:** NA

**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** Method Blank  
**Lab Code:** KWG0609161-9  
**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	5.0	2.4	1	06/08/06	06/11/06	KWG0609161	
Phenol	ND	U	15	1.9	1	06/08/06	06/11/06	KWG0609161	
2-Chlorophenol	ND	U	5.0	1.7	1	06/08/06	06/11/06	KWG0609161	
1,3-Dichlorobenzene	ND	U	5.0	1.6	1	06/08/06	06/11/06	KWG0609161	
1,4-Dichlorobenzene	ND	U	5.0	1.9	1	06/08/06	06/11/06	KWG0609161	
1,2-Dichlorobenzene	ND	U	5.0	1.3	1	06/08/06	06/11/06	KWG0609161	
Benzyl Alcohol	ND	U	5.0	3.7	1	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroisopropyl) Ether	ND	U	5.0	1.2	1	06/08/06	06/11/06	KWG0609161	
2-Methylphenol	ND	U	5.0	3.4	1	06/08/06	06/11/06	KWG0609161	
Hexachloroethane	ND	U	5.0	2.2	1	06/08/06	06/11/06	KWG0609161	
N-Nitrosodi-n-propylamine	ND	U	5.0	3.2	1	06/08/06	06/11/06	KWG0609161	
4-Methylphenol†	ND	U	5.0	2.9	1	06/08/06	06/11/06	KWG0609161	
Nitrobenzene	ND	U	5.0	2.0	1	06/08/06	06/11/06	KWG0609161	
Isophorone	ND	U	5.0	1.6	1	06/08/06	06/11/06	KWG0609161	
2-Nitrophenol	ND	U	5.0	2.6	1	06/08/06	06/11/06	KWG0609161	
2,4-Dimethylphenol	ND	U	25	5.5	1	06/08/06	06/11/06	KWG0609161	
Bis(2-chloroethoxy)methane	ND	U	5.0	1.3	1	06/08/06	06/11/06	KWG0609161	
2,4-Dichlorophenol	ND	U	5.0	1.8	1	06/08/06	06/11/06	KWG0609161	
Benzoic Acid	ND	U	100	96	1	06/08/06	06/11/06	KWG0609161	*
1,2,4-Trichlorobenzene	ND	U	5.0	1.5	1	06/08/06	06/11/06	KWG0609161	
Naphthalene	ND	U	5.0	1.3	1	06/08/06	06/11/06	KWG0609161	
4-Chloroaniline	ND	U	5.0	2.1	1	06/08/06	06/11/06	KWG0609161	
Hexachlorobutadiene	ND	U	5.0	1.4	1	06/08/06	06/11/06	KWG0609161	
4-Chloro-3-methylphenol	ND	U	5.0	2.1	1	06/08/06	06/11/06	KWG0609161	
2-Methylnaphthalene	ND	U	5.0	1.2	1	06/08/06	06/11/06	KWG0609161	
Hexachlorocyclopentadiene	ND	U	25	15	1	06/08/06	06/11/06	KWG0609161	
2,4,6-Trichlorophenol	ND	U	5.0	1.8	1	06/08/06	06/11/06	KWG0609161	
2,4,5-Trichlorophenol	ND	U	5.0	3.0	1	06/08/06	06/11/06	KWG0609161	
2-Chloronaphthalene	ND	U	5.0	3.6	1	06/08/06	06/11/06	KWG0609161	
2-Nitroaniline	ND	U	10	2.7	1	06/08/06	06/11/06	KWG0609161	
Acenaphthylene	ND	U	5.0	1.4	1	06/08/06	06/11/06	KWG0609161	
Dimethyl Phthalate	ND	U	5.0	1.8	1	06/08/06	06/11/06	KWG0609161	
2,6-Dinitrotoluene	ND	U	5.0	2.8	1	06/08/06	06/11/06	KWG0609161	

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Collected: NA  
 Date Received: NA

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank  
 Lab Code: KWG0609161-9  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	5.0	1.0	1	06/08/06	06/11/06	KWG0609161	
3-Nitroaniline	ND	U	10	2.6	1	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrophenol	ND	U	100	36	1	06/08/06	06/11/06	KWG0609161	
Dibenzofuran	ND	U	5.0	1.3	1	06/08/06	06/11/06	KWG0609161	
4-Nitrophenol	ND	U	50	30	1	06/08/06	06/11/06	KWG0609161	
2,4-Dinitrotoluene	ND	U	5.0	2.8	1	06/08/06	06/11/06	KWG0609161	
Fluorene	ND	U	5.0	1.7	1	06/08/06	06/11/06	KWG0609161	
4-Chlorophenyl Phenyl Ether	ND	U	5.0	2.0	1	06/08/06	06/11/06	KWG0609161	
Diethyl Phthalate	ND	U	5.0	3.5	1	06/08/06	06/11/06	KWG0609161	
4-Nitroaniline	ND	U	10	3.4	1	06/08/06	06/11/06	KWG0609161	
2-Methyl-4,6-dinitrophenol	ND	U	50	1.7	1	06/08/06	06/11/06	KWG0609161	
N-Nitrosodiphenylamine	ND	U	5.0	2.2	1	06/08/06	06/11/06	KWG0609161	
4-Bromophenyl Phenyl Ether	ND	U	5.0	1.4	1	06/08/06	06/11/06	KWG0609161	
Hexachlorobenzene	ND	U	5.0	2.1	1	06/08/06	06/11/06	KWG0609161	
Pentachlorophenol	ND	U	50	8.5	1	06/08/06	06/11/06	KWG0609161	
Phenanthrene	ND	U	5.0	1.3	1	06/08/06	06/11/06	KWG0609161	
Anthracene	ND	U	5.0	1.4	1	06/08/06	06/11/06	KWG0609161	
Di-n-butyl Phthalate	2.7	J	5.0	2.6	1	06/08/06	06/11/06	KWG0609161	
Fluoranthene	ND	U	5.0	2.2	1	06/08/06	06/11/06	KWG0609161	
Pyrene	ND	U	5.0	1.3	1	06/08/06	06/11/06	KWG0609161	
Butyl Benzyl Phthalate	ND	U	5.0	1.5	1	06/08/06	06/11/06	KWG0609161	
3,3'-Dichlorobenzidine	ND	U	50	3.7	1	06/08/06	06/11/06	KWG0609161	
Benz(a)anthracene	ND	U	5.0	1.4	1	06/08/06	06/11/06	KWG0609161	
Chrysene	ND	U	5.0	1.4	1	06/08/06	06/11/06	KWG0609161	
Bis(2-ethylhexyl) Phthalate	2.4	J	100	1.7	1	06/08/06	06/11/06	KWG0609161	
Di-n-octyl Phthalate	ND	U	5.0	1.2	1	06/08/06	06/11/06	KWG0609161	
Benzo(b)fluoranthene	ND	U	5.0	2.5	1	06/08/06	06/11/06	KWG0609161	
Benzo(k)fluoranthene	ND	U	5.0	2.5	1	06/08/06	06/11/06	KWG0609161	
Benzo(a)pyrene	ND	U	5.0	1.6	1	06/08/06	06/11/06	KWG0609161	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1.9	1	06/08/06	06/11/06	KWG0609161	
Dibenz(a,h)anthracene	ND	U	5.0	2.2	1	06/08/06	06/11/06	KWG0609161	
Benzo(g,h,i)perylene	ND	U	5.0	2.3	1	06/08/06	06/11/06	KWG0609161	

\* See Case Narrative

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Collected:** NA  
**Date Received:** NA

**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** Method Blank  
**Lab Code:** KWG0609161-9

**Units:** ug/Kg  
**Basis:** Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	33	12-88	06/11/06	Acceptable
Phenol-d6	51	20-101	06/11/06	Acceptable
Nitrobenzene-d5	39	10-97	06/11/06	Acceptable
2-Fluorobiphenyl	46	10-107	06/11/06	Acceptable
2,4,6-Tribromophenol	60	16-122	06/11/06	Acceptable
Terphenyl-d14	67	28-135	06/11/06	Acceptable

† Analyte Comments

4-Methylphenol      This analyte cannot be separated from 3-Methylphenol.

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574

**Surrogate Recovery Summary  
 Semi-Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**Units:** PERCENT  
**Level:** Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
NWC-1-22W	K0604574-006	33 D	53 D	38 D	53 D	55 D	60 D
NWC-1-2W	K0604574-007	30 D	53 D	38 D	56 D	54 D	70 D
NWC-1-12W	K0604574-010	28 D	51 D	37 D	56 D	62 D	79 D
NWC-2-39W	K0604574-011	33 D	55 D	44 D	50 D	49 D	60 D
Method Blank	KWG0609161-9	33	51	39	46	60	67
Batch QC	K0604453-001	36	56	54	51	55	57
Batch QCMS	KWG0609161-13	44	64	58	61	70	69
Batch QCDMS	KWG0609161-14	43	64	59	61	69	65
Lab Control Sample	KWG0609161-10	33	48	45	48	52	57
Duplicate Lab Control Sample	KWG0609161-11	34	53	46	46	59	68

**Surrogate Recovery Control Limits (%)**

Sur1 = 2-Fluorophenol	12-88	Sur5 = 2,4,6-Tribromophenol	16-122
Sur2 = Phenol-d6	20-101	Sur6 = Terphenyl-d14	28-135
Sur3 = Nitrobenzene-d5	10-97		
Sur4 = 2-Fluorobiphenyl	10-107		

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/11/2006  
**Time Analyzed:** 06:34

**Internal Standard Area and RT Summary  
 Semi-Volatile Organic Compounds by GC/MS**

**File ID:** J:\MS10\DATA\061106\0611F001.D  
**Instrument ID:** MS10  
**Analysis Method:** 8270C

**Lab Code:** KWG0609518-2  
**Analysis Lot:** KWG0609518

	1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthene-d10	
	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>
Results ==>	249,856	8.60	832,649	10.52	446,535	13.32
Upper Limit ==>	499,712	9.10	1,665,298	11.02	893,070	13.82
Lower Limit ==>	124,928	8.10	416,325	10.02	223,268	12.82
ICAL Result ==>	335,999	8.62	1,091,617	10.55	580,767	13.34

**Associated Analyses**

Method Blank	KWG0609161-9	262,124	8.60	905,187	10.52	469,858	13.31
Lab Control Sample	KWG0609161-10	255,768	8.60	919,094	10.52	480,142	13.32
Duplicate Lab Control Sample	KWG0609161-11	255,685	8.60	914,594	10.52	489,659	13.32
Batch QCMS	KWG0609161-13	258,262	8.60	879,486	10.52	448,348	13.31
Batch QCDMS	KWG0609161-14	265,396	8.60	929,502	10.52	485,977	13.32
Batch QC	K0604453-001	271,195	8.61	947,289	10.52	519,253	13.32
NWC-1-22W	K0604574-006	267,710	8.61	941,581	10.53	464,108	13.33
NWC-1-2W	K0604574-007	286,837	8.61	908,023	10.53	439,974	13.33
NWC-1-12W	K0604574-010	268,747	8.62	885,215	10.54	439,738	13.34
NWC-2-39W	K0604574-011	269,684	8.62	951,021	10.54	510,150	13.34

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4

**Service Request:** K0604574  
**Date Analyzed:** 06/11/2006  
**Time Analyzed:** 06:34

**Internal Standard Area and RT Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

**File ID:** J:\MS10\DATA\061106\0611F001.D  
**Instrument ID:** MS10  
**Analysis Method:** 8270C

**Lab Code:** KWG0609518-2  
**Analysis Lot:** KWG0609518

	Phenanthrene-d10		Chrysene-d12		Perylene-d12		
	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>	
<b>Results ==&gt;</b>	709,869	15.71	694,819	20.08	468,688	23.60	
<b>Upper Limit ==&gt;</b>	1,419,738	16.21	1,389,638	20.58	937,376	24.10	
<b>Lower Limit ==&gt;</b>	354,935	15.21	347,410	19.58	234,344	23.10	
<b>ICAL Result ==&gt;</b>	951,084	15.74	828,513	20.11	602,544	23.65	
<b>Associated Analyses</b>							
Method Blank	KWG0609161-9	728,015	15.71	688,499	20.06	469,162	23.59
Lab Control Sample	KWG0609161-10	758,950	15.71	686,793	20.07	485,299	23.60
Duplicate Lab Control Sample	KWG0609161-11	762,326	15.70	671,639	20.07	494,939	23.60
Batch QCMS	KWG0609161-13	733,431	15.71	662,505	20.07	492,137	23.61
Batch QCDMS	KWG0609161-14	767,003	15.71	692,279	20.08	499,380	23.61
Batch QC	K0604453-001	790,971	15.71	733,688	20.07	533,155	23.62
NWC-1-22W	K0604574-006	692,315	15.73	682,824	20.10	485,996	23.65
NWC-1-2W	K0604574-007	734,032	15.73	641,272	20.10	472,323	23.69
NWC-1-12W	K0604574-010	684,198	15.74	638,310	20.12	466,181	23.71
NWC-2-39W	K0604574-011	745,149	15.74	686,981	20.11	510,947	23.67

Results flagged with an asterisk (\*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/08/2006  
 Date Analyzed: 06/11/2006

Matrix Spike/Duplicate Matrix Spike Summary  
 Semi-Volatile Organic Compounds by GC/MS

Sample Name: Batch QC  
 Lab Code: K0604453-001  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0609161

Analyte Name	Sample Result	Batch QCMS KWG0609161-13 Matrix Spike			Batch QCDMS KWG0609161-14 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Phenol	7.7	157	250	60	153	249	58	14-114	3	40
2-Chlorophenol	ND	142	250	57	135	249	54	10-116	5	40
1,4-Dichlorobenzene	ND	86.1	250	35	92.5	249	37	10-72	7	40
N-Nitrosodi-n-propylamine	ND	162	250	65	159	249	64	18-111	2	40
1,2,4-Trichlorobenzene	ND	129	250	52	129	249	52	10-80	0	40
4-Chloro-3-methylphenol	ND	166	250	66	164	249	66	17-120	1	40
Acenaphthene	ND	164	250	66	157	249	63	10-132	4	40
4-Nitrophenol	ND	187	250	75	167	249	67	22-128	12	40
2,4-Dinitrotoluene	ND	187	250	75	181	249	73	30-120	4	40
Pentachlorophenol	ND	201	250	80	181	249	73	10-145	10	40
Pyrene	8.5	190	250	73	175	249	67	10-136	8	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Extracted:** 06/08/2006  
**Date Analyzed:** 06/11/2006

**Lab Control Spike/Duplicate Lab Control Spike Summary  
 Semi-Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG0609161

Analyte Name	Lab Control Sample KWG0609161-10 Lab Control Spike			Duplicate Lab Control Sample KWG0609161-11 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	113	250	45	113	250	45	41-89	0	40
Phenol	130	250	52	132	250	53	35-102	1	40
2-Chlorophenol	114	250	46	115	250	46	35-98	1	40
1,3-Dichlorobenzene	91.9	250	37	91.4	250	37	36-89	1	40
1,4-Dichlorobenzene	93.9	250	38	95.7	250	38	37-87	2	40
1,2-Dichlorobenzene	102	250	41	108	250	43	39-91	5	40
Benzyl Alcohol	160	250	64	162	250	65	35-88	1	40
Bis(2-chloroisopropyl) Ether	116	250	46	124	250	49	35-90	6	40
2-Methylphenol	128	250	51	126	250	50	30-91	2	40
Hexachloroethane	99.4	250	40	102	250	41	37-90	3	40
N-Nitrosodi-n-propylamine	131	250	52	133	250	53	40-100	2	40
4-Methylphenol	137	250	55	138	250	55	28-94	1	40
Nitrobenzene	129	250	51	127	250	51	40-91	2	40
Isophorone	131	250	53	129	250	51	47-101	2	40
2-Nitrophenol	119	250	48	115	250	46	37-100	4	40
2,4-Dimethylphenol	111	250	44	96.5	250	39	10-63	14	40
Bis(2-chloroethoxy)methane	128	250	51	121	250	48	42-89	6	40
2,4-Dichlorophenol	127	250	51	129	250	52	36-100	1	40
Benzoic Acid	66.6	750	9 *	119	750	16	10-88	56 *	40
1,2,4-Trichlorobenzene	108	250	43	110	250	44	40-91	2	40
Naphthalene	112	250	45	115	250	46	41-90	3	40
4-Chloroaniline	105	250	42	102	250	41	26-78	3	40
Hexachlorobutadiene	102	250	41	103	250	41	37-92	2	40
4-Chloro-3-methylphenol	135	250	54	133	250	53	36-102	1	40
2-Methylnaphthalene	122	250	49	121	250	48	41-87	1	40
Hexachlorocyclopentadiene	82.1	250	33	87.0	250	35	21-98	6	40
2,4,6-Trichlorophenol	137	250	55	132	250	53	37-100	4	40
2,4,5-Trichlorophenol	136	250	55	136	250	55	37-103	0	40
2-Chloronaphthalene	124	250	50	125	250	50	40-94	1	40
2-Nitroaniline	138	250	55	136	250	54	44-96	1	40
Acenaphthylene	143	250	57	133	250	53	49-100	8	40
Dimethyl Phthalate	140	250	56	140	250	56	48-99	0	40
2,6-Dinitrotoluene	159	250	64	152	250	61	50-98	4	40
Acenaphthene	142	250	57	131	250	52	44-92	8	40
3-Nitroaniline	144	250	58	130	250	52	43-93	10	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4  
 Sample Matrix: Soil

Service Request: K0604574  
 Date Extracted: 06/08/2006  
 Date Analyzed: 06/11/2006

Lab Control Spike/Duplicate Lab Control Spike Summary  
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0609161

