VCP NW2651

AGRA
ENGINEERING GLOBAL SOLUTIONS

AGRA Earth &
Environmental, Inc.
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USA 98034-6918
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February 16, 1999
9-91M-12700-0

Wolfkill Feed and Fertilizer
P.O. Box 578
Monroe, Washington 98272

Attention: Mr. Willard Cox III

Subject: **Groundwater Status Report (January 28, 1999)**
Former Wolfkill Yard
205 W. Fir Street
Mt. Vernon, Washington

Dear Mr. Cox:

AGRA Earth & Environmental, Inc. (AGRA) is pleased to present Wolfkill Feed and Fertilizer with the following *Groundwater Status Report*. The contents of this report include AGRA's observations of groundwater conditions, analytical results of the groundwater samples collected on January 28, 1999, and AGRA's conclusions based upon these findings.

INTRODUCTION

The site is currently a feed and fertilizer supply facility located at 205 West Fir Street in Mt. Vernon, Washington (Figure 1). In December 1990, AGRA (formerly Rittenhouse- Zeman & Associates, Inc.) was subcontracted to assist in the characterization and remediation of petroleum contamination identified during the removal of four underground storage tanks (USTs) at the subject site. The USTs were reported to contain gasoline and diesel fuels and had been removed prior to AGRA's involvement. AGRA visited the subject site shortly following the removal of the USTs to document their condition and direct overexcavation efforts to remove residual petroleum contaminated soils. The analytical test results of soil samples collected from the final limits of excavation indicated that petroleum concentrations were below Washington's Model Toxics Control Act Method A cleanup levels.

In February 1990, following site restoration efforts, and due to the presence of shallow groundwater in the UST excavation, AGRA installed three groundwater monitoring wells (MW-1, MW-2, and MW-3) near the perimeter of the former UST excavation. Soil samples were collected during well installation and select samples were submitted for laboratory analysis. One soil sample collected from MW-2 (southwest corner of excavation), at an approximate depth of 7.5 to 9 feet below the site grade, contained concentrations of total petroleum hydrocarbons (TPH, by EPA Method 418.1) at 305 parts per million (ppm), benzene at 3.25 ppm, and total xylenes at 42.9 ppm (BTEX by EPA

1999

Method 8020). These concentrations exceeded the MTCA method A cleanup levels of 200 ppm, 0.5 ppm, and 20 ppm respectively.

Groundwater samples were collected from the wells on 19 February 1990. The analytical results indicated that groundwater samples collected in all three wells contained one or more petroleum compounds above the current MTCA Method A cleanup criteria. AGRA's *Subsurface Petroleum Hydrocarbon Investigation Report* (9 March 1990) should be referred to for more specific information regarding environmental conditions at the subject site.

In October 1998, Wolfkill Feed and Fertilizer authorized AGRA to resume groundwater monitoring and sampling at the subject site.

JANUARY 28, 1999 MONITORING AND SAMPLING RESULTS

Groundwater Monitoring Results

AGRA visited the subject site on January 13, 1999 to evaluate the condition of the three monitoring wells and re-develop the wells if necessary. The wells contained an accumulation of sediment and were therefore redeveloped by repeatedly surging and pumping the wells. The wells were allowed to equilibrate prior to sampling.

On 28 January 1999 groundwater monitoring and sampling was performed. Water levels ranged from 4.73 feet (MW-1) to 5.39 feet (MW-2) below the top of the well casings. The average depth to water was approximately 4.99 feet below the top of the well casings.

The calculated groundwater elevation data indicated a groundwater flow direction to the northeast at an average hydraulic gradient of 0.004 feet/foot, which is generally consistent with data collected during the February 1990 monitoring event. The water level/elevation data is summarized in Table 1. A groundwater contour map depicting the inferred direction of groundwater flow is presented as Figure 2.

TABLE 1
SUMMARY OF GROUNDWATER CONDITIONS

Well ID	Date	Well Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	2/19/90 1/26/99	99.43	3.74 4.73	95.69 94.70
MW-2	2/19/90 1/26/99	100.64	4.71 5.39	95.93 95.25
MW-3	2/19/90 1/26/99	100.03	4.25 4.87	95.78 95.16

Groundwater Analytical Results

Groundwater samples were collected from the three monitoring wells (MW-1 through MW-3) on January 28, 1999, following the purging of approximately 3 to 4 well casing volumes of groundwater. Approximately 90 gallons of purge water was generated during this sampling event. All purge water was transported to AGRA's Kirkland, Washington office for subsequent air sparging treatment and disposal.

The groundwater samples were collected in laboratory prepared containers and preserved accordingly. All samples were submitted to AGRA's Washington State certified laboratory facility in Portland, Oregon for analytical testing of:

- Gasoline range petroleum hydrocarbons (GRPH) by Ecology Method WTPH-G;
- Diesel range petroleum hydrocarbons (DRPH) by Ecology Method WTPH-D;
- Volatile aromatic hydrocarbons (benzene, toluene, ethylbenzene, and xylenes (BTEX)) by EPA Method 602; and
- Total lead by EPA Method 6000 series methods

Laboratory analytical data indicated that the sample collected from MW-1 and MW-2 contained GRPH concentrations of 1,290 parts per billion (ppb) and 564 ppb, respectively. Laboratory analytical data indicated that the sample collected from MW-2 and MW-3 contained DRPH concentrations of 290 parts per billion (ppb) and 250 ppb, respectively. The sample collected from MW- 1 exceeds the 1,000 ppb Method A cleanup level for total petroleum hydrocarbons (gasoline plus diesel range petroleum hydrocarbons) established in Washington's Model Toxics Control Act (MTCA).

The groundwater samples collected from wells MW-1 and MW-2 contained detectable concentrations of one or more of the volatile aromatic hydrocarbons (BTEX). Concentrations of benzene exceeded the MTCA Method A cleanup level of 5.0 ppb in samples collected from MW-1 (25.8 ppb). Total xylenes concentrations exceeded the MTCA Method A cleanup level of 20 ppb in the sample collected from MW-1 (38.9 ppb). The remaining BTEX concentrations in the samples from MW-1 and MW-2 were below the MTCA Method A cleanup levels.

AGRA submitted the samples collected from MW-1 and MW-2 for analysis of total lead, associated with leaded gasolines. The analytical results indicated that the sample collected from MW-1 contained no detectable concentrations of lead. The sample collected from MW-2 contained a total lead concentration of 5.29 ppb, slightly exceeding the MTCA Method A cleanup level of 5.0 ppb.

Quality control/quality assurance (QA/QC) testing performed by AGRA's Portland laboratory included surrogate recoveries, matrix spike/duplicates, and a laboratory control standard. All QA/QC data was within acceptable ranges of tolerance. No field quality control samples were collected during this sampling event.

Groundwater analytical data is summarized in Table 2 and on Figure 2. Laboratory analytical certificates for this sampling event are presented as an attachment to this report.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Well	Date	TPH	Gasoline Range TPH	Diesel Range TPH	B	T	E	X	Lead
MW-1	2/19/90 1/26/99	**5,100** NT	NT **1,290**	NT <0.25	**74** **25.8**	11 5.39	<1 18.0	**72** **38.9**	NT <5.0
MW-2	2/19/90 1/26/99	**23,000** NT	NT 564	NT 290	**49** <0.5	**150** 3.52	**177** 4.02	**648** 7.40	NT **5.29**
MW-3	2/19/90 1/26/99	<5,000 NT	NT <50	NT 250	**7** <0.5	3 <0.5	<1 <0.5	**38** <1.5	NT NT
MTCA		**1,000**	**1,000**	**1,000**	**5.0**	**40.0**	**20.0**	**20.0**	**5.0**

Notes:
TPH = Total petroleum hydrocarbons by EPA Method 418.1
Gasoline range TPH by NWTPH-G
Diesel range TPH by NWTPH-Dx
BTEX by EPA Method 5030/8021B
All concentrations are presented in parts per billion (ppb)
MTCA = Model Toxics Control Act. Method A cleanup levels shown.
Lead Analysis by EPA 6000 Series Methods
NT = Not Tested

CONCLUSIONS

Based upon AGRA's field observations and analytical laboratory results obtained during this monitoring and sampling event, petroleum hydrocarbons persist in the groundwater at the subject site at levels above the current MTCA Method A cleanup levels. The concentrations and chromatographic data indicates that residual petroleum hydrocarbons are attenuating naturally. AGRA believes the attenuation has been a result of a combination of dispersion, dilution, and to a lesser extent, biological degradation. The presence of BTEX compounds in the groundwater 9 years following the source removal indicates that pockets of residual soil contamination may be continuing to act as sources for groundwater contamination; however, based on the relatively low petroleum hydrocarbon concentrations, the volume of residual soil contamination appears to be negligible. AGRA believes that the groundwater flow direction may reverse during the summer and fall seasons due to the proximity of the site to the Skagit River. The reversals in the groundwater flow direction is inferred to minimize the lateral dispersion of the residual groundwater contamination. AGRA expects the residual soil and groundwater contamination to continue to attenuate naturally without the need for any additional remedial actions.