Analyte Name	Lab Control Sample KWG0609161-10 Lab Control Spike			Duplicate Lab Control Sample KWG0609161-11 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	96.0	250	38	165	250	66	14-111	53 *	40
Dibenzofuran	140	250	56	136	250	54	44-91	3	40
4-Nitrophenol	129	250	52	148	250	59	35-120	13	40
2,4-Dinitrotoluene	162	250	65	158	250	63	52-107	2	40
Fluorene	139	250	56	138	250	55	46-97	1	40
4-Chlorophenyl Phenyl Ether	141	250	56	134	250	54	44-97	5	40
Diethyl Phthalate	139	250	56	146	250	58	48-107	4	40
4-Nitroaniline	146	250	59	138	250	55	40-100	6	40
2-Methyl-4,6-dinitrophenol	132	250	53	169	250	68	30-114	25	40
N-Nitrosodiphenylamine	140	250	56	137	250	55	47-108	2	40
4-Bromophenyl Phenyl Ether	146	250	59	142	250	57	47-96	3	40
Hexachlorobenzene	149	250	60	146	250	58	46-103	2	40
Pentachlorophenol	138	250	55	159	250	63	22-100	14	40
Phenanthrene	159	250	63	154	250	61	50-96	3	40
Anthracene	162	250	65	159	250	64	51-97	2	40
Di-n-butyl Phthalate	173	250	69	182	250	73	51-111	5	40
Fluoranthene	156	250	62	165	250	66	53-108	5	40
Pyrene	165	250	66	176	250	70	50-108	6	40
Butyl Benzyl Phthalate	162	250	65	179	250	71	48-119	10	40
3,3'-Dichlorobenzidine	116	250	46	96.2	250	38	22-94	18	40
Benz(a)anthracene	175	250	70	183	250	73	58-106	5	40
Chrysene	172	250	69	183	250	73	57-111	6	40
Bis(2-ethylhexyl) Phthalate	182	250	73	186	250	75	47-124	2	40
Di-n-octyl Phthalate	174	250	70	180	250	72	41-123	3	40
Benzo(b)fluoranthene	171	250	69	178	250	71	56-104	4	40
Benzo(k)fluoranthene	180	250	72	180	250	72	58-106	0	40
Benzo(a)pyrene	175	250	70	178	250	71	56-107	2	40
Indeno(1,2,3-cd)pyrene	176	250	70	182	250	73	55-107	3	40
Dibenz(a,h)anthracene	175	250	70	181	250	72	55-107	4	40
Benzo(g,h,i)perylene	182	250	73	183	250	73	27-121	1	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Extracted:** 06/08/2006  
**Date Analyzed:** 06/11/2006  
**Time Analyzed:** 07:11

**Method Blank Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** Method Blank **File ID:** J:\MS10\DATA\061106\0611F002.D  
**Lab Code:** KWG0609161-9 **Instrument ID:** MS10  
**Extraction Method:** EPA 3541 **Level:** Low  
**Analysis Method:** 8270C **Extraction Lot:** KWG0609161

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0609161-10	J:\MS10\DATA\061106\0611F003.D	06/11/06	07:48
Duplicate Lab Control Sample	KWG0609161-11	J:\MS10\DATA\061106\0611F004.D	06/11/06	08:26
Batch QCMS	KWG0609161-13	J:\MS10\DATA\061106\0611F005.D	06/11/06	09:04
Batch QCDMS	KWG0609161-14	J:\MS10\DATA\061106\0611F006.D	06/11/06	09:41
Batch QC	K0604453-001	J:\MS10\DATA\061106\0611F007.D	06/11/06	10:19
NWC-1-22W	K0604574-006	J:\MS10\DATA\061106\0611F014.D	06/11/06	14:15
NWC-1-2W	K0604574-007	J:\MS10\DATA\061106\0611F015.D	06/11/06	14:53
NWC-1-12W	K0604574-010	J:\MS10\DATA\061106\0611F016.D	06/11/06	15:31
NWC-2-39W	K0604574-011	J:\MS10\DATA\061106\0611F017.D	06/11/06	16:09

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574

**Lab Control Sample/Duplicate Lab Control Sample Summary  
 Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** Lab Control Sample  
**Lab Code:** KWG0609161-10  
**File ID:** J:\MS10\DATA\061106\0611F003.D  
**Instrument ID:** MS10  
**Date Extracted:** 06/08/2006  
**Date Analyzed:** 06/11/2006  
**Time Analyzed:** 07:48

**Sample Name:** Duplicate Lab Control Sample  
**Lab Code:** KWG0609161-11  
**File ID:** J:\MS10\DATA\061106\0611F004.D  
**Instrument ID:** MS10  
**Date Extracted:** 06/08/2006  
**Date Analyzed:** 06/11/2006  
**Time Analyzed:** 08:26

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**Level:** Low  
**Extraction Lot:** KWG0609161

These Lab Control Samples apply to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG0609161-9	J:\MS10\DATA\061106\0611F002.D	06/11/06	07:11
Batch QCMS	KWG0609161-13	J:\MS10\DATA\061106\0611F005.D	06/11/06	09:04
Batch QCDMS	KWG0609161-14	J:\MS10\DATA\061106\0611F006.D	06/11/06	09:41
Batch QC	K0604453-001	J:\MS10\DATA\061106\0611F007.D	06/11/06	10:19
NWC-1-22W	K0604574-006	J:\MS10\DATA\061106\0611F014.D	06/11/06	14:15
NWC-1-2W	K0604574-007	J:\MS10\DATA\061106\0611F015.D	06/11/06	14:53
NWC-1-12W	K0604574-010	J:\MS10\DATA\061106\0611F016.D	06/11/06	15:31
NWC-2-39W	K0604574-011	J:\MS10\DATA\061106\0611F017.D	06/11/06	16:09

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Date Analyzed: 06/11/2006  
 Time Analyzed: 06:34

Tune Summary  
 Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS10\DATA\061106\0611T001.D  
 Instrument ID: MS10  
 Column:

Analysis Method: 8270C  
 Analysis Lot: KWG0609518

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	60.7	187040	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	64.9	200209	PASS
70	69	0	2	0.0	0	PASS
127	198	25	75	45.4	140095	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	308275	PASS
199	198	5	9	6.8	20819	PASS
275	198	10	30	22.0	67797	PASS
365	198	1	100	2.8	8672	PASS
441	443	0	100	34.8	13184	PASS
442	198	40	110	64.7	199453	PASS
443	442	15	24	19.0	37898	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG0609518-2	J:\MS10\DATA\061106\0611F001.D	06/11/2006	06:34	
Method Blank	KWG0609161-9	J:\MS10\DATA\061106\0611F002.D	06/11/2006	07:11	
Lab Control Sample	KWG0609161-10	J:\MS10\DATA\061106\0611F003.D	06/11/2006	07:48	
Duplicate Lab Control Sample	KWG0609161-11	J:\MS10\DATA\061106\0611F004.D	06/11/2006	08:26	
Batch QCMS	KWG0609161-13	J:\MS10\DATA\061106\0611F005.D	06/11/2006	09:04	
Batch QCDMS	KWG0609161-14	J:\MS10\DATA\061106\0611F006.D	06/11/2006	09:41	
Batch QC	K0604453-001	J:\MS10\DATA\061106\0611F007.D	06/11/2006	10:19	
NWC-1-22W	K0604574-006	J:\MS10\DATA\061106\0611F014.D	06/11/2006	14:15	
NWC-1-2W	K0604574-007	J:\MS10\DATA\061106\0611F015.D	06/11/2006	14:53	
NWC-1-12W	K0604574-010	J:\MS10\DATA\061106\0611F016.D	06/11/2006	15:31	
NWC-2-39W	K0604574-011	J:\MS10\DATA\061106\0611F017.D	06/11/2006	16:09	

Results flagged with an asterisk (\*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS10\DATA\051106\0511F003.D	F	J:\MS10\DATA\051106\0511F008.D
B	J:\MS10\DATA\051106\0511F004.D	G	J:\MS10\DATA\051106\0511F009.D
C	J:\MS10\DATA\051106\0511F005.D	H	J:\MS10\DATA\051106\0511F010.D
D	J:\MS10\DATA\051106\0511F006.D	I	J:\MS10\DATA\051106\0511F011.D
E	J:\MS10\DATA\051106\0511F007.D		

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF
Bis(2-chloroethyl) Ether	A	100	1.48	B	200	1.27	C	500	1.34	D	1000	1.29	E	2000	1.34
	F	3000	1.22	G	4000	1.23	H	5000	1.16	I	6000	1.14			
† Phenol	A	100	1.90	B	200	1.57	C	500	1.63	D	1000	1.59	E	2000	1.50
	F	3000	1.33	G	4000	1.37	H	5000	1.28	I	6000	1.26			
2-Chlorophenol	A	100	1.38	B	200	1.27	C	500	1.31	D	1000	1.30	E	2000	1.34
	F	3000	1.28	G	4000	1.28	H	5000	1.20	I	6000	1.21			
1,3-Dichlorobenzene	A	100	1.67	B	200	1.51	C	500	1.53	D	1000	1.51	E	2000	1.52
	F	3000	1.38	G	4000	1.42	H	5000	1.38	I	6000	1.36			
† 1,4-Dichlorobenzene	A	100	1.71	B	200	1.56	C	500	1.51	D	1000	1.50	E	2000	1.51
	F	3000	1.37	G	4000	1.41	H	5000	1.36	I	6000	1.34			
1,2-Dichlorobenzene	A	100	1.62	B	200	1.39	C	500	1.38	D	1000	1.37	E	2000	1.30
	F	3000	1.20	G	4000	1.23	H	5000	1.18	I	6000	1.14			
Benzyl Alcohol	A	100	0.548	B	200	0.557	C	500	0.615	D	1000	0.623	E	2000	0.618
	F	3000	0.579	G	4000	0.595	H	5000	0.567	I	6000	0.561			
Bis(2-chloroisopropyl) Ether	A	100	2.86	B	200	2.52	C	500	2.50	D	1000	2.41	E	2000	2.25
	F	3000	2.10	G	4000	2.15	H	5000	2.03	I	6000	1.98			
2-Methylphenol	A	100	1.01	B	200	0.917	C	500	0.919	D	1000	0.918	E	2000	0.886
	F	3000	0.831	G	4000	0.823	H	5000	0.785	I	6000	0.755			
Hexachloroethane	A	100	0.736	B	200	0.646	C	500	0.618	D	1000	0.627	E	2000	0.634
	F	3000	0.592	G	4000	0.583	H	5000	0.574	I	6000	0.560			
† N-Nitrosodi-n-propylamine	A	100	0.952	B	200	0.870	C	500	0.839	D	1000	0.878	E	2000	0.887
	F	3000	0.806	G	4000	0.821	H	5000	0.815	I	6000	0.772			
4-Methylphenol	A	100	1.47	B	200	1.20	C	500	1.27	D	1000	1.26	E	2000	1.25
	F	3000	1.18	G	4000	1.15	H	5000	1.15	I	6000	1.13			
Nitrobenzene	A	100	1.43	B	200	1.29	C	500	1.23	D	1000	1.27	E	2000	1.25
	F	3000	1.21	G	4000	1.26	H	5000	1.21	I	6000	1.20			
Isophorone	A	100	0.747	B	200	0.710	C	500	0.714	D	1000	0.706	E	2000	0.692
	F	3000	0.652	G	4000	0.672	H	5000	0.671	I	6000	0.652			

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF
‡ 2-Nitrophenol	A	100	0.189	B	200	0.185	C	500	0.189	D	1000	0.203	E	2000	0.214
	F	3000	0.198	G	4000	0.198	H	5000	0.200	I	6000	0.191			
2,4-Dimethylphenol	A	100	0.301	B	200	0.280	C	500	0.285	D	1000	0.286	E	2000	0.269
	F	3000	0.260	G	4000	0.251	H	5000	0.247	I	6000	0.246			
Bis(2-chloroethoxy)methane	A	100	0.482	B	200	0.424	C	500	0.430	D	1000	0.422	E	2000	0.446
	F	3000	0.385	G	4000	0.389	H	5000	0.391	I	6000	0.374			
‡ 2,4-Dichlorophenol	A	100	0.310	B	200	0.302	C	500	0.293	D	1000	0.301	E	2000	0.305
	F	3000	0.282	G	4000	0.289	H	5000	0.282	I	6000	0.272			
Benzoic Acid										D	1000	0.0903	E	2000	0.138
	F	3000	0.137	G	4000	0.169	H	5000	0.167	I	6000	0.171			
1,2,4-Trichlorobenzene	A	100	0.375	B	200	0.350	C	500	0.345	D	1000	0.342	E	2000	0.353
	F	3000	0.318	G	4000	0.326	H	5000	0.326	I	6000	0.314			
Naphthalene	A	100	1.07	B	200	0.928	C	500	0.955	D	1000	0.974	E	2000	0.978
	F	3000	0.875	G	4000	0.888	H	5000	0.855	I	6000	0.852			
4-Chloroaniline	A	100	0.457	B	200	0.414	C	500	0.408	D	1000	0.408	E	2000	0.412
	F	3000	0.399	G	4000	0.391	H	5000	0.387	I	6000	0.380			
‡ Hexachlorobutadiene	A	100	0.209	B	200	0.197	C	500	0.187	D	1000	0.192	E	2000	0.199
	F	3000	0.183	G	4000	0.190	H	5000	0.189	I	6000	0.189			
‡ 4-Chloro-3-methylphenol	A	100	0.311	B	200	0.287	C	500	0.287	D	1000	0.291	E	2000	0.295
	F	3000	0.274	G	4000	0.265	H	5000	0.278	I	6000	0.271			
2-Methylnaphthalene	A	100	0.607	B	200	0.553	C	500	0.564	D	1000	0.569	E	2000	0.571
	F	3000	0.514	G	4000	0.525	H	5000	0.505	I	6000	0.499			
† Hexachlorocyclopentadiene							C	500	0.286	D	1000	0.327	E	2000	0.381
	F	3000	0.376	G	4000	0.399	H	5000	0.403	I	6000	0.426			
‡ 2,4,6-Trichlorophenol	A	100	0.425	B	200	0.391	C	500	0.375	D	1000	0.389	E	2000	0.413
	F	3000	0.390	G	4000	0.409	H	5000	0.399	I	6000	0.424			
2,4,5-Trichlorophenol	A	100	0.424	B	200	0.403	C	500	0.407	D	1000	0.416	E	2000	0.461
	F	3000	0.429	G	4000	0.459	H	5000	0.440	I	6000	0.465			
2-Chloronaphthalene	A	100	0.508	B	200	0.455	C	500	0.429	D	1000	0.426	E	2000	0.463
	F	3000	0.429	G	4000	0.437	H	5000	0.436	I	6000	0.436			
2-Nitroaniline	A	100	0.462	B	200	0.390	C	500	0.417	D	1000	0.410	E	2000	0.439
	F	3000	0.426	G	4000	0.443	H	5000	0.449	I	6000	0.460			
Acenaphthylene	A	100	1.98	B	200	1.78	C	500	1.77	D	1000	1.65	E	2000	1.80
	F	3000	1.60	G	4000	1.75	H	5000	1.75	I	6000	1.67			

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Analyte Name	Level			Level			Level			Level					
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF			
Dimethyl Phthalate	A	100	1.53	B	200	1.39	C	500	1.30	D	1000	1.34	E	2000	1.40
	F	3000	1.33	G	4000	1.39	H	5000	1.37	I	6000	1.39			
2,6-Dinitrotoluene	A	100	0.298	B	200	0.294	C	500	0.299	D	1000	0.323	E	2000	0.350
	F	3000	0.347	G	4000	0.357	H	5000	0.347	I	6000	0.360			
* Acenaphthene	A	100	1.20	B	200	1.06	C	500	1.06	D	1000	1.04	E	2000	1.09
	F	3000	1.00	G	4000	1.01	H	5000	0.994	I	6000	1.03			
3-Nitroaniline	A	100	0.386	B	200	0.348	C	500	0.350	D	1000	0.369	E	2000	0.391
	F	3000	0.363	G	4000	0.381	H	5000	0.386	I	6000	0.384			
* 2,4-Dinitrophenol										D	1000	0.0666	E	2000	0.117
	F	3000	0.146	G	4000	0.173	H	5000	0.182	I	6000	0.213			
Dibenzofuran	A	100	1.92	B	200	1.73	C	500	1.71	D	1000	1.71	E	2000	1.68
	F	3000	1.60	G	4000	1.62	H	5000	1.61	I	6000	1.62			
* 4-Nitrophenol				B	200	0.178	C	500	0.198	D	1000	0.212	E	2000	0.241
	F	3000	0.242	G	4000	0.253	H	5000	0.257	I	6000	0.266			
2,4-Dinitrotoluene	A	100	0.403	B	200	0.376	C	500	0.414	D	1000	0.443	E	2000	0.472
	F	3000	0.462	G	4000	0.485	H	5000	0.483	I	6000	0.506			
Fluorene	A	100	1.51	B	200	1.36	C	500	1.29	D	1000	1.31	E	2000	1.34
	F	3000	1.26	G	4000	1.28	H	5000	1.27	I	6000	1.29			
4-Chlorophenyl Phenyl Ether	A	100	0.743	B	200	0.662	C	500	0.641	D	1000	0.636	E	2000	0.656
	F	3000	0.624	G	4000	0.640	H	5000	0.649	I	6000	0.667			
Diethyl Phthalate	A	100	1.66	B	200	1.49	C	500	1.39	D	1000	1.42	E	2000	1.49
	F	3000	1.40	G	4000	1.45	H	5000	1.41	I	6000	1.43			
4-Nitroaniline	A	100	0.365	B	200	0.347	C	500	0.356	D	1000	0.381	E	2000	0.402
	F	3000	0.397	G	4000	0.406	H	5000	0.404	I	6000	0.416			
2-Methyl-4,6-dinitrophenol							C	500	0.124	D	1000	0.173	E	2000	0.234
	F	3000	0.255	G	4000	0.273	H	5000	0.268	I	6000	0.289			
* N-Nitrosodiphenylamine	A	100	1.16	B	200	1.06	C	500	1.04	D	1000	1.07	E	2000	1.05
	F	3000	1.02	G	4000	1.03	H	5000	1.04	I	6000	1.08			
4-Bromophenyl Phenyl Ether	A	100	0.249	B	200	0.236	C	500	0.237	D	1000	0.239	E	2000	0.247
	F	3000	0.231	G	4000	0.235	H	5000	0.229	I	6000	0.228			
Hexachlorobenzene	A	100	0.296	B	200	0.266	C	500	0.256	D	1000	0.258	E	2000	0.274
	F	3000	0.254	G	4000	0.268	H	5000	0.262	I	6000	0.264			
* Pentachlorophenol							C	500	0.116	D	1000	0.135	E	2000	0.157
	F	3000	0.152	G	4000	0.162	H	5000	0.164	I	6000	0.165			

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Analyte Name	Level ID			Level ID			Level ID			Level ID			Level ID		
	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Phenanthrene	A	100	1.37	B	200	1.21	C	500	1.21	D	1000	1.18	E	2000	1.24
	F	3000	1.14	G	4000	1.12	H	5000	1.11	I	6000	1.08			
Anthracene	A	100	1.32	B	200	1.21	C	500	1.23	D	1000	1.20	E	2000	1.25
	F	3000	1.17	G	4000	1.17	H	5000	1.13	I	6000	1.10			
Di-n-butyl Phthalate	A	100	1.57	B	200	1.45	C	500	1.48	D	1000	1.47	E	2000	1.51
	F	3000	1.39	G	4000	1.39	H	5000	1.34	I	6000	1.31			
† Fluoranthene	A	100	1.37	B	200	1.24	C	500	1.21	D	1000	1.19	E	2000	1.25
	F	3000	1.14	G	4000	1.19	H	5000	1.17	I	6000	1.13			
Pyrene	A	100	1.48	B	200	1.41	C	500	1.37	D	1000	1.37	E	2000	1.41
	F	3000	1.32	G	4000	1.32	H	5000	1.32	I	6000	1.29			
Butyl Benzyl Phthalate	A	100	0.736	B	200	0.680	C	500	0.672	D	1000	0.678	E	2000	0.719
	F	3000	0.668	G	4000	0.662	H	5000	0.652	I	6000	0.635			
3,3'-Dichlorobenzidine	A	100	0.456	B	200	0.427	C	500	0.435	D	1000	0.442	E	2000	0.467
	F	3000	0.440	G	4000	0.465	H	5000	0.469	I	6000	0.458			
Benz(a)anthracene	A	100	1.20	B	200	1.10	C	500	1.10	D	1000	1.10	E	2000	1.16
	F	3000	1.07	G	4000	1.11	H	5000	1.11	I	6000	1.09			
Chrysene	A	100	1.15	B	200	1.06	C	500	1.07	D	1000	1.07	E	2000	1.12
	F	3000	1.05	G	4000	1.06	H	5000	1.07	I	6000	1.04			
Bis(2-ethylhexyl) Phthalate	A	100	0.911	B	200	0.869	C	500	0.884	D	1000	0.909	E	2000	0.941
	F	3000	0.885	G	4000	0.887	H	5000	0.856	I	6000	0.838			
† Di-n-octyl Phthalate	A	100	1.89	B	200	1.82	C	500	2.00	D	1000	2.04	E	2000	2.18
	F	3000	2.00	G	4000	2.04	H	5000	1.98	I	6000	1.94			
Benzo(b)fluoranthene	A	100	1.33	B	200	1.24	C	500	1.28	D	1000	1.30	E	2000	1.39
	F	3000	1.31	G	4000	1.35	H	5000	1.36	I	6000	1.30			
Benzo(k)fluoranthene	A	100	1.36	B	200	1.28	C	500	1.36	D	1000	1.35	E	2000	1.46
	F	3000	1.34	G	4000	1.39	H	5000	1.37	I	6000	1.35			
† Benzo(a)pyrene	A	100	1.31	B	200	1.16	C	500	1.23	D	1000	1.25	E	2000	1.33
	F	3000	1.22	G	4000	1.28	H	5000	1.26	I	6000	1.25			
Indeno(1,2,3-cd)pyrene	A	100	1.13	B	200	0.968	C	500	1.03	D	1000	1.06	E	2000	1.13
	F	3000	1.09	G	4000	1.15	H	5000	1.13	I	6000	1.15			
Dibenz(a,h)anthracene	A	100	1.05	B	200	0.977	C	500	1.03	D	1000	1.07	E	2000	1.16
	F	3000	1.09	G	4000	1.19	H	5000	1.18	I	6000	1.19			
Benzo(g,h,i)perylene	A	100	1.21	B	200	1.11	C	500	1.13	D	1000	1.15	E	2000	1.25
	F	3000	1.16	G	4000	1.24	H	5000	1.22	I	6000	1.22			

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Analyte Name	Level			Level			Level			Level					
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF			
2-Fluorophenol	A	100	1.40	B	200	1.26	C	500	1.30	D	1000	1.33	E	2000	1.42
	F	3000	1.36	G	4000	1.38	H	5000	1.34	I	6000	1.35			
Phenol-d6	A	100	1.58	B	200	1.43	C	500	1.52	D	1000	1.54	E	2000	1.50
	F	3000	1.34	G	4000	1.36	H	5000	1.25	I	6000	1.23			
Nitrobenzene-d5	A	100	1.51	B	200	1.34	C	500	1.34	D	1000	1.38	E	2000	1.39
	F	3000	1.35	G	4000	1.39	H	5000	1.33	I	6000	1.34			
2-Fluorobiphenyl	A	100	1.45	B	200	1.34	C	500	1.28	D	1000	1.30	E	2000	1.38
	F	3000	1.27	G	4000	1.30	H	5000	1.31	I	6000	1.31			
2,4,6-Tribromophenol	A	100	0.130	B	200	0.135	C	500	0.132	D	1000	0.139	E	2000	0.150
	F	3000	0.144	G	4000	0.150	H	5000	0.151	I	6000	0.154			
Terphenyl-d14	A	100	1.01	B	200	0.959	C	500	0.911	D	1000	0.935	E	2000	0.955
	F	3000	0.885	G	4000	0.928	H	5000	0.910	I	6000	0.909			

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Bis(2-chloroethyl) Ether	TRG	AverageRF	% RSD	8.2		≤ 15	1.27		0.01
* Phenol	MS	AverageRF	% RSD	13.9		≤ 15	1.49		0.01
2-Chlorophenol	MS	AverageRF	% RSD	4.4		≤ 15	1.28		0.01
1,3-Dichlorobenzene	TRG	AverageRF	% RSD	6.7		≤ 15	1.47		0.01
* 1,4-Dichlorobenzene	MS	AverageRF	% RSD	8.0		≤ 15	1.48		0.01
1,2-Dichlorobenzene	TRG	AverageRF	% RSD	11.3		≤ 15	1.31		0.01
Benzyl Alcohol	TRG	AverageRF	% RSD	4.9		≤ 15	0.585		0.01
Bis(2-chloroisopropyl) Ether	TRG	AverageRF	% RSD	12.3		≤ 15	2.31		0.01
2-Methylphenol	TRG	AverageRF	% RSD	9.2		≤ 15	0.872		0.01
Hexachloroethane	TRG	AverageRF	% RSD	8.5		≤ 15	0.619		0.01
* N-Nitrosodi-n-propylamine	MS	AverageRF	% RSD	6.3		≤ 15	0.849		0.05
4-Methylphenol	TRG	AverageRF	% RSD	8.5		≤ 15	1.23		0.01
Nitrobenzene	TRG	AverageRF	% RSD	5.5		≤ 15	1.26		0.01
Isophorone	TRG	AverageRF	% RSD	4.6		≤ 15	0.691		0.01
* 2-Nitrophenol	TRG	AverageRF	% RSD	4.6		≤ 15	0.196		0.01
2,4-Dimethylphenol	TRG	AverageRF	% RSD	7.3		≤ 15	0.269		0.01
Bis(2-chloroethoxy)methane	TRG	AverageRF	% RSD	8.3		≤ 15	0.416		0.01
* 2,4-Dichlorophenol	TRG	AverageRF	% RSD	4.4		≤ 15	0.293		0.01
Benzoic Acid	TRG	Quadratic	COD	0.995		≥ 0.990	0.145		0.01
1,2,4-Trichlorobenzene	MS	AverageRF	% RSD	5.8		≤ 15	0.339		0.01
Naphthalene	TRG	AverageRF	% RSD	7.8		≤ 15	0.931		0.01
4-Chloroaniline	TRG	AverageRF	% RSD	5.5		≤ 15	0.406		0.01
* Hexachlorobutadiene	TRG	AverageRF	% RSD	4.1		≤ 15	0.193		0.01
* 4-Chloro-3-methylphenol	MS	AverageRF	% RSD	5.0		≤ 15	0.284		0.01
2-Methylnaphthalene	TRG	AverageRF	% RSD	6.7		≤ 15	0.545		0.01
* Hexachlorocyclopentadiene	TRG	AverageRF	% RSD	13.1		≤ 15	0.371		0.05
* 2,4,6-Trichlorophenol	TRG	AverageRF	% RSD	4.3		≤ 15	0.402		0.01
2,4,5-Trichlorophenol	TRG	AverageRF	% RSD	5.5		≤ 15	0.434		0.01
2-Chloronaphthalene	TRG	AverageRF	% RSD	5.8		≤ 15	0.447		0.01
2-Nitroaniline	TRG	AverageRF	% RSD	5.6		≤ 15	0.433		0.01
Acenaphthylene	TRG	AverageRF	% RSD	6.2		≤ 15	1.75		0.01
Dimethyl Phthalate	TRG	AverageRF	% RSD	4.6		≤ 15	1.38		0.01
2,6-Dinitrotoluene	TRG	AverageRF	% RSD	8.2		≤ 15	0.330		0.01
* Acenaphthene	MS	AverageRF	% RSD	6.0		≤ 15	1.05		0.01
3-Nitroaniline	TRG	AverageRF	% RSD	4.4		≤ 15	0.373		0.01
* 2,4-Dinitrophenol	TRG	Quadratic	COD	0.998		≥ 0.990	0.150		0.05
Dibenzofuran	TRG	AverageRF	% RSD	5.9		≤ 15	1.69		0.01
* 4-Nitrophenol	MS	AverageRF	% RSD	13.6		≤ 15	0.231		0.05
2,4-Dinitrotoluene	MS	AverageRF	% RSD	9.7		≤ 15	0.449		0.01
Fluorene	TRG	AverageRF	% RSD	5.8		≤ 15	1.32		0.01
4-Chlorophenyl Phenyl Ether	TRG	AverageRF	% RSD	5.3		≤ 15	0.658		0.01
Diethyl Phthalate	TRG	AverageRF	% RSD	5.6		≤ 15	1.46		0.01

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006

Initial Calibration Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL5348  
 Instrument ID: MS10

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
4-Nitroaniline	TRG	AverageRF	% RSD	6.4		≤ 15	0.386		0.01
2-Methyl-4,6-dinitrophenol	TRG	Quadratic	COD	0.999		≥ 0.990	0.231		0.01
† N-Nitrosodiphenylamine	TRG	Linear	R2	0.999		≥ 0.990	1.06		0.01
4-Bromophenyl Phenyl Ether	TRG	AverageRF	% RSD	3.3		≤ 15	0.237		0.01
Hexachlorobenzene	TRG	AverageRF	% RSD	4.8		≤ 15	0.266		0.01
† Pentachlorophenol	MS	AverageRF	% RSD	12.3		≤ 15	0.150		0.01
Phenanthrene	TRG	AverageRF	% RSD	7.6		≤ 15	1.18		0.01
Anthracene	TRG	AverageRF	% RSD	5.5		≤ 15	1.20		0.01
Di-n-butyl Phthalate	TRG	AverageRF	% RSD	5.9		≤ 15	1.44		0.01
† Fluoranthene	TRG	AverageRF	% RSD	5.9		≤ 15	1.21		0.01
Pyrene	MS	AverageRF	% RSD	4.5		≤ 15	1.37		0.01
Butyl Benzyl Phthalate	TRG	AverageRF	% RSD	4.6		≤ 15	0.678		0.01
3,3'-Dichlorobenzidine	TRG	AverageRF	% RSD	3.4		≤ 15	0.451		0.01
Benz(a)anthracene	TRG	AverageRF	% RSD	3.5		≤ 15	1.11		0.01
Chrysene	TRG	AverageRF	% RSD	3.4		≤ 15	1.08		0.01
Bis(2-ethylhexyl) Phthalate	TRG	AverageRF	% RSD	3.5		≤ 15	0.887		0.01
† Di-n-octyl Phthalate	TRG	AverageRF	% RSD	5.1		≤ 15	1.99		0.01
Benzo(b)fluoranthene	TRG	AverageRF	% RSD	3.4		≤ 15	1.32		0.01
Benzo(k)fluoranthene	TRG	AverageRF	% RSD	3.5		≤ 15	1.36		0.01
† Benzo(a)pyrene	TRG	AverageRF	% RSD	4.1		≤ 15	1.25		0.01
Indeno(1,2,3-cd)pyrene	TRG	AverageRF	% RSD	5.8		≤ 15	1.09		0.01
Dibenz(a,h)anthracene	TRG	AverageRF	% RSD	7.1		≤ 15	1.10		0.01
Benzo(g,h,i)perylene	TRG	AverageRF	% RSD	4.4		≤ 15	1.19		0.01
2-Fluorophenol	SURR	AverageRF	% RSD	3.7		≤ 15	1.35		0.01
Phenol-d6	SURR	AverageRF	% RSD	8.9		≤ 15	1.42		0.01
Nitrobenzene-d5	SURR	AverageRF	% RSD	4.0		≤ 15	1.37		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	4.2		≤ 15	1.33		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	6.1		≤ 15	0.143		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	4.1		≤ 15	0.934		0.01

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006  
 Date Analyzed: 05/11/2006

Second Source Calibration Verification  
 Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard  
 Analysis Method: 8270C

Calibration ID: CAL5348  
 Units: ng/ml

File ID: J:\MS10\DATA\051106\0511F012.D  
 J:\MS10\DATA\051106\0511F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Bis(2-chloroethyl) Ether	3000	2700	1.27	1.14	-10	NA	± 30 %	AverageRF
‡ Phenol	3000	2600	1.49	1.30	-13	NA	± 20 %	AverageRF
2-Chlorophenol	3000	2800	1.28	1.20	-7	NA	± 30 %	AverageRF
1,3-Dichlorobenzene	3000	2700	1.47	1.32	-10	NA	± 30 %	AverageRF
‡ 1,4-Dichlorobenzene	3000	2700	1.48	1.33	-10	NA	± 20 %	AverageRF
1,2-Dichlorobenzene	3000	2600	1.31	1.14	-13	NA	± 30 %	AverageRF
Benzyl Alcohol	3000	3200	0.585	0.625	7	NA	± 30 %	AverageRF
Bis(2-chloroisopropyl) Ether	3000	2500	2.31	1.96	-15	NA	± 30 %	AverageRF
2-Methylphenol	3000	2700	0.872	0.790	-9	NA	± 30 %	AverageRF
Hexachloroethane	3000	2700	0.619	0.563	-9	NA	± 30 %	AverageRF
† N-Nitrosodi-n-propylamine	3000	2600	0.849	0.744	-12	NA	± 30 %	AverageRF
4-Methylphenol	3000	2800	1.23	1.15	-6	NA	± 30 %	AverageRF
Nitrobenzene	3000	2700	1.26	1.15	-8	NA	± 30 %	AverageRF
Isophorone	3000	2400	0.691	0.547	-21	NA	± 30 %	AverageRF
‡ 2-Nitrophenol	3000	2900	0.196	0.191	-3	NA	± 20 %	AverageRF
2,4-Dimethylphenol	3000	2900	0.269	0.256	-5	NA	± 30 %	AverageRF
Bis(2-chloroethoxy)methane	3000	2600	0.416	0.356	-14	NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	2800	0.293	0.274	-6	NA	± 20 %	AverageRF
Benzoic Acid	3000	2600	0.145	0.124	NA	-14	± 30 %	Quadratic
1,2,4-Trichlorobenzene	3000	2600	0.339	0.298	-12	NA	± 30 %	AverageRF
Naphthalene	3000	2800	0.931	0.857	-8	NA	± 30 %	AverageRF
4-Chloroaniline	3000	2800	0.406	0.381	-6	NA	± 30 %	AverageRF
‡ Hexachlorobutadiene	3000	2800	0.193	0.177	-8	NA	± 20 %	AverageRF
‡ 4-Chloro-3-methylphenol	3000	2900	0.284	0.271	-5	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	2900	0.545	0.522	-4	NA	± 30 %	AverageRF
† Hexachlorocyclopentadiene	3000	2400	0.371	0.292	-21	NA	± 30 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	2800	0.402	0.371	-8	NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	2800	0.434	0.404	-7	NA	± 30 %	AverageRF
2-Chloronaphthalene	3000	2600	0.447	0.392	-12	NA	± 30 %	AverageRF
2-Nitroaniline	3000	3100	0.433	0.442	2	NA	± 30 %	AverageRF
Acenaphthylene	3000	2400	1.75	1.41	-20	NA	± 30 %	AverageRF
Dimethyl Phthalate	3000	2700	1.38	1.23	-11	NA	± 30 %	AverageRF
2,6-Dinitrotoluene	3000	2800	0.330	0.313	-5	NA	± 30 %	AverageRF
‡ Acenaphthene	3000	2600	1.05	0.907	-14	NA	± 20 %	AverageRF
3-Nitroaniline	3000	2900	0.373	0.358	-4	NA	± 30 %	AverageRF
† 2,4-Dinitrophenol	3000	3100	0.150	0.152	NA	3	± 30 %	Quadratic
Dibenzofuran	3000	2800	1.69	1.56	-8	NA	± 30 %	AverageRF
† 4-Nitrophenol	3000	2900	0.231	0.223	-3	NA	± 30 %	AverageRF
2,4-Dinitrotoluene	3000	2800	0.449	0.419	-7	NA	± 30 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Calibration Date: 05/11/2006  
 Date Analyzed: 05/11/2006

Second Source Calibration Verification  
 Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard  
 Analysis Method: 8270C

Calibration ID: CAL5348  
 Units: ng/ml

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Fluorene	3000	2700	1.32	1.18	-11	NA	± 30 %	AverageRF
4-Chlorophenyl Phenyl Ether	3000	2600	0.658	0.576	-12	NA	± 30 %	AverageRF
Diethyl Phthalate	3000	2600	1.46	1.26	-14	NA	± 30 %	AverageRF
4-Nitroaniline	3000	3000	0.386	0.389	1	NA	± 30 %	AverageRF
2-Methyl-4,6-dinitrophenol	3000	3100	0.231	0.263	NA	3	± 30 %	Quadratic
† N-Nitrosodiphenylamine	3000	2400	1.06	0.846	NA	-19	± 20 %	Linear
4-Bromophenyl Phenyl Ether	3000	2800	0.237	0.217	-8	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	2700	0.266	0.235	-12	NA	± 30 %	AverageRF
† Pentachlorophenol	3000	3300	0.150	0.163	9	NA	± 20 %	AverageRF
Phenanthrene	3000	2600	1.18	1.04	-12	NA	± 30 %	AverageRF
Anthracene	3000	2700	1.20	1.07	-11	NA	± 30 %	AverageRF
Di-n-butyl Phthalate	3000	2600	1.44	1.25	-13	NA	± 30 %	AverageRF
† Fluoranthene	3000	2600	1.21	1.05	-13	NA	± 30 %	AverageRF
Pyrene	3000	3000	1.37	1.35	-1	NA	± 30 %	AverageRF
Butyl Benzyl Phthalate	3000	3000	0.678	0.684	1	NA	± 30 %	AverageRF
3,3'-Dichlorobenzidine	3000	2800	0.451	0.424	-6	NA	± 30 %	AverageRF
Benzo(a)anthracene	3000	2900	1.11	1.06	-4	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.08	1.06	-2	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	3100	0.887	0.905	2	NA	± 30 %	AverageRF
† Di-n-octyl Phthalate	3000	3300	1.99	2.21	11	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3300	1.32	1.47	11	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	3200	1.36	1.45	6	NA	± 30 %	AverageRF
† Benzo(a)pyrene	3000	3300	1.25	1.37	9	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3500	1.09	1.27	16	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	3300	1.10	1.23	12	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	3300	1.19	1.30	10	NA	± 30 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Date Analyzed: 06/11/2006

Continuing Calibration Verification Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard  
 Analysis Method: 8270C  
 CCV Standard ID: SVM22-11C

Calibration Date: 05/11/2006  
 Calibration ID: CAL5348  
 Analysis Lot: KWG0609518  
 Units: ng/ml

File ID: J:\MS10\DATA\061106\0611F001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Bis(2-chloroethyl) Ether	3000	2900	0.01	1.27	1.23	-3	NA	± 30 %	AverageRF
‡ Phenol	3000	2900	0.01	1.49	1.42	-5	NA	± 20 %	AverageRF
2-Chlorophenol	3000	2900	0.01	1.28	1.25	-3	NA	± 30 %	AverageRF
1,3-Dichlorobenzene	3000	2900	0.01	1.47	1.45	-2	NA	± 30 %	AverageRF
‡ 1,4-Dichlorobenzene	3000	2900	0.01	1.48	1.42	-4	NA	± 20 %	AverageRF
1,2-Dichlorobenzene	3000	2900	0.01	1.31	1.27	-3	NA	± 30 %	AverageRF
Benzyl Alcohol	3000	3300	0.01	0.585	0.649	11	NA	± 30 %	AverageRF
Bis(2-chloroisopropyl) Ether	3000	3200	0.01	2.31	2.43	5	NA	± 30 %	AverageRF
2-Methylphenol	3000	3000	0.01	0.872	0.885	1	NA	± 30 %	AverageRF
Hexachloroethane	3000	3000	0.01	0.619	0.623	1	NA	± 30 %	AverageRF
† N-Nitrosodi-n-propylamine	3000	3200	0.05	0.849	0.905	7	NA	± 30 %	AverageRF
4-Methylphenol	3000	3000	0.01	1.23	1.22	-1	NA	± 30 %	AverageRF
Nitrobenzene	3000	3200	0.01	1.26	1.34	7	NA	± 30 %	AverageRF
Isophorone	3000	3000	0.01	0.691	0.685	-1	NA	± 30 %	AverageRF
‡ 2-Nitrophenol	3000	3300	0.01	0.196	0.213	9	NA	± 20 %	AverageRF
2,4-Dimethylphenol	3000	2900	0.01	0.269	0.260	-3	NA	± 30 %	AverageRF
Bis(2-chloroethoxy)methane	3000	3100	0.01	0.416	0.435	5	NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	3100	0.01	0.293	0.303	3	NA	± 20 %	AverageRF
Benzoic Acid	3000	2800	0.01	0.145	0.139	NA	-6	± 30 %	Quadratic
1,2,4-Trichlorobenzene	3000	3000	0.01	0.339	0.341	1	NA	± 30 %	AverageRF
Naphthalene	3000	2900	0.01	0.931	0.901	-3	NA	± 30 %	AverageRF
4-Chloroaniline	3000	3000	0.01	0.406	0.403	-1	NA	± 30 %	AverageRF
‡ Hexachlorobutadiene	3000	3100	0.01	0.193	0.200	4	NA	± 20 %	AverageRF
‡ 4-Chloro-3-methylphenol	3000	3000	0.01	0.284	0.283	-1	NA	± 20 %	AverageRF
2-Methylnaphthalene	3000	3000	0.01	0.545	0.548	0	NA	± 30 %	AverageRF
† Hexachlorocyclopentadiene	3000	2900	0.05	0.371	0.357	-4	NA	± 30 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	2900	0.01	0.402	0.390	-3	NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	3100	0.01	0.434	0.447	3	NA	± 30 %	AverageRF
2-Chloronaphthalene	3000	2900	0.01	0.447	0.431	-4	NA	± 30 %	AverageRF
2-Nitroaniline	3000	3100	0.01	0.433	0.440	2	NA	± 30 %	AverageRF
Acenaphthylene	3000	3000	0.01	1.75	1.75	0	NA	± 30 %	AverageRF
Dimethyl Phthalate	3000	2900	0.01	1.38	1.33	-3	NA	± 30 %	AverageRF
2,6-Dinitrotoluene	3000	3200	0.01	0.330	0.354	7	NA	± 30 %	AverageRF
‡ Acenaphthene	3000	3000	0.01	1.05	1.05	-1	NA	± 30 %	AverageRF
3-Nitroaniline	3000	3000	0.01	0.373	0.369	-1	NA	± 30 %	AverageRF
† 2,4-Dinitrophenol	3000	2400	0.05	0.150	0.104	NA	-19	± 30 %	Quadratic
Dibenzofuran	3000	2900	0.01	1.69	1.64	-3	NA	± 30 %	AverageRF
† 4-Nitrophenol	3000	2800	0.05	0.231	0.219	-5	NA	± 30 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574  
 Date Analyzed: 06/11/2006

Continuing Calibration Verification Summary  
 Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard  
 Analysis Method: 8270C  
 CCV Standard ID: SVM22-11C

Calibration Date: 05/11/2006  
 Calibration ID: CAL5348  
 Analysis Lot: KWG0609518  
 Units: ng/ml

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2,4-Dinitrotoluene	3000	3200	0.01	0.449	0.481	7	NA	± 30 %	AverageRF
Fluorene	3000	2900	0.01	1.32	1.29	-2	NA	± 30 %	AverageRF
4-Chlorophenyl Phenyl Ether	3000	3000	0.01	0.658	0.648	-2	NA	± 30 %	AverageRF
Diethyl Phthalate	3000	2800	0.01	1.46	1.38	-6	NA	± 30 %	AverageRF
4-Nitroaniline	3000	3000	0.01	0.386	0.390	1	NA	± 30 %	AverageRF
2-Methyl-4,6-dinitrophenol	3000	2700	0.01	0.231	0.227	NA	-9	± 30 %	Quadratic
† N-Nitrosodiphenylamine	3000	3000	0.01	1.06	1.04	NA	-1	± 20 %	Linear
4-Bromophenyl Phenyl Ether	3000	3000	0.01	0.237	0.234	-1	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3100	0.01	0.266	0.272	2	NA	± 30 %	AverageRF
† Pentachlorophenol	3000	3100	0.01	0.150	0.156	4	NA	± 20 %	AverageRF
Phenanthrene	3000	3000	0.01	1.18	1.17	-1	NA	± 30 %	AverageRF
Anthracene	3000	3000	0.01	1.20	1.21	1	NA	± 30 %	AverageRF
Di-n-butyl Phthalate	3000	3200	0.01	1.44	1.52	6	NA	± 30 %	AverageRF
† Fluoranthene	3000	3200	0.01	1.21	1.28	5	NA	± 20 %	AverageRF
Pyrene	3000	2900	0.01	1.37	1.31	-4	NA	± 30 %	AverageRF
Butyl Benzyl Phthalate	3000	3000	0.01	0.678	0.668	-1	NA	± 30 %	AverageRF
3,3'-Dichlorobenzidine	3000	2900	0.01	0.451	0.432	-4	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	2900	0.01	1.11	1.08	-3	NA	± 30 %	AverageRF
Chrysene	3000	3000	0.01	1.08	1.08	0	NA	± 30 %	AverageRF
Bis(2-ethylhexyl) Phthalate	3000	2900	0.01	0.887	0.867	-2	NA	± 30 %	AverageRF
† Di-n-octyl Phthalate	3000	3100	0.01	1.99	2.02	2	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	3000	3000	0.01	1.32	1.32	0	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	3100	0.01	1.36	1.41	3	NA	± 30 %	AverageRF
† Benzo(a)pyrene	3000	3000	0.01	1.25	1.27	1	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	3000	3100	0.01	1.09	1.13	3	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	3100	0.01	1.10	1.15	4	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	3200	0.01	1.19	1.27	7	NA	± 30 %	AverageRF
2-Fluorophenol	3000	2600	0.01	1.35	1.17	-13	NA	± 30 %	AverageRF
Phenol-d6	3000	3000	0.01	1.42	1.42	0	NA	± 30 %	AverageRF
Nitrobenzene-d5	3000	3200	0.01	1.37	1.47	7	NA	± 30 %	AverageRF
2-Fluorobiphenyl	3000	3000	0.01	1.33	1.31	-1	NA	± 30 %	AverageRF
2,4,6-Tribromophenol	3000	3100	0.01	0.143	0.147	3	NA	± 30 %	AverageRF
Terphenyl-d14	3000	2900	0.01	0.934	0.918	-2	NA	± 30 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Geomatrix Consultants, Incorporated  
 Project: NW Corner-FRP/8769.005/4

Service Request: K0604574

Analysis Run Log  
 Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270C

Analysis Lot: KWG0609518  
 Instrument ID: MS10

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0611F001.D	Continuing Calibration Verification	KWG0609518-2	6/11/2006	06:34		6/11/2006	07:02
0611T001.D	GC/MS Tuning - Generic	KWG0609518-1	6/11/2006	06:34		6/11/2006	07:02
0611F002.D	Method Blank	KWG0609161-9	6/11/2006	07:11		6/11/2006	07:39
0611F003.D	Lab Control Sample	KWG0609161-10	6/11/2006	07:48		6/11/2006	08:16
0611F004.D	Duplicate Lab Control Sample	KWG0609161-11	6/11/2006	08:26		6/11/2006	08:54
0611F005.D	Batch QCMS	KWG0609161-13	6/11/2006	09:04		6/11/2006	09:32
0611F006.D	Batch QCDMS	KWG0609161-14	6/11/2006	09:41		6/11/2006	10:09
0611F007.D	Batch QC	K0604453-001	6/11/2006	10:19		6/11/2006	10:47
0611F008.D	ZZZZZZ	ZZZZZZ	6/11/2006	10:56		6/11/2006	11:24
0611F009.D	ZZZZZZ	ZZZZZZ	6/11/2006	11:34		6/11/2006	12:02
0611F012.D	ZZZZZZ	ZZZZZZ	6/11/2006	13:00		6/11/2006	13:28
0611F013.D	ZZZZZZ	ZZZZZZ	6/11/2006	13:38		6/11/2006	14:06
0611F014.D	NWC-1-22W	K0604574-006	6/11/2006	14:15		6/11/2006	14:43
0611F015.D	NWC-1-2W	K0604574-007	6/11/2006	14:53		6/11/2006	15:21
0611F016.D	NWC-1-12W	K0604574-010	6/11/2006	15:31		6/11/2006	15:59
0611F017.D	NWC-2-39W	K0604574-011	6/11/2006	16:09		6/11/2006	16:37

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis



**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Results

**Client:** Geomatrix Consultants, Incorporated  
**Project:** NW Corner-FRP/8769.005/4  
**Sample Matrix:** Soil

**Service Request:** K0604574  
**Date Extracted:** 06/08/2006

**Extraction Prep Log  
Semi-Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

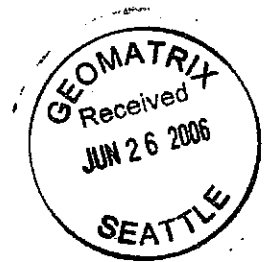
**Extraction Lot:** KWG0609161  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
NWC-1-22W	K0604574-006	06/02/06	06/06/06	40.00g	2ml	82.7	
NWC-1-2W	K0604574-007	06/02/06	06/06/06	40.05g	2ml	79.8	
NWC-1-12W	K0604574-010	06/05/06	06/06/06	40.01g	2ml	86.9	
NWC-2-39W	K0604574-011	06/05/06	06/06/06	40.03g	2ml	83.8	
Method Blank	KWG0609161-9	NA	NA	40.05g	2ml	NA	
Batch QC	K0604453-001	NA	NA	23.39g	2ml	86.0	
Batch QCMS	KWG0609161-13	NA	NA	23.29g	2ml	86.0	
Batch QCDMS	KWG0609161-14	NA	NA	23.36g	2ml	86.0	
Lab Control Sample	KWG0609161-10	NA	NA	20.00g	2ml	NA	
Duplicate Lab Control Sample	KWG0609161-11	NA	NA	20.00g	2ml	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

June 23, 2006

Service Request No: K0604601



John Long  
 Geomatrix Consultants, Incorporated  
 One Union Square  
 600 University Street, Suite 1020  
 Seattle, WA 98101

**RE: Former RP site/8769.005/4**

Dear John:

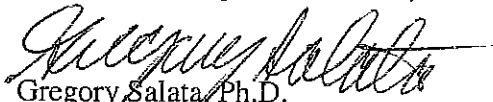
Enclosed are the results of the sample(s) submitted to our laboratory on June 07, 2006. For your reference, these analyses have been assigned our service request number K0604601.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

  
 Gregory Salata, Ph.D.  
 Project Chemist

GS/lmb

Page 1 of 214

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- \* The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## **Case Narrative**

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geomatrix Consultants, Inc.  
Project: Former RP Site/8769.005/4  
Sample Matrix: Soil

Service Request No.: K0604601  
Date Received: 06/07/06

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One hundred seventeen soil samples were received for analysis at Columbia Analytical Services on 06/07/06. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

**Matrix Spike Recovery Exceptions:**

The control criteria for matrix spike recovery of Copper for sample NWC-1-37A is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

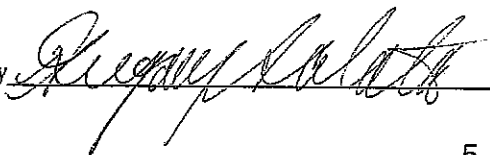
The matrix spike recovery of Copper for sample NWC-2-30A was outside the CAS control criteria as a result of a heterogeneous distribution of this analyte in the sample. The associated QA/QC results (e.g. control sample, additional matrix spike, calibration standards, etc.) indicate the analysis was in control. No further corrective action was appropriate.

**Relative Percent Difference Exceptions:**

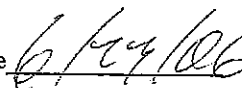
The Relative Percent Difference (RPD) for the replicate analysis of Copper in sample NWC-2-1A was outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous distribution of this analyte in the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Date



**Chain of Custody  
Documentation**

**CHAIN-OF-CUSTODY RECORD**

SEA 10113  
 PAGE 1 OF 79

10604601  
 DATE: 6/5/06  
 REPORTING REQUIREMENTS:

PROJECT NAME: NW Corner - Former Rhona Paulene  
 PROJECT NUMBER: 8769.005/4  
 RESULTS TO: John Long  
 TURNAROUND TIME:  
 SAMPLE SHIPMENT METHOD: Courier

LABORATORY NAME: C.A.S.  
 LABORATORY ADDRESS: 1817 S. 15th Ave  
 Kelso, WA 98626  
 LABORATORY CONTACT: Greg Salanta  
 LABORATORY PHONE NUMBER: 360 577-7222

CLIENT INFORMATION:  
 CONTAINER PROPERTIES

GEOTRACKER REQUIRED  
 YES NO

SITE SPECIFIC GLOBAL ID NO.

**SAMPLERS (SIGNATURE):**

*Zanna Sade*

**ANALYSES**

DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
6/2/06	0923	NWC-1-1A	2oz jar	S					1	
0924		NWC-2-1A								
0927		NWC-3-1A								
		NWC-1-2A								
		NWC-2-2A								
		NWC-3-2A								
		NWC-1-3A								
		NWC-2-3A								
		NWC-3-3A								
		NWC-1-4A								
		NWC-2-4A								
		NWC-3-4A								
		NWC-1-5A								
		NWC-2-5A								
		NWC-3-5A								

RELINQUISHED BY: [Signature]  
 RECEIVED BY: [Signature]  
 DATE: 6/6/06  
 TIME: 1300  
 SIGNATURE: [Signature]  
 PRINTED NAME: Robert Shook  
 COMPANY: Geomatrix  
 SIGNATURE: [Signature]  
 PRINTED NAME: Mc Delivery  
 COMPANY: [Blank]

SAMPLING COMMENTS: hold pending analysis of primary composite samples.



One Union Square, 600 University Street, Suite 1020  
 Seattle, Washington 98101-4107  
 Tel: 206.342.1760 Fax 206.342.1761

1 2 3 4 5 6 7 8 9 10 11 12



**CHAIN-OF-CUSTODY RECORD**

PROJECT NAME: NW Corner - Foster Home Palace SEA 10114  
 PROJECT NUMBER: K0604601 PAGE 2 OF 79

DATE: 6/5/06  
 REPORTING REQUIREMENTS:

CLIENT INFORMATION:

LABORATORY NAME:  
 LABORATORY ADDRESS:  
 LABORATORY CONTACT:  
 LABORATORY PHONE NUMBER:

GEOTRACKER REQUIRED: YES NO  
 SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): Za J

**ANALYSES**

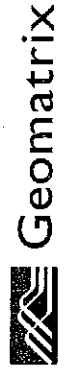
DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
6/2/06	1303	NWC-1-6A	2oz jar	S					1	
6/2/06	1305	NWC-2-6A								
6/2/06	1304	NWC-3-6A								
6/2/06	1339	NWC-1-7A								
6/2/06	13A1	NWC-2-7A								
6/2/06	13A3	NWC-3-7A								
6/5/06	0807	NWC-1-8A								
6/5/06	0809	NWC-2-8A								
6/5/06	0810	NWC-3-8A								
6/5/06	0838	NWC-1-9A								
6/5/06	0839	NWC-2-9A								
6/5/06	0839	NWC-3-9A								
6/5/06	0908	NWC-1-10A								
6/5/06	0909	NWC-2-10A								
6/5/06	0910	NWC-3-10A								

RELINQUISHED BY: DATE TIME RECEIVED BY: DATE TIME TOTAL NUMBER OF CONTAINERS:

SIGNATURE: Za J DATE: 6/5/06 TIME: 0715 SIGNATURE: See pg 1  
 PRINTED NAME: Robert Shockey  
 COMPANY: Mc Delivery  
 SIGNATURE:  
 PRINTED NAME:  
 COMPANY:

SIGNATURE: [Signature] DATE: 6/6/06 TIME: 1300  
 PRINTED NAME: [Name]  
 COMPANY: [Company]  
 SIGNATURE: [Signature]  
 PRINTED NAME: [Name]  
 COMPANY: [Company]

One Union Square, 600 University Street, Suite 1020  
 Seattle, Washington 98101-4107  
 Tel 206.342.1760 Fax 206.342.1761



Geomatrix

10604601 SEA 10115 PHA  
PAGE 3 OF 79

DATE: 6/5/06  
REPORTING REQUIREMENTS:

GEOTRACKER REQUIRED YES NO  
SITE SPECIFIC GLOBAL ID NO.

CLIENT INFORMATION:  
LABORATORY NAME:  
LABORATORY ADDRESS:

LABORATORY CONTACT:  
LABORATORY PHONE NUMBER:

RESULTS TO:  
TURNAROUND TIME:  
SAMPLE SHIPMENT METHOD:

ANALYSES

SAMPLERS (SIGNATURE):  
Za J

DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MSMSD	No. of Containers	ADDITIONAL COMMENTS
6/5/06	0915	NWC-1-11A	Zoogac.	S					1	
	0916	NWC-2-11A								
	0920	NWC-3-11A								
		NWC-1-12A								
		NWC-2-12A								
		NWC-3-12A								
	1004	NWC-1-13A								
	1006	NWC-2-13A								
	1009	NWC-3-13A								
	0858	NWC-1-14A								
	0857	NWC-2-14A								
	0859	NWC-3-14A								
	0826	NWC-1-15A								
	0827	NWC-2-15A								
	0829	NWC-3-15A								

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: Robert Sheehan  
COMPANY: GeoMatrix

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: M.C. Delivery  
COMPANY: M.C. Delivery

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: [Signature]  
COMPANY: [Signature]

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: [Signature]  
COMPANY: [Signature]

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: [Signature]  
COMPANY: [Signature]

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: [Signature]  
COMPANY: [Signature]

RECEIVED BY: [Signature]  
SIGNATURE: [Signature]  
PRINTED NAME: [Signature]  
COMPANY: [Signature]



One Union Square, 600 University Street, Suite 1020  
Seattle, Washington 98101-4107  
Tel 206.342.1760 Fax 206.342.1761

**CHAIN-OF-CUSTODY RECORD**

60604601  
SEA 10116  
PAGE 4 OF 79

PROJECT NAME: NW Corner Porter Phone Balance DATE: 6/5/06  
 PROJECT NUMBER: \_\_\_\_\_ REPORTING REQUIREMENTS: \_\_\_\_\_  
 RESULTS TO: \_\_\_\_\_  
 LABORATORY NAME: \_\_\_\_\_ CLIENT INFORMATION: \_\_\_\_\_  
 LABORATORY ADDRESS: \_\_\_\_\_  
 TURNAROUND TIME: \_\_\_\_\_  
 SAMPLE SHIPMENT METHOD: \_\_\_\_\_  
 LABORATORY CONTACT: \_\_\_\_\_  
 LABORATORY PHONE NUMBER: \_\_\_\_\_  
 GEOTRACKER REQUIRED: YES NO  
 SITE SPECIFIC GLOBAL ID NO. \_\_\_\_\_

SAMPLERS (SIGNATURE):		ANALYSES									
DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE		Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MSMSD	No. of Containers	ADDITIONAL COMMENTS
			2oz. jar		S						
40	6/5/06	0800	NWC-1-16A								
41	6/5/06	0801	NWC-2-16A								
42	6/5/06	0802	NWC-3-16A								
43	6/2/06	1324	NWC-1-17A								
44	6/2/06	1330	NWC-2-17A								
45	6/2/06	1331	NWC-3-17A								
46	6/2/06	1353	NWC-1-18A								
47	6/2/06	1355	NWC-2-18A								
48	6/2/06	1357	NWC-3-18A								
49	6/2/06	1140	NWC-1-19A								
50	6/2/06	1143	NWC-2-19A								
51	6/2/06	1145	NWC-3-19A								
52	6/2/06	1105	NWC-1-20A								
53	6/2/06	1107	NWC-2-20A								
54	6/2/06	1109	NWC-3-20A								

RECEIVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 PRINTED NAME: \_\_\_\_\_  
 COMPANY: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 PRINTED NAME: \_\_\_\_\_  
 COMPANY: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 PRINTED NAME: \_\_\_\_\_  
 COMPANY: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 PRINTED NAME: \_\_\_\_\_  
 COMPANY: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 PRINTED NAME: \_\_\_\_\_  
 COMPANY: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 PRINTED NAME: \_\_\_\_\_  
 COMPANY: \_\_\_\_\_

CHAIN-OF-CUSTODY RECORD

6004601

SEA 10117

PROJECT NAME: NW Corner Barber Shore Boulevard DATE: 6/5/06 PAGE 5 OF 7

PROJECT NUMBER: \_\_\_\_\_ REPORTING REQUIREMENTS: \_\_\_\_\_

RESULTS TO: \_\_\_\_\_

TURNAROUND TIME: \_\_\_\_\_

SAMPLE SHIPMENT METHOD: \_\_\_\_\_

LABORATORY NAME: \_\_\_\_\_ CLIENT INFORMATION: \_\_\_\_\_

LABORATORY ADDRESS: \_\_\_\_\_

LABORATORY CONTACT: \_\_\_\_\_

LABORATORY PHONE NUMBER: \_\_\_\_\_

GEOTRACKER REQUIRED: \_\_\_\_\_ YES \_\_\_\_\_ NO \_\_\_\_\_

SITE SPECIFIC GLOBAL ID NO. \_\_\_\_\_

SAMPLERS (SIGNATURE):		ANALYSES										ADDITIONAL COMMENTS				
DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers							
			metals for													
6/2/06	1024	NWC-1-21A	2oz. jar	S					1							
6/2/06	1025	NWC-2-21A														
6/2/06	1026	NWC-3-21A														
6/2/06	0948	NWC-1-22A														
6/2/06	0955	NWC-2-22A														
6/2/06	0958	NWC-3-22A														
6/2/06	0914	NWC-1-23A														
6/2/06	0915	NWC-2-23A														
6/2/06	0916	NWC-3-23A														
6/2/06	0831	NWC-1-24A														
6/2/06	0837	NWC-2-24A														
6/2/06	0838	NWC-3-24A														
6/2/06	0858	NWC-1-25A														
6/2/06	0900	NWC-2-25A														
6/2/06	0906	NWC-3-25A														

RECEIVED BY: \_\_\_\_\_ DATE: 6/6/06 TIME: 0715

SIGNATURE: [Signature]

PRINTED NAME: Robert Shook

COMPANY: Geomatrix

SIGNATURE: \_\_\_\_\_

PRINTED NAME: \_\_\_\_\_

COMPANY: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

PRINTED NAME: \_\_\_\_\_

COMPANY: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_


PRINTED NAME: \_\_\_\_\_

COMPANY: \_\_\_\_\_

TOTAL NUMBER OF CONTAINERS: \_\_\_\_\_

SAMPLING COMMENTS: See page 1

One Union Square, 600 University Street, Suite 1020  
 Seattle, Washington 98101-4107  
 Tel 206.342.1760 Fax 206.342.1761



Geomatrix

CHAIN-OF-CUSTODY RECORD

SEA 10118

PAGE 6 OF 79

DATE: 6/5/06  
 REPORTING REQUIREMENTS:

PROJECT NAME: Nid Corner - Farmer Stone - for sale  
 CLIENT INFORMATION:

LABORATORY NAME:  
 LABORATORY ADDRESS:  
 LABORATORY CONTACT:  
 LABORATORY PHONE NUMBER:

RESULTS TO:  
 TURNAROUND TIME:  
 SAMPLE SHIPMENT METHOD:  
 GEOTRACKER REQUIRED: YES NO  
 SITE SPECIFIC GLOBAL ID NO.

ANALYSES		CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
DATE	TIME								
6/2/06	0934	NWC-1-26A	S					1	
	0935	NWC-2-26A							
	0939	NWC-3-26A							
	1013	NWC-1-27A							
	1014	NWC-2-27A							
	1017	NWC-3-27A							
	1052	NWC-1-28A							
	1053	NWC-2-28A							
	1056	NWC-3-28A							
	1128	NWC-1-29A							
	1129	NWC-2-29A							
	1132	NWC-3-29A							
	1244	NWC-1-30A							
	1245	NWC-2-30A							
	1247	NWC-3-30A							

SAMPLERS (SIGNATURE):

*AS*

RECEIVED BY: *Robert Shook*  
 SIGNATURE: *[Signature]*  
 PRINTED NAME: Robert Shook  
 COMPANY: MC Delivery  
 SIGNATURE:  
 PRINTED NAME:  
 COMPANY:  
 SIGNATURE:  
 PRINTED NAME:  
 COMPANY:  
 SIGNATURE:  
 PRINTED NAME:  
 COMPANY:  
 SIGNATURE:  
 PRINTED NAME:  
 COMPANY:

DATE: 6/6/06  
 TIME: 13:00  
 TOTAL NUMBER OF CONTAINERS:  
 SAMPLING COMMENTS: See page 1



One Union Square, 600 University Street, Suite 1020  
 Seattle, Washington 98101-4107  
 Tel 206.342.1760 Fax 206.342.1761

70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84

10604601

CHAIN-OF-CUSTODY RECORD

SEA 10119

DATE: 6/5/06 PAGE 7 OF 79

PROJECT NAME: NW Corner - Former Rhone-Rodene  
 LABORATORY NAME: METALINK  
 LABORATORY ADDRESS: [Blank]  
 LABORATORY CONTACT: [Blank]  
 LABORATORY PHONE NUMBER: [Blank]

RESULTS TO: [Blank]  
 TURNAROUND TIME: [Blank]  
 SAMPLE SHIPMENT METHOD: [Blank]

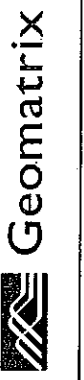
GEOTRACKER REQUIRED: YES NO  
 SITE SPECIFIC GLOBAL ID NO. [Blank]

SAMPLERS (SIGNATURE):		ANALYSES										CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MMS/MSD	No. of Containers	ADDITIONAL COMMENTS	
DATE	TIME	SAMPLE NUMBER																		
6/2/06	1316	NWC-1-31A																		
6/2/06	1317	NWC-2-31A																		
6/2/06	1318	NWC-3-31A																		
6/5/06	0751	NWC-1-32A																		
	0752	NWC-2-32A																		
	0755	NWC-3-32A																		
	0819	NWC-1-33A																		
	0820	NWC-2-33A																		
	0822	NWC-3-33A																		
	0849	NWC-1-34A																		
	0851	NWC-2-34A																		
	0853	NWC-3-34A																		
	0955	NWC-1-35A																		
	0957	NWC-2-35A																		
	1001	NWC-3-35A																		

RELINQUISHED BY: [Signature] DATE: 6/6/06  
 RECEIVED BY: [Signature] DATE: 6/6/06  
 SIGNATURE: [Signature] TIME: 0715  
 PRINTED NAME: Robert Shoelley  
 COMPANY: Geomatrix  
 SIGNATURE: [Signature]  
 PRINTED NAME: [Signature]  
 COMPANY: [Signature]

PRINTED NAME: [Blank]  
 COMPANY: [Blank]  
 SIGNATURE: [Blank]  
 PRINTED NAME: [Blank]  
 COMPANY: [Blank]

One Union Square, 600 University Street, Suite 1020  
 Seattle, Washington 98101-4107  
 Tel 206.342.1760 Fax 206.342.1761



CHAIN-OF-CUSTODY RECORD  
 PROJECT NAME: NW Corner Farmer Shore Boulevard SEA 10120  
 PROJECT NUMBER: 615106 PAGE 8 OF 9  
 DATE: 6/5/06

REPORTING REQUIREMENTS:  
 CLIENT INFORMATION:  
 LABORATORY NAME:  
 LABORATORY ADDRESS:  
 LABORATORY PHONE NUMBER:  
 LABORATORY CONTACT:  
 LABORATORY PHONE NUMBER:  
 GEOTRACKER REQUIRED: YES NO  
 SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):		ANALYSES											
DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE										
6/5/06	0930	NWC-1-36A	202 jar										
0932		NWC-2-36A											
0934		NWC-3-36A											
1019		NWC-1-37A											
1020		NWC-2-37A											
1021		NWC-3-37A											
1024		NWC-1-38A											
1020		NWC-2-38A											
1032		NWC-3-38A											
1059		NWC-1-40A											
1100		NWC-2-40A											
1101		NWC-3-40A											
1106		NWC-1-A1A											
1108		NWC-2-A1A											
1110		NWC-3-A1A											

RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME	TOTAL NUMBER OF CONTAINERS:
<i>[Signature]</i>		<i>[Signature]</i>	6/6/06	1
PRINTED NAME: <u>Robert Shackley</u>	6/6/06 705	PRINTED NAME: <u>Robert Shackley</u>	6/6/06	SAMPLING COMMENTS: <u>See page 1</u>
COMPANY: <u>Geomatrix</u>		COMPANY: <u>Mc Delivery</u>		
SIGNATURE:		SIGNATURE:		
PRINTED NAME:		PRINTED NAME:		
COMPANY:		COMPANY:		
SIGNATURE:		SIGNATURE:		
PRINTED NAME:		PRINTED NAME:		
COMPANY:		COMPANY:		

One Union Square, 600 University Street, Suite 1020  
 Seattle, Washington 98101-4107  
 Tel 206.342.1760 Fax 206.342.1761  
**Geomatrix**

CHAIN-OF-CUSTODY RECORD

K0604601

SEA 10121

DATE: 6/5/06 PAGE 9 OF 9

PROJECT NAME: NW Corner - Former Chase Bolene

CLIENT INFORMATION:

LABORATORY NAME:

LABORATORY ADDRESS:

LABORATORY CONTACT:

LABORATORY PHONE NUMBER:

RESULTS TO:

TURNAROUND TIME:

SAMPLE SHIPMENT METHOD:

GEOTRACKER REQUIRED

YES NO

SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

Za S

ANALYSES

DATE	TIME	SAMPLE NUMBER
6/5/06	1118	NWC-1-A2A
6/5/06	1120	NWC-2-A2A
6/5/06	1122	NWC-3-A2A

CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
202 gal	S						
<del>245 6/6/06</del>							

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	TOTAL NUMBER OF CONTAINERS:	SAMPLING COMMENTS:
<i>[Signature]</i> Lana Sattenuku Geomatrix	6/6/06	1300	<i>[Signature]</i> Robert Shoddy McDelivery	6/6/06	0715		see page 1.



One Union Square, 600 University Street, Suite 1020  
Seattle, Washington 98101-4107  
Tel 206.342.1760 · Fax 206.342.1761



Columbia Analytical Services Inc.  
Cooler Receipt and Preservation Form

PC Greg

Project/Client GEOMATRIX Service Request K06 4601

Cooler received on 6/6/6 and opened on 6/6/6 by Ag

1. Were custody seals on outside of coolers? MCD Y  N  
If yes, how many and where? \_\_\_\_\_
2. Were custody seals intact? ~~Y~~ N
3. Were signature and date present on the custody seals? ~~Y~~ N
4. Is the shipper's airbill available and filed? If no, record airbill number: \_\_\_\_\_  N
5. COC# \_\_\_\_\_
- Temperature of cooler(s) upon receipt: (°C) 

5.4	3.5	3.7	4.4	3.5
5.1	2.6	2.1	N/A	5.8
- Temperature Blank: (°C) \_\_\_\_\_
- Were samples hand delivered on the same day as collection? ~~Y~~ N
6. Were custody papers properly filled out (ink, signed, etc.)?  N
7. Type of packing material present FOAM, CARDBOARD, ICE
8. Did all bottles arrive in good condition (unbroken)?  N
9. Were all bottle labels complete (i.e analysis, preservation, etc.)?  N
10. Did all bottle labels and tags agree with custody papers?  N
11. Were the correct types of bottles used for the tests indicated?  N
12. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y~~ N
13. Were VOA vials checked for absence of air bubbles, and if present, noted below?  N
14. Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below? ~~Y~~ N
15. Did the bottles originate from CAS/K or a branch laboratory? Y  N
16. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? ~~Y~~ N
17. Was C12/Res negative? ~~Y~~ N

Explain any discrepancies: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESOLUTION: \_\_\_\_\_

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

## **Metals**

METALS

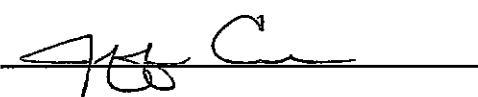
- Cover Page -  
INORGANIC ANALYSIS DATA PACKAGE

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
 Project No.: 8769.005/4  
 Project Name: Former RP site

Sample No.	Lab Sample ID.
NWC-2-1A	K0604601-002
NWC-2-1AD	K0604601-002D
NWC-2-1AS	K0604601-002S
NWC-2-3A	K0604601-005
NWC-2-4A	K0604601-008
NWC-2-5A	K0604601-011
NWC-2-6A	K0604601-014
NWC-2-7A	K0604601-017
NWC-1-8A	K0604601-019
NWC-2-8A	K0604601-020
NWC-2-9A	K0604601-023
NWC-2-10A	K0604601-026
NWC-2-11A	K0604601-029
NWC-2-11AD	K0604601-029D
NWC-2-11AS	K0604601-029S
NWC-1-13A	K0604601-031
NWC-2-13A	K0604601-032
NWC-2-14A	K0604601-035
NWC-2-15A	K0604601-038
NWC-1-16A	K0604601-040
NWC-2-16A	K0604601-041
NWC-2-17A	K0604601-044
NWC-2-18A	K0604601-047

Were ICP interelement corrections applied? Yes/No YES  
 Were ICP background corrections applied? Yes/No YES  
 If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature: 

Date: 6/22/06

METALS

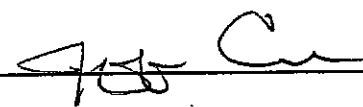
- Cover Page -  
INORGANIC ANALYSIS DATA PACKAGE

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
 Project No.: 8769.005/4  
 Project Name: Former RP site

Sample No.	Lab Sample ID.
NWC-2-19A	K0604601-050
NWC-2-20A	K0604601-053
NWC-2-20AD	K0604601-053D
NWC-2-20AS	K0604601-053S
NWC-2-21A	K0604601-056
NWC-2-22A	K0604601-059
NWC-2-23A	K0604601-062
NWC-2-24A	K0604601-065
NWC-2-25A	K0604601-068
NWC-2-26A	K0604601-071
NWC-2-27A	K0604601-074
NWC-2-28A	K0604601-077
NWC-2-29A	K0604601-080
NWC-2-30A	K0604601-083
NWC-2-30AD	K0604601-083D
NWC-2-30AS	K0604601-083S
NWC-2-31A	K0604601-086
NWC-1-32A	K0604601-088
NWC-2-32A	K0604601-089
NWC-2-33A	K0604601-092
NWC-2-34A	K0604601-095
NWC-1-35A	K0604601-097
NWC-2-35A	K0604601-098

Were ICP interelement corrections applied? Yes/No YES  
 Were ICP background corrections applied? Yes/No YES  
 If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature: 

Date: 6/22/06

METALS

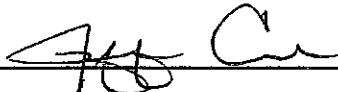
- Cover Page -  
INORGANIC ANALYSIS DATA PACKAGE

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
 Project No.: 8769.005/4  
 Project Name: Former RP site

Sample No.	Lab Sample ID.
NWC-1-36A	K0604601-100
NWC-2-36A	K0604601-101
NWC-1-37A	K0604601-103
NWC-1-37AD	K0604601-103D
NWC-1-37AS	K0604601-103S
NWC-2-37A	K0604601-104
NWC-1-38A	K0604601-106
NWC-2-38A	K0604601-107
NWC-1-40A	K0604601-109
NWC-2-40A	K0604601-110
NWC-1-41A	K0604601-112
NWC-2-41A	K0604601-113
NWC-1-42A	K0604601-115
NWC-2-42A	K0604601-116
Method Blank	K0604601-MB
Method Blank 2	K0604601-MB2
Method Blank 3	K0604601-MB3

Were ICP interelement corrections applied? Yes/No YES  
 Were ICP background corrections applied? Yes/No YES  
 If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature: 

Date: 6/22/20

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-1A

Lab Code: K0604601-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	14.7		*

J

% Solids: NA

Comments:

TG  
7/13/06

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-3A

Lab Code: K0604601-005

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	17.1		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-4A

Lab Code: K0604601-008

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	180		*

% Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-5A

Lab Code: K0604601-011

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	15.8		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-6A

Lab Code: K0604601-014

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	36.9		*

‡ Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-7A

Lab Code: K0604601-017

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	16.6		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/05/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-1-8A

Lab Code: K0604601-019

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	94.8		*

% Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/05/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-9A

Lab Code: K0604601-023

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	24.2		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-10A

Lab Code: K0604601-026

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	39.7		*

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
Project No.: 8769.005/4  
Project Name: Former RP site  
Matrix: SOIL

Service Request: K0604601  
Date Collected: 06/05/06  
Date Received: 06/07/06  
Units: MG/KG  
Basis: Wet

Sample Name: NWC-2-11A

Lab Code: K0604601-029

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.79	0.24	20	6/16/06	6/19/06	32.9		*

\* Solids: NA

Comments:





METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-13A

Lab Code: K0604601-032

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	23.0		*

% Solids: NA

Comments:

METALS  
-1-  
INORGANIC ANALYSIS DATA SHEET

Client:	Geomatrix Consultants, Incorporated	Service Request:	K0604601
Project No.:	8769.005/4	Date Collected:	06/05/06
Project Name:	Former RP site	Date Received:	06/07/06
Matrix:	SOIL	Units:	MG/KG
		Basis:	Wet

Sample Name: NWC-2-14A

Lab Code: K0604601-035

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	20.3		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/05/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-15A

Lab Code: K0604601-038

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	3.85	1.15	100	6/16/06	6/19/06	591		*

‡ Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client:	Geomatrix Consultants, Incorporated	Service Request:	K0604601
Project No.:	8769.005/4	Date Collected:	06/05/06
Project Name:	Former RP site	Date Received:	06/07/06
Matrix:	SOIL	Units:	MG/KG
		Basis:	Wet

Sample Name: NWC-1-16A

Lab Code: K0604601-040

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.33	0.10	10	6/16/06	6/19/06	89.4		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-16A

Lab Code: K0604601-041

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	137		*

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-17A

Lab Code: K0604601-044

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	39.8		*

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-18A

Lab Code: K0604601-047

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.77	0.23	20	6/16/06	6/19/06	31.3		*

\* Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-19A

Lab Code: K0604601-050

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.38	0.11	10	6/16/06	6/19/06	23.8		*

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-20A

Lab Code: K0604601-053

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	45.5		N

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-21A

Lab Code: K0604601-056

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	39.8		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-22A

Lab Code: K0604601-059

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	45.6		N

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-23A

Lab Code: K0604601-062

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	20.00	6.00	500	6/16/06	6/19/06	4190		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-24A

Lab Code: K0604601-065

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	15.1		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-25A

Lab Code: K0604601-068

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	19.4		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-26A

Lab Code: K0604601-071

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	22.0		N

\* Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-27A

Lab Code: K0604601-074

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	25.5		N

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-28A

Lab Code: K0604601-077

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	13.1		N

‡ Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-29A

Lab Code: K0604601-080

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	19.8		N

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/02/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-2-30A

Lab Code: K0604601-083

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	28.0		N

J-

% Solids: NA

Comments:

TG  
7/13/06

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/02/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-31A

Lab Code: K0604601-086

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	50.8		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
Project No.: 8769.005/4  
Project Name: Former RP site  
Matrix: SOIL

Service Request: K0604601  
Date Collected: 06/05/06  
Date Received: 06/07/06  
Units: MG/KG  
Basis: Wet

Sample Name: NWC-1-32A

Lab Code: K0604601-088

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	7.92	2.38	200	6/16/06	6/19/06	1500		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-32A

Lab Code: K0604601-089

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	64.0		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-33A

Lab Code: K0604601-092

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	36.1		N

\* Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-34A

Lab Code: K0604601-095

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	23.0		N

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/05/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-1-35A

Lab Code: K0604601-097

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	7.62	2.29	200	6/16/06	6/19/06	1330		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-35A

Lab Code: K0604601-098

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	22.9		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-1-36A

Lab Code: K0604601-100

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	4.00	1.20	100	6/16/06	6/19/06	820		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
Project No.: 8769.005/4  
Project Name: Former RP site  
Matrix: SOIL

Service Request: K0604601  
Date Collected: 06/05/06  
Date Received: 06/07/06  
Units: MG/KG  
Basis: Wet

Sample Name: NWC-2-36A

Lab Code: K0604601-101

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	32.2		N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-1-37A

Lab Code: K0604601-103

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	19.80	5.94	500	6/16/06	6/19/06	3880		

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-37A

Lab Code: K0604601-104

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	85.4		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-1-38A

Lab Code: K0604601-106

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	39.20	11.80	1000	6/16/06	6/19/06	7750		

% Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-38A

Lab Code: K0604601-107

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	20.9		

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-1-40A

Lab Code: K0604601-109

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	19.40	5.83	500	6/16/06	6/19/06	3110		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-40A

Lab Code: K0604601-110

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	91.7		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: 8769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/05/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-1-41A

Lab Code: K0604601-112

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	3.85	1.15	100	6/16/06	6/19/06	598		

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-41A

Lab Code: K0604601-113

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.40	0.12	10	6/16/06	6/19/06	96.9		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated  
 Project No.: B769.005/4  
 Project Name: Former RP site  
 Matrix: SOIL

Service Request: K0604601  
 Date Collected: 06/05/06  
 Date Received: 06/07/06  
 Units: MG/KG  
 Basis: Wet

Sample Name: NWC-1-42A

Lab Code: K0604601-115

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	3.77	1.13	100	6/16/06	6/19/06	957		

\* Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected: 06/05/06

Project Name: Former RP site

Date Received: 06/07/06

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: NWC-2-42A

Lab Code: K0604601-116

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.39	0.12	10	6/16/06	6/19/06	187		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected:

Project Name: Former RP site

Date Received:

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: Method Blank

Lab Code: K0604601-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.20	0.06	5	6/16/06	6/19/06	0.12	B	*

\* Solids: NA

Comments:



METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected:

Project Name: Former RP site

Date Received:

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: Method Blank 2

Lab Code: K0604601-MB2

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.20	0.06	5	6/16/06	6/19/06	0.09	B	N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Date Collected:

Project Name: Former RP site

Date Received:

Matrix: SOIL

Units: MG/KG

Basis: Wet

Sample Name: Method Blank 3

Lab Code: K0604601-MB3

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Copper	6020	0.20	0.06	5	6/16/06	6/19/06	0.10	B	

% Solids: NA

Comments:

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration				Method	
	True	Found	%R(1)	True	Found	%R(1)	Found		%R(1)
Copper	12.5	12.7	102	25.0	24.8	99	24.7	99	6020

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration				Method	
	True	Found	%R(1)	True	Found	%R(1)	Found		%R(1)
Copper				25.0	24.9	99	24.7	99	6020

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Copper				25.0	24.9	100	24.7	99	6020

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration				Method	
	True	Found	%R(1)	True	Found	%R(1)	Found		%R(1)
Copper				25.0	24.9	99	25.4	102	6020

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Copper				25.0	25.1	100	25.1	100	6020

METALS

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration				Method	
	True	Found	%R(1)	True	Found	%R(1)	Found		%R(1)
Copper				25.0	24.6	98			6020



METALS

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

Concentration Units: ug/l

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
	True	Found	%R	True	Found	%R	Found	%R
Copper				0.20	0.26	131		

METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
	C	U	1 C	1 U	2 C	2 U	3 C	3 U		
Copper	0.12	U	0.12	U	0.12	U	0.12	U		6020

METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
			1	C	2	C	3	C		
Copper			0.12	U	0.12	U	0.12	U		6020

METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	Method
			1	C	2	C	3	C			
Copper			0.12	U	0.36	B	0.25	B			6020

METALS

- 3 -

BLANKS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank C	Method
			1	C	2	C	3	C		
Copper			0.12	U	0.12	U				6020

METALS

-4-

ICP INTERFERENCE CHECK SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICP ID Number: X Series

ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Copper		20	0.25	22.0	110			

METALS

- 5a -

SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
 Project No.: 8769.005/4 Units: mg/kg  
 Project Name: Former RP site Basis: Wet  
 Matrix: SOIL % Solids: NA

Sample Name: NWC-1-37AS

Lab Code: K0604601-103S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Copper		1540	3880	47.2	4958		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

-5a-

SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-11AS

Lab Code: K0604601-029S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Copper	52 - 153	68.8	32.9	47.2	76		6020

An empty field in the Control Limit column indicates the control limit is not applicable.



METALS  
 - 5a -  
 SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-1AS

Lab Code: K0604601-002S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Copper	52 - 153	64.1		14.7		48.1	103		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

- 5a -

SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-20AS

Lab Code: K0604601-053S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Copper	52 - 153	91.8		45.5		47.6	97		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

- 5a -

SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-30AS

Lab Code: K0604601-083S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Copper	52 - 153	30.5	28.0	48.1	5	N	6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

- 5b -

POST DIGEST SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: ug/L  
 Project Name: Former RP site  
 Matrix: SOIL

Sample Name: NWC-2-1AA

Lab Code: K0604601-002A

Analyte	Control Limit %R	Spiked Sample Result (SSR)      C	Sample Result (SR)      C	Spike Added (SA)	%R	Q	M
Copper	75-125	32.5	15.3	20.0	86		MS

Comments: \_\_\_\_\_

METALS

- 5b -

POST DIGEST SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
 Project No.: 8769.005/4 Units: ug/L  
 Project Name: Former RP site  
 Matrix: SOIL

Sample Name: NWC-2-20AA

Lab Code: K0604601-053A

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Copper	75-125	64.7	47.4	20.0	86		MS

Comments:

METALS

- 5b -

POST DIGEST SPIKE SAMPLE RECOVERY

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Units: ug/L

Project Name: Former RP site

Matrix: SOIL

Sample Name: NWC-2-38AA

Lab Code: K0604601-107A

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Copper	75-125	37.5	20.9	20.0	83		MS

Comments:

METALS

- 6 -

DUPLICATES

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Units: mg/kg

Project Name: Former RP site

Basis: Wet

Matrix: SOIL

% Solids: NA

Sample Name: NWC-1-37AD

Lab Code: K0604601-103D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Copper	30	3880		3610		7		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS  
- 6 -  
DUPLICATES

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
Project No.: 8769.005/4      Units: mg/kg  
Project Name: Former RP site      Basis: Wet  
Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-11AD

Lab Code: K0604601-029D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Copper	30	32.9		36.5		10		6020

An empty field in the Control Limit column indicates the control limit is not applicable.



METALS

- 6 -

DUPLICATES

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-1AD

Lab Code: K0604601-002D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Copper	30	14.7		23.8		47	*	6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

- 6 -

DUPLICATES

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-20AD

Lab Code: K0604601-053D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Copper	30	45.5		38.0		18		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

- 6 -

DUPLICATES

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: mg/kg  
 Project Name: Former RP site      Basis: Wet  
 Matrix: SOIL      % Solids: NA

Sample Name: NWC-2-30AD

Lab Code: K0604601-083D

Analyte	Control Limit (%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Copper	30	28.0		22.9		20		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

METALS

-7-

LABORATORY CONTROL SAMPLE

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4  
 Project Name: Former RP site

Aqueous LCS Source: Inorganic Ventures      Solid LCS Source: ERA Lot #D045540

Analyte	Aqueous mg/L			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Copper				67.0	68.1		53.8	80.2	102

METALS

- 7 -

LABORATORY CONTROL SAMPLE

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source: ERA Lot #D045540

Analyte	Aqueous mg/L			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Copper				67.0	69.3		53.8	80.2	103

METALS

- 7 -

LABORATORY CONTROL SAMPLE

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4  
 Project Name: Former RP site

Aqueous LCS Source: Inorganic Ventures      Solid LCS Source: ERA Lot #D045540

Analyte	Aqueous mg/L			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Copper				67.0	64.7		53.8	80.2	96

METALS

- 9 -

ICP SERIAL DILUTIONS

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
Project No.: 8769.005/4 Units: ug/L  
Project Name: Former RP site

Sample Name: NWC-2-1AL

Lab Code: K0604601-002L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ-	Q	Method
Copper	15.3	12.3	19	E	6020

METALS

- 9 -

ICP SERIAL DILUTIONS

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
 Project No.: 8769.005/4      Units: ug/L  
 Project Name: Former RP site

Sample Name: NWC-2-20AL

Lab Code: K0604601-053L

Analyte	Initial Sample Result (I)      C	Serial Dilution Result (S)      C	% Differ-	Q	Method
Copper	47.4	57.0	20	E	6020



METALS

- 9 -

ICP SERIAL DILUTIONS

Client: Geomatrix Consultants, Incorporated Service Request: K0604601  
 Project No.: 8769.005/4 Units: ug/L  
 Project Name: Former RP site

Sample Name: NWC-2-38AL

Lab Code: K0604601-107L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ-	Q	Method
Copper	20.9	22.1	6		6020

METALS

-10-

METHOD DETECTION LIMITS

Client: Geomatrix Consultants, Incorporated

Service Request: K0604601

Project No.: 8769.005/4

Project Name: Former RP site

ICP/ICP-MS ID #: X Series

GFAA ID #:

AA ID #:

Analyte	Mass	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Copper	65		0.40	0.12	6020

Comments

---

---

---

METALS

-12-

ICP LINEAR RANGES (QUARTERLY)

Client: Geomatrix Consultants, Incorporated      Service Request: K0604601  
Project No.: 8769.005/4  
Project Name: Former RP site

ICP ID Number: X Series

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Copper	15.00	400.0	6020

Comments: \_\_\_\_\_

# **APPENDIX D**

---

## **Site Photographs – Excavation**



1. 7/20/06 – NWC boring NWC-X-39, prior to excavation, looking northwest.



3. Northwest corner of NWC excavation, looking northwest, showing deeper excavation to 5 feet.



2. 7/20/06 – Excavation of upper 2 feet, looking northeast. Note barrier wall on right.



4. Excavation, looking northeast from southwest corner. Note areas of deeper excavation to 5 feet. Note barrier wall on east side of excavation.



APPENDIX D  
Northwest Corner Affected Soil Removal Report  
Former Rhone-Poulenc Site  
Tukwila, Washington

Project No.  
8769

Page  
1 of 3



5. 7/21/06 – Excavation looking southeast from northwest corner. Note barrier wall on east side of excavation.



6. 7/21/06 – Excavation complete to 5 feet, looking northeast. Concrete pile in left foreground.



7. 7/21/06 – Stockpiled soil from NWC excavation (to be disposed of off site).



APPENDIX D  
 Northwest Corner Affected Soil Removal Report  
 Former Rhone-Poulenc Site  
 Tukwila, Washington

Project No.  
 8769

Page  
**2 of 3**



8. 7/21/06 – NWC after excavation and backfill.



9. 7/21/06 – Backfill and compaction of northwest corner using vibratory roller.



APPENDIX D  
Northwest Corner Affected Soil Removal Report  
Former Rhone-Poulenc Site  
Tukwila, Washington

Project No.  
8769

Page  
**3 of 3**

# **APPENDIX E**

---

## **MTCA Cleanup Criteria Calculations**



**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/1/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RfD<sub>o</sub></i>	6.00E-02	mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>		kg-day/mg
Inhalation Reference Dose:	<i>RfD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others); for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"); for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"); for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"); for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults); for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults); for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	4.900E+03	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	6.400E-03	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of <i>H<sub>cc</sub></i> @13 °C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
	<i>H<sub>cc</sub></i>	0.000E+00	atm.m <sup>3</sup> /mol
			unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g. within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 4.200E+00 mg/l

C<sub>w</sub> 9.90E+02 ug/l

n 0.43 unitless

θ<sub>w</sub> 0.3 unitless

θ<sub>a</sub> 0.13 unitless

ρ<sub>b</sub> 1.5 kg/l

f<sub>oc</sub> 0.00256 unitless

DF 20 unitless

VAF unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: Acenaphthylene

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	2.523E+02	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.523E+02	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

C<sub>sat</sub> corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

Soil Saturation Limit, $C_{sat}$ :	5.353E+01	mg/kg
Retardation Factor, $R$ :	44.8	unitless

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use		Method C Industrial Land Use	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil	@HQ=1.0	N/A	2.100E+05	N/A
	CUL? mg/kg	@RISK = 1.0E-6 or 1.0E-5	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK = 1.0E-6		
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Ground Water CUL? mg/kg	ug/l	9.900E+02		
	Target Soil CUL? mg/kg		2.523E+02		
<b>Protection of Air Quality (for informational purpose only)</b>			Method C @ HQ=1.0; RISK = 1.0E-6		
	Under the Current Condition	Predicted Air Conc? @ Exposure Point ug/m <sup>3</sup>	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Air CUL? ug/m <sup>3</sup>	@ HQ=1.0	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A
		@ HQ=1.0	N/A	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

*Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.*

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RfD<sub>o</sub></i>	3.00E-01	mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>		kg-day/mg
Inhalation Reference Dose:	<i>RfD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	2.300E+04	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	2.700E-03	unitless
<i>*If the value for Henry's Law Constant is given in the unit of "atm.m<sup>3</sup>/mol", enter value here:</i>	<i>H</i>		atm.m <sup>3</sup> /mol
<i>*Converted unitless form of <i>H<sub>cc</sub></i> @13° C: (Enter this converted value into "H<sub>cc</sub> input Box" above for a calculation)</i>	<i>H<sub>cc</sub></i>	0.000E+00	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

$S$   mg/l

$C_w$   ug/l

$n$   unitless

$\theta_w$   unitless

$\theta_a$   unitless

$\rho_b$   kg/l

$f_{oc}$   unitless

$DF$   unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: Anthracene

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	4.726E+04	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	4.726E+04	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{set}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	2.540E+00	mg/kg
Retardation Factor, $R$ :	206.4	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use		Method C Industrial Land Use	
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	Ingestion only	Ingestion & Dermal	Ingestion & Dermal
	Target Soil CUL? mg/kg	RISK? @ Exposure Point	N/A	N/A	N/A
		@HQ=1.0	N/A	N/A	N/A
		@RISK = 1.0E-6 or 1.0E-5	2.400E+04	1.050E+06	N/A
<b>Protection of Potable Ground Water</b>	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
	Target Ground Water CUL? ug/l	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	Target Ground Water CUL? ug/l	4.000E+04	4.726E+04	
<b>Protection of Air Quality (for informational purpose only)</b>	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @ Exposure Point	N/A		
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A	N/A
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	
	@ HQ=1.0	N/A	N/A	N/A	
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

*Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.*

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:			
Oral Carcinogenic Potency Factor:			
Inhalation Reference Dose:			
Inhalation Carcinogenic Potency Factor:			
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	3.600E+05	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	1.400E-04	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of <i>H<sub>cc</sub></i> @13°C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
	<i>H<sub>cc</sub></i>	0.000E+00	atm.m <sup>3</sup> /mol
			unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the *Ground Water Cleanup Level Worksheet* are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"); for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 9.400E-03 mg/l

C<sub>w</sub> 1.80E-02 ug/l

n 0.43 unitless

θ<sub>w</sub> 0.3 unitless

θ<sub>a</sub> 0.13 unitless

ρ<sub>b</sub> 1.5 kg/l

f<sub>oc</sub> 0.00256 unitless

DF 20 unitless

VAF [ ] unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: Benzo(a)anthracene

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.318E-01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.318E-01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

C<sub>sat</sub> corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

Soil Saturation Limit,  $C_{sat}$ : 8.665E+00 mg/kg  
 Retardation Factor,  $R$ : 3,215.9 unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway					
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5			
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A
	Target Soil	RISK? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A
	CUL? mg/kg	@HQ=1.0	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A
		@RISK =1.0E-6 or 1.0E-5	1.370E-01	Ingestion only	1.798E+01	Ingestion & Dermal	N/A
<b>Protection of Potable Ground Water</b>	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A				
	Target Ground Water	CUL? ug/l	1.800E-02				
	Target Soil	CUL? mg/kg	3.318E-01				
			Method B @ HQ=1.0; RISK =1.0E-6 @ HQ=1.0; RISK =1.0E-5				
<b>Protection of Air Quality (for informational purpose only)</b>	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @ Exposure Point	N/A				
	Target Air	CUL? ug/m <sup>3</sup>	N/A				
	Target Soil	CUL? mg/kg	N/A				
			Method B @ HQ=1.0; RISK =1.0E-6 @ HQ=1.0; RISK =1.0E-5				

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :			
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:			
Oral Carcinogenic Potency Factor:			
Inhalation Reference Dose:			
Inhalation Carcinogenic Potency Factor:			
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	1.200E+06	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	4.600E-03	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of <i>H<sub>cc</sub></i> @13 ° C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
		0.000E+00	atm.m <sup>3</sup> /mol
			unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 1.500E-03 mg/l

$C_w$  1.80E-02 ug/l

$n$  0.43 unitless

$\theta_w$  0.3 unitless

$\theta_a$  0.13 unitless

$\rho_b$  1.5 kg/l

$f_{oc}$  0.00256 unitless

$DF$  20 unitless

VAF unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: Benzo(b)fluoranthene

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.106E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.106E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	4.608E+00	mg/kg
Retardation Factor, $R$ :	10,717.3	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
	Target Soil	RISK? @ Exposure Point	N/A	N/A	N/A
	CUL? mg/kg	@HQ=1.0	N/A	N/A	N/A
		@RISK =1.0E-6 or 1.0E-5	1.370E-01	N/A	1.798E+01
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
	Target Ground Water CUL? .ug/l	HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Soil CUL? mg/kg		1.800E-02		
			1.106E+00		
<b>Protection of Air Quality (for informational purpose only)</b>			Method C @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @ Exposure Point	N/A		
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A	
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A	
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:	$C_s$		mg/kg
Natural Background Concentration for Soil:	$NB_s$		mg/kg
Practical Quantitation Limit for Soil:	$PQL_s$		mg/kg
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$		mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$	7.30E+00	kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	1.200E+06	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	3.400E-05	unitless
<i>*If the value for Henry's Law Constant is given in the unit of "atm.m<sup>3</sup>/mol", enter value here:</i>	$H$		atm.m <sup>3</sup> /mol
<i>*Converted unitless form of <math>H_{cc}</math> @13° C: (Enter this converted value into "H<sub>cc</sub> input Box" above for a calculation)</i>	$H_{cc}$	0.000E+00	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the *Ground Water Cleanup Level Worksheet* are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

$S$   mg/l

$C_w$   ug/l

$n$   unitless

$\theta_w$   unitless

$\theta_a$   unitless

$\rho_b$   kg/l

$f_{oc}$   unitless

$DF$   unitless

$VAF$   unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

**Chemical of Concern:** Benzo(k)fluoranthene

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.106E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.106E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	2.458E+00	mg/kg
Retardation Factor, $R$ :	10,717.3	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil	@HQ=1.0	N/A	N/A	N/A
	CUL? mg/kg	@RISK =1.0E-6 or 1.0E-5	1.370E-01	1.798E+01	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Ground Water	CUL? ug/l	1.800E-02		
	Target Soil	CUL? mg/kg	1.106E+00		
<b>Protection of Air Quality (for informational purpose only)</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5
	Under the Current Condition	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Air	CUL? ug/m <sup>3</sup>	@ HQ=1.0	N/A	N/A
	Target Soil	CUL? mg/kg	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A
		@ HQ=1.0	N/A	N/A	
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General Information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RfD<sub>o</sub></i>	2.00E-02	mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>	1.40E-02	kg-day/mg
Inhalation Reference Dose:	<i>RfD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	1.100E+05	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	4.200E-06	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here.			
*Converted unitless form of <i>H<sub>cc</sub></i> @13°C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
	<i>H<sub>cc</sub></i>	0.000E+00	atm.m <sup>3</sup> /mol

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**S** 3.400E-01 mg/l

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

$n$	0.43	unitless
$\theta_w$	0.3	unitless
$\theta_a$	0.13	unitless
$\rho_b$	1.5	kg/l
$f_{oc}$	0.00256	unitless
$DF$	20	unitless

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

**VAF**  unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

**Chemical of Concern: Bis(2-ethylhexyl)phthalate**

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.240E+01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.240E+01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit,  $C_{sat}$ : 9.581E+01 mg/kg  
 Retardation Factor,  $R$ : 983.3 unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	RISK? @ Exposure Point	N/A	N/A	N/A
		@HQ=1.0	1.600E+03	7.000E+04	N/A
	@RISK =1.0E-6 or 1.0E-5	7.143E+01	N/A	9.375E+03	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
	Target Ground Water CUL? ug/l	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	Target Ground Water CUL? ug/l	2.200E+00		1.240E+01
	Target Soil CUL? mg/kg	Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5	
<b>Protection of Air Quality (for informational purpose only)</b>	Under the Current Condition	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A		
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A
	@ HQ=1.0	N/A	N/A	N/A	
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for AF, ABS <sub>d</sub> , GI:	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	R <sub>FD</sub> <sub>o</sub>	2.00E-01	mg/kg-day
Oral Carcinogenic Potency Factor:	CPF <sub>o</sub>		kg-day/mg
Inhalation Reference Dose:	R <sub>FD</sub> <sub>i</sub>	2.00E-01	mg/kg-day
Inhalation Carcinogenic Potency Factor:	CPF <sub>i</sub>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	INH	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	ABS <sub>i</sub>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	ABI	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	AF	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	ABS <sub>d</sub>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	GI		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter K <sub>d</sub> value here and enter "1" for f <sub>oc</sub> value	K <sub>oc</sub>	1.400E+04	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	H <sub>cc</sub>	5.200E-05	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:	H		atm.m <sup>3</sup> /mol
*Converted unitless form of H <sub>cc</sub> @13 °C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)	H <sub>cc</sub>	0.000E+00	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the *Ground Water Cleanup Level Worksheet* are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* *Vapor Attenuation Factor* is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 2.700E+00 mg/l

$C_w$  1.90E+03 ug/l

$n$  0.43 unitless

$\theta_w$  0.3 unitless

$\theta_a$  0.13 unitless

$\rho_b$  1.5 kg/l

$f_{oc}$  0.00256 unitless

$DF$  20 unitless

VAF unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: Butyl benzyl phthalate

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.370E+03	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.370E+03	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	9.731E+01	mg/kg
Retardation Factor, $R$ :	126.0	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway					
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5			
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A
	Target Soil CUL? mg/kg	RISK? @ Exposure Point	N/A	Ingestion & Dermal	N/A	Ingestion only	N/A
		@HQ=1.0	1.600E+04	N/A	7.000E+05	N/A	N/A
		@RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A				
	Target Ground Water CUL? ug/l	HQ? @ Exposure Point	N/A	N/A			
		RISK? @ Exposure Point	N/A	N/A			
	Target Soil CUL? mg/kg	Target Ground Water CUL? mg/kg	1.900E+03	1.370E+03			
<b>Protection of Air Quality (for informational purpose only)</b>	Under the Current Condition	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A				
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A			
		RISK? @ Exposure Point	N/A	N/A			
	Target Soil CUL? mg/kg	@ HQ=1.0	3.200E+02	7.000E+02			
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A				
	@ HQ=1.0	0.000E+00	0.000E+00				
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A				

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:		Chrysene	
Measured Soil Concentration, if any:	$C_s$		mg/kg
Natural Background Concentration for Soil:	$NB_s$		mg/kg
Practical Quantitation Limit for Soil:	$PQL_s$		mg/kg
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$		mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$	7.30E+00	kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	4.000E+05	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	3.900E-03	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here.			
*Converted unitless form of $H_{cc}$ @13 ° C: (Enter this converted value into " $H_{cc}$ input Box" above for a calculation)			
	$H_{cc}$	0.000E+00	atm.m <sup>3</sup> /mol
			unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

VAF

unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: **Chrysene**

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.687E-01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.687E-01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	1.639E+00	mg/kg
Retardation Factor, $R$ :	3,573.1	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

## 2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil	@HQ=1.0	N/A	N/A	N/A
	CUL? mg/kg	@RISK =1.0E-6 or 1.0E-5	1.370E-01	1.798E+01	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Ground Water	CUL? ug/l	1.800E-02		
	Target Soil	CUL? mg/kg	3.687E-01		
<b>Protection of Air Quality (for informational purpose only)</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @ Exposure Point	N/A		
		HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Air	@ HQ=1.0	N/A	N/A	
	CUL? ug/m <sup>3</sup>	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	
Target Soil	@ HQ=1.0	N/A	N/A		
CUL? mg/kg	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A		

**NOTES:** "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to *WAC 173-340-720, 740, 745, 747 and 750 for details.*

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>I. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RfD<sub>o</sub></i>		mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>	7.30E+00	kg-day/mg
Inhalation Reference Dose:	<i>RfD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	1.800E+06	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	6.000E-07	unitless
<i>*If the value for Henry's Law Constant is given in the unit of "atm.m<sup>3</sup>/mol", enter value here:</i>	<i>H</i>		atm.m <sup>3</sup> /mol
<i>*Converted unitless form of <i>H<sub>cc</sub></i> @13 °C: (Enter this converted value into "H<sub>cc</sub> input Box" above for a calculation)</i>	<i>H<sub>cc</sub></i>	0.000E+00	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the *Ground Water Cleanup Level Worksheet* are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* *Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

$S$   mg/l

$C_w$   ug/l

$n$   unitless

$\theta_w$   unitless

$\theta_a$   unitless

$\rho_b$   kg/l

$f_{oc}$   unitless

$DF$   unitless

$VAF$   unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

**Chemical of Concern: Dibenzo(a,h)anthracene**

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.659E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.659E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit,  $C_{sat}$ : 1.152E+01 mg/kg  
 Retardation Factor,  $R$ : 16,075.4 unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway						
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5				
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A	
	Target Soil	RISK? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A	
	CUL? mg/kg	@HQ=1.0	N/A	N/A	N/A	N/A	N/A	
		@RISK =1.0E-6 or 1.0E-5	1.370E-01	N/A	1.798E+01	N/A	N/A	
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5			
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A					
	Target Ground Water CUL? ug/l	HQ? @ Exposure Point	N/A	N/A	N/A	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A	N/A	
	Target Soil CUL? mg/kg	Target Ground Water CUL? ug/l	1.800E-02					
		Target Soil CUL? mg/kg	1.659E+00					
<b>Protection of Air Quality (for informational purpose only)</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5			
	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @ Exposure Point	N/A					
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A	N/A	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	N/A	N/A	N/A	
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A					
		@ RISK=1.0E-6 or 1.0E-5	N/A					
Target Soil CUL? mg/kg	@ HQ=1.0	N/A						
	@ RISK=1.0E-6 or 1.0E-5	N/A						

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



Solubility of the Chemical in Water: for the calculation of soil saturation limit

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):  
 Volumetric Water Content (default = "0.30"):  
 Volumetric Air Content (default = "0.13"):  
 Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here  
 Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 1.100E+01 mg/l

$C_w$  4.50E+03 ug/l

$n$  0.43 unitless  
 $\Theta_w$  0.3 unitless  
 $\Theta_a$  0.13 unitless  
 $\rho_b$  1.5 kg/l  
 $f_{oc}$  0.00256 unitless  
 $DF$  20 unitless

VAF [ ] unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: di-butylphthalate

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.866E+02	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.866E+02	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit,  $C_{sat}$ : 4.726E+01 mg/kg  
 Retardation Factor,  $R$ : 15.3 unit/less

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	8.000E+03	3.500E+05	N/A
		@RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Ground Water CUL? ug/l	4.500E+03			
	Target Soil CUL? mg/kg	3.866E+02			
<b>Protection of Air Quality (for informational purpose only)</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Air CUL? ug/m <sup>3</sup>	@ HQ=1.0	N/A	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A	N/A
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

**Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.**

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RfD<sub>o</sub></i>	4.00E-02	mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>		kg-day/mg
Inhalation Reference Dose:	<i>RfD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	4.900E+04	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	6.600E-04	unitless
<i>*If the value for Henry's Law Constant is given in the unit of "atm.m<sup>3</sup>/mol", enter value here:</i>	<i>H</i>		atm.m <sup>3</sup> /mol
<i>*Converted unitless form of <i>H<sub>cc</sub></i> @13 °C: (Enter this converted value into "H<sub>cc</sub> input Box" above for a calculation)</i>	<i>H<sub>cc</sub></i>	0.000E+00	unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

**S** 2.100E-01 mg/l

**C<sub>iv</sub>** 1.40E+02 ug/l

**n** 0.43 unitless

**Θ<sub>w</sub>** 0.3 unitless

**Θ<sub>a</sub>** 0.13 unitless

**ρ<sub>b</sub>** 1.5 kg/l

**f<sub>oc</sub>** 0.00256 unitless

**DF** 20 unitless

**VAF** unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: fluoranthene

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.518E+02	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.518E+02	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	2.638E+01	mg/kg
Retardation Factor, $R$ :	438.6	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

## 2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil	@HQ=1.0	3.200E+03	1.400E+05	N/A
	CUL? mg/kg	@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Ground Water	CUL? ug/l	1.400E+02		
	Target Soil	CUL? mg/kg	3.518E+02		
<b>Protection of Air Quality (for informational purpose only)</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5
	Under the Current Condition	Predicted Air Conc? @ Exposure Point ug/m <sup>3</sup>	N/A		
		HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Air	@ HQ=1.0	N/A	N/A	
	CUL? ug/m <sup>3</sup>	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	
Target Soil	@ HQ=1.0	N/A	N/A		
CUL? mg/kg	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A		

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

*Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.*

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:		indeno(1,2,3-cd)pyrene	
Measured Soil Concentration, if any:	$C_s$		mg/kg
Natural Background Concentration for Soil:	$NB_s$		mg/kg
Practical Quantitation Limit for Soil:	$PQL_s$		mg/kg
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$		mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$	7.30E+00	kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	3.500E+06	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	6.600E-05	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of $H_{cc}$ @13 °C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
	$H_{cc}$	0.000E+00	atm.m <sup>3</sup> /mol

Solubility of the Chemical in Water: for the calculation of soil saturation limit

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the *Ground Water Cleanup Level Worksheet* are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* *Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)*

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

VAF

unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

**Chemical of Concern: indeno(1,2,3-cd)pyrene**

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.226E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.226E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the



**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:		pentachlorophenol	
Measured Soil Concentration, if any:	$C_s$		mg/kg
Natural Background Concentration for Soil:	$NB_s$		mg/kg
Practical Quantitation Limit for Soil:	$PQL_s$		mg/kg
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$	3.00E-02	mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$	1.20E-01	kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	5.900E+02	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	1.000E-06	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of $H_{cc}$ @13 °C: (Enter this converted value into " $H_{cc}$ input Box" above for a calculation)			
	$H$	0.000E+00	atm.m <sup>3</sup> /mol
	$H_{cc}$		unitless

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

**S** 2.000E+03 mg/l

**C<sub>w</sub>** 7.90E+00 ug/l

**n** 0.43 unitless

**θ<sub>w</sub>** 0.3 unitless

**θ<sub>a</sub>** 0.13 unitless

**ρ<sub>b</sub>** 1.5 kg/l

**f<sub>oc</sub>** 0.00256 unitless

**DF** 20 unitless

**VAF** unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

**Chemical of Concern: pentachlorophenol**

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	2.702E-01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	2.702E-01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

**C<sub>sat</sub>** corresponds to the total soil chemical concentration saturated in soil.

**R** is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	3.421E+03	mg/kg
Retardation Factor, $R$ :	6.3	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

## 2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway					
		<u>Method B</u> Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		<u>Method C</u> Industrial Land Use @ HQ=1.0; RISK =1.0E-5			
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A
	Target Soil CUL? mg/kg	RISK? @ Exposure Point	N/A	Ingestion & Dermal	N/A	Ingestion only	N/A
		@HQ=1.0	2.400E+03	N/A	N/A	1.050E+05	N/A
	@RISK =1.0E-6 or 1.0E-5	8.333E+00	N/A	N/A	1.094E+03	N/A	N/A
<b>Protection of Potable Ground Water</b>	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A				
		HQ? @ Exposure Point	N/A	N/A			
	Target Ground Water CUL? ug/l	RISK? @ Exposure Point	N/A	N/A			
		Target Soil CUL? mg/kg	7.900E+00	2.702E-01			
<b>Protection of Air Quality (for informational purpose only)</b>	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup>	N/A				
		@Exposure Point	N/A				
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A			
		RISK? @ Exposure Point	N/A	N/A			
Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A				
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A				
@ HQ=1.0	N/A	N/A					
@ RISK=1.0E-6 or 1.0E-5	N/A	N/A					

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RD<sub>o</sub></i>	6.00E-01	mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>		kg-day/mg
Inhalation Reference Dose:	<i>RD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	2.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	2.900E+01	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	1.600E-05	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of <i>H<sub>cc</sub></i> @13 ° C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			

Solubility of the Chemical in Water: for the calculation of soil saturation limit

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 8.300E+04 mg/l

C<sub>w</sub> 1.70E+06 ug/l

n 0.43 unitless

θ<sub>w</sub> 0.3 unitless

θ<sub>a</sub> 0.13 unitless

ρ<sub>b</sub> 1.5 kg/l

f<sub>oc</sub> 0.00256 unitless

DF 20 unitless

VAF unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: phenol

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	9.324E+03	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	9.324E+03	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

C<sub>soil</sub> corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sr}$ :	2.276E+04	mg/kg
Retardation Factor, $R$ :	1.3	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

## 2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use		Method C Industrial Land Use	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil CUL? mg/kg	@HQ=1.0	4.800E+04	N/A	2.100E+06
		@RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>					
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
Target Ground Water CUL? ug/l		1.700E+06			
Target Soil CUL? mg/kg		9.324E+03			
<b>Protection of Air Quality (for informational purpose only)</b>					
	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @ Exposure Point	N/A		
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Air CUL? ug/m <sup>3</sup>	@ HQ=1.0	N/A		
		@ RISK=1.0E-6 or 1.0E-5	N/A		
Target Soil CUL? mg/kg	@ HQ=1.0	N/A			
	@ RISK=1.0E-6 or 1.0E-5	N/A			

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

*Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.*

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General Information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:			
Natural Background Concentration for Soil:			
Practical Quantitation Limit for Soil:			
To evaluate the ingestion and dermal pathways concurrently, check here and input values for <i>AF</i> , <i>ABS<sub>d</sub></i> , <i>GI</i> :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	<i>RfD<sub>o</sub></i>	3.00E-02	mg/kg-day
Oral Carcinogenic Potency Factor:	<i>CPF<sub>o</sub></i>		kg-day/mg
Inhalation Reference Dose:	<i>RfD<sub>i</sub></i>		mg/kg-day
Inhalation Carcinogenic Potency Factor:	<i>CPF<sub>i</sub></i>		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	<i>INH</i>	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	<i>ABS<sub>i</sub></i>	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	<i>ABI</i>	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	<i>AF</i>	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	<i>ABS<sub>d</sub></i>		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	<i>GI</i>		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter <i>K<sub>d</sub></i> value here and enter "1" for <i>f<sub>oc</sub></i> value	<i>K<sub>oc</sub></i>	6.800E+04	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	<i>H<sub>cc</sub></i>	4.500E-04	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of <i>H<sub>cc</sub></i> @13°C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
	<i>H<sub>cc</sub></i>	0.000E+00	atm.m <sup>3</sup> /mol

Solubility of the Chemical in Water: for the calculation of soil saturation limit

5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 1.400E-01 mg/l

C<sub>w</sub> 4.00E+03 ug/l

n 0.43 unitless

θ<sub>w</sub> 0.3 unitless

θ<sub>a</sub> 0.13 unitless

ρ<sub>b</sub> 1.5 kg/l

f<sub>oc</sub> 0.00256 unitless

DF 20 unitless

VAF unitless

B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: pyrene

1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	1.394E+04	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	1.394E+04	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

C<sub>sat</sub> corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

Soil Saturation Limit,  $C_{sat}$ : 2.440E+01 mg/kg  
 Retardation Factor,  $R$ : 608.3 unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil	@HQ=1.0	2.400E+03	1.050E+05	N/A
	CUL? mg/kg	@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		
		HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Ground Water CUL? ug/l	4.000E+03			
	Target Soil CUL? mg/kg	1.394E+04			
<b>Protection of Air Quality (for informational purpose only)</b>			Method B @ HQ=1.0; RISK =1.0E-6		
	Under the Current Condition	Predicted Air Conc? ug/m <sup>3</sup> @Exposure Point	N/A		
		HQ? @ Exposure Point	N/A	N/A	
		RISK? @ Exposure Point	N/A	N/A	
	Target Air CUL? ug/m <sup>3</sup>	@ HQ=1.0			
	Target Soil CUL? mg/kg	@ RISK=1.0E-6 or 1.0E-5			
		@ HQ=1.0			
		@ RISK=1.0E-6 or 1.0E-5			

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:	$C_s$		mg/kg
Natural Background Concentration for Soil:	$NB_s$		mg/kg
Practical Quantitation Limit for Soil:	$PQL_s$		mg/kg
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$	5.00E-03	mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$		kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	5.000E+00	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	0.000E+00	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of $H_{cc}$ @13°C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			

Solubility of the Chemical in Water: for the calculation of soil saturation limit

mg/l

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

ug/l  
**7.10E+01**

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

unitless  
0.43

Volumetric Water Content (default = "0.30"):

unitless  
0.3

Volumetric Air Content (default = "0.13"):

unitless  
0.13

Dry Soil Bulk Density (default = "1.50"):

kg/l  
1.5

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

unitless  
1

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

unitless  
20

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

unitless  
VAF

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

**Chemical of Concern: selenium**

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	7.384E+00	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	7.384E+00	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	0.000E+00	mg/kg
Retardation Factor, $R$ :	18.4	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

## 2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway						
		<u>Method B</u> Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		<u>Method C</u> Industrial Land Use @ HQ=1.0; RISK =1.0E-5				
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	Ingestion only	N/A	Ingestion & Dermal	N/A	
	Target Soil CUL? mg/kg	RISK? @ Exposure Point	N/A	Ingestion & Dermal	N/A	Ingestion only	N/A	
		@HQ=1.0	4.000E+02	N/A	1.750E+04	N/A	N/A	
		@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A	N/A	
<b>Protection of Potable Ground Water</b>				<u>Method B</u> @ HQ=1.0; RISK =1.0E-6				
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A					
	Target Ground Water CUL? ug/l	HQ? @ Exposure Point	N/A	N/A				
		RISK? @ Exposure Point	N/A	N/A				
	Target Ground Water CUL? mg/kg	7.100E+01						
	Target Soil CUL? mg/kg	7.384E+00						
<b>Protection of Air Quality (for informational purpose only)</b>				<u>Method B</u> @ HQ=1.0; RISK =1.0E-6				
	Under the Current Condition	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A					
	Target Air CUL? ug/m <sup>3</sup>	HQ? @ Exposure Point	N/A	N/A				
		RISK? @ Exposure Point	N/A	N/A				
	Target Soil CUL? mg/kg	@ HQ=1.0	N/A	N/A				
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A				
		@ HQ=1.0	N/A	N/A				
		@ RISK=1.0E-6 or 1.0E-5	N/A	N/A				

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).



**Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use**

Date: 12/7/2006  
 Site Name: Former Rhone-Poulenc Site Northwest Corner  
 Evaluator: Z. Satterwhite

*Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.*

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General information</b>			
Name of Chemical:	$C_s$	silver	mg/kg
Measured Soil Concentration, if any:	$NB_s$		mg/kg
Natural Background Concentration for Soil:	$PQL_s$		mg/kg
Practical Quantitation Limit for Soil:	<input checked="" type="checkbox"/>		
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :			
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$	5.00E-03	mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$		kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	1.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	8.300E+00	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	0.000E+00	unitless
*If the value for Henry's Law Constant is given in the unit of 'atm.m <sup>3</sup> /mol', enter value here:			
*Converted unitless form of $H_{cc}$ @13 °C: (Enter this converted value into " $H_{cc}$ input Box" above for a calculation)			
	$H_{cc}$	0.000E+00	atm.m <sup>3</sup> /mol

Solubility of the Chemical in Water: for the calculation of soil saturation limit  
5. Target Ground Water Cleanup Level

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:  
 \*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

6. Site-Specific Hydrogeological Characteristics

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S

$C_{iv}$

$n$

$\theta_{iv}$

$\theta_{\alpha}$

$\rho_b$

$f_{oc}$

$DF$

VAF

## B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS

Chemical of Concern: silver

### 1. Summary of Results

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.230E-01	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.230E-01	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

Warning: Soil Cleanup Level is higher than Soil Saturation Limit!

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

$R$  is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	0.000E+00	mg/kg
Retardation Factor, $R$ :	30.0	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
Soil Direct Contact	Under the Current Condition	Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
	RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	@HQ=1.0	4.000E+02	N/A	1.750E+04	N/A
	@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A
	mg/kg				
Protection of Potable Ground Water	Under the Current Condition	Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5	
		N/A			
	Predicted Ground Water Conc? ug/l	N/A			
	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
	RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	Target Ground Water CUL? ug/l	1.900E+00			
	Target Soil CUL? mg/kg	3.230E-01			
Protection of Air Quality (for informational purpose only)	Under the Current Condition	Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5	
		N/A			
	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A			
	HQ? @ Exposure Point	N/A	N/A	N/A	N/A
	RISK? @ Exposure Point	N/A	N/A	N/A	N/A
	@ HQ=1.0	N/A	N/A	N/A	N/A
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A
	@ HQ=1.0	N/A	N/A	N/A	N/A
	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	N/A
	mg/kg				

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).

Worksheet for Calculating Soil Cleanup Levels for Unrestricted & Industrial Land Use

Date: 12/7/2006

Site Name: Former Rhone-Poulenc Site Northwest Corner

Evaluator: Z. Satterwhite

Refer to WAC 173-340-720, 740, 745, 747 and 750 for details.

**A. INPUT PARAMETERS FOR SOIL CLEANUP LEVEL CALCULATIONS**

Note: If no data is available for any of the following inputs, then leave the input box blank

Item	Symbol	Value	Units
<b>1. General Information</b>			
Name of Chemical:			
Measured Soil Concentration, if any:	$C_s$		mg/kg
Natural Background Concentration for Soil:	$NB_s$		mg/kg
Practical Quantitation Limit for Soil:	$PQL_s$		mg/kg
To evaluate the ingestion and dermal pathways concurrently, check here and input values for $AF$ , $ABS_d$ , $GI$ :	<input checked="" type="checkbox"/>		
<b>2. Toxicological Properties of the Chemical: Chemical-Specific</b>			
Oral Reference Dose:	$RfD_o$	1.00E-01	mg/kg-day
Oral Carcinogenic Potency Factor:	$CPF_o$		kg-day/mg
Inhalation Reference Dose:	$RfD_i$		mg/kg-day
Inhalation Carcinogenic Potency Factor:	$CPF_i$		kg-day/mg
<b>3. Exposure Parameters</b>			
Inhalation Correction Factor (default = "2" for volatiles; "1" for all others): for target ground water cleanup level	$INH$	2.00E+00	unitless
Inhalation Absorption Fraction (default = "1"): for target air cleanup level	$ABS_i$	1	unitless
Gastrointestinal Absorption Fraction (default = "1"): for ingestion & dermal exposure pathways	$ABI$	1	unitless
Adherence Factor (default = "0.2"): for dermal exposure pathway	$AF$	0.2	mg/cm <sup>2</sup> -day
Dermal Absorption Fraction (chemical-specific or defaults): for dermal exposure pathway	$ABS_d$		unitless
Gastrointestinal Absorption Conversion Factor (chemical-specific or defaults): for dermal exposure pathway	$GI$		unitless
<b>4. Physical and Chemical Properties of the Chemical: Chemical-Specific</b>			
Soil Organic Carbon-Water Partitioning Coefficient: for metals, enter $K_d$ value here and enter "1" for $f_{oc}$ value	$K_{oc}$	1.600E+03	l/kg
Henry's Law Constant: for the evaluation of ground water and vapor exposure pathway	$H_{cc}$	1.800E-04	unitless
*If the value for Henry's Law Constant is given in the unit of "atm.m <sup>3</sup> /mol", enter value here:			
*Converted unitless form of $H_{cc}$ @13 °C: (Enter this converted value into "H <sub>cc</sub> input Box" above for a calculation)			
	$H_{cc}$	0.000E+00	atm.m <sup>3</sup> /mol

Solubility of the Chemical in Water: for the calculation of soil saturation limit

**5. Target Ground Water Cleanup Level**

Target Ground Water Cleanup Level applicable for a soil cleanup level calculation:

\*Results from the Ground Water Cleanup Level Worksheet are not automatically transferred into this worksheet.

**6. Site-Specific Hydrogeological Characteristics**

Total Soil Porosity (default = "0.43"):

Volumetric Water Content (default = "0.30"):

Volumetric Air Content (default = "0.13"):

Dry Soil Bulk Density (default = "1.50"):

Fraction Soil Organic Carbon (default = "0.001"): for metals, enter "1" for  $f_{oc}$  value here

Dilution Factor (default = "20" for unsaturated zone soil; "1" for saturated zone soil; or site-specific)

**7. Vapor Attenuation Factor due to Advection (building structure) & Diffusion (soil layer) Mechanisms**

\* Vapor Attenuation Factor is the ratio of vapor-phase contaminant concentration within the soil at the source to the air concentration at the exposure point (e.g., within the building)

Enter Vapor Attenuation Factor: for the evaluation of vapor exposure pathway

S 1.200E+03 mg/l

$C_w$  3.60E+03 ug/l

$n$  0.43 unitless

$\Theta_w$  0.3 unitless

$\Theta_a$  0.13 unitless

$\rho_b$  1.5 kg/l

$f_{oc}$  0.00256 unitless

DF 20 unitless

VAF unitless

**B. SUMMARY OF SOIL CLEANUP LEVEL CALCULATIONS**

Chemical of Concern: 2,4,5-trichlorophenol

**1. Summary of Results**

To calculate a soil cleanup level based on Industrial Land Use (Method C) for Direct Soil Contact, check here:

To calculate a soil concentration based on Method C vapor pathway, check here:

Basis for Soil Concentration	Conc	Units
Most stringent soil concentration based on Soil Direct Contact & Ground Water Protection:	3.093E+02	mg/kg
Natural Background concentration for Soil:	N/A	mg/kg
Practical Quantitation Limit for Soil:	N/A	mg/kg
Soil Cleanup Level (not considering vapor pathway):	3.093E+02	mg/kg
Warning! Soil Cleanup Level above may not be protective of vapor exposure pathway - evaluate vapor pathway further.		
Soil concentration based on Vapor Pathway (informational purposes only):	0.000E+00	mg/kg

$C_{sat}$  corresponds to the total soil chemical concentration saturated in soil.

R is the ratio of the ground water flow velocity to the

Soil Saturation Limit, $C_{sat}$ :	5.155E+03	mg/kg
Retardation Factor, $R$ :	15.3	unitless

$R$  is the ratio of the ground water flow velocity to the contaminant migration velocity in saturated zone.

2. Summary of Calculation for each Exposure Pathway

		Summary by Exposure Pathway			
		Method B Unrestricted Land Use @ HQ=1.0; RISK =1.0E-6		Method C Industrial Land Use @ HQ=1.0; RISK =1.0E-5	
		Ingestion only	Ingestion & Dermal	Ingestion only	Ingestion & Dermal
<b>Soil Direct Contact</b>	Under the Current Condition	HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Soil	@HQ=1.0	N/A	3.500E+05	N/A
	CUL? mg/kg	@RISK =1.0E-6 or 1.0E-5	N/A	N/A	N/A
<b>Protection of Potable Ground Water</b>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5
	Under the Current Condition	Predicted Ground Water Conc? ug/l	N/A		N/A
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Ground Water CUL? ug/l	3.600E+03			
	Target Soil CUL? mg/kg	3.093E+02			
<b>Protection of Air Quality</b> <i>(for informational purpose only)</i>			Method B @ HQ=1.0; RISK =1.0E-6		Method C @ HQ=1.0; RISK =1.0E-5
	Under the Current Condition	Predicted Air Conc? @Exposure Point ug/m <sup>3</sup>	N/A		N/A
		HQ? @ Exposure Point	N/A	N/A	N/A
		RISK? @ Exposure Point	N/A	N/A	N/A
	Target Air	@ HQ=1.0	N/A	N/A	N/A
	CUL? ug/m <sup>3</sup>	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A
Target Soil	@ HQ=1.0	N/A	N/A	N/A	
CUL? mg/kg	@ RISK=1.0E-6 or 1.0E-5	N/A	N/A	N/A	

**NOTES: "CUL" = Cleanup Level; "Conc" = concentration; "HQ" = hazard quotient; "RISK" = carcinogenic risk.**

**CAUTION:** The requirements and procedures for establishing soil cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-740, 173-340-745, 173-340-747 and 173-340-7490 through 173-340-7494). The use of this Workbook is not sufficient to establish soil cleanup levels under the regulation. Specifically, the soil cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-740(3)(b)(i) and 173-340-745(5)(b)(i));
- Soil residual saturation (see WAC 173-340-747(10));
- Ecological impacts (see WAC 173-340-7490 through 7494); and
- Total site risk (see WAC 173-340-740(5)(a) and 173-340-745(6)(a)).

Other exposure pathways may also need to be evaluated on a site-specific basis to establish soil cleanup levels.

**CAUTION:** The requirements and procedures for establishing air cleanup levels that are protective of human health and the environment are specified in the MTCA Cleanup Regulation (see WAC 173-340-750). The use of this Workbook may not be sufficient to establish air cleanup levels under the regulation. Specifically, the air cleanup levels derived using this Workbook do not account for the following:

- Concentrations based on applicable state and federal laws (see WAC 173-340-750(3)(b)(i) and (4)(b)(i));
- Concentrations based on natural background and the practical quantitation limit (see WAC 173-340-750(5)(c));
- Total site risk (see WAC 173-340-750(5)(a)).