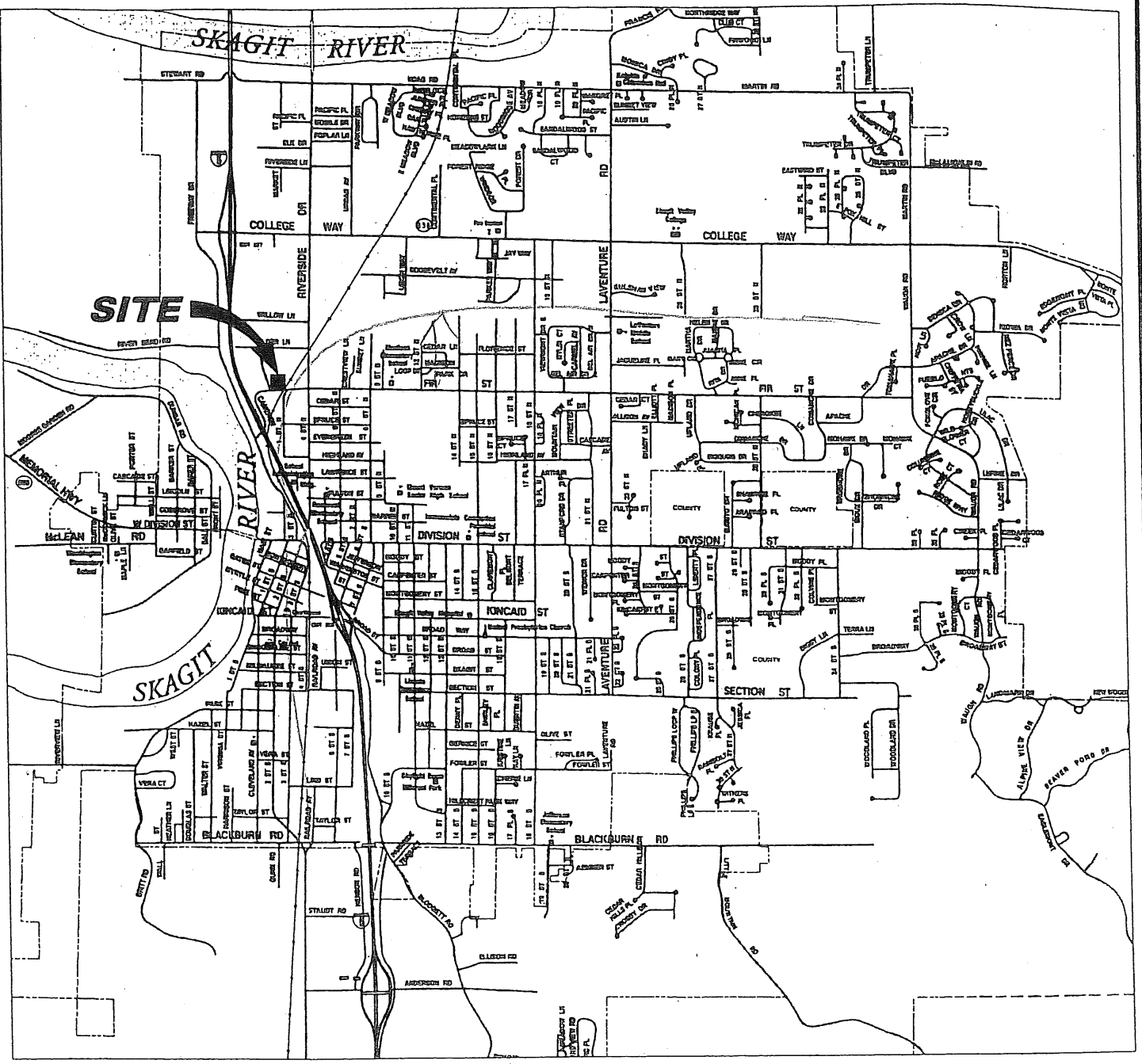
AGRA appreciates the opportunity to be of service to Wolfkill Feed and Fertilizer. If there are any additional questions or comments regarding either the contents of this report, or any other aspects of this assessment, please feel free to contact our office at your earliest convenience.

Sincerely,

Jeffrey Kaspar
Project Environmental Geologist

John T. Cooper, P.G.
Senior Project Geologist

JK/JTC/lad
Enclosures: Figure 1 — Location Map
Figure 2 — Groundwater Contour Map For January 28, 1999
Laboratory Test Certificates



N.T.S.

AGRA
ENGINEERING GLOBAL SOLUTIONS
11335 N.E. 122nd Way, Suite 100
Kirkland, WA, U.S.A. 98034-6918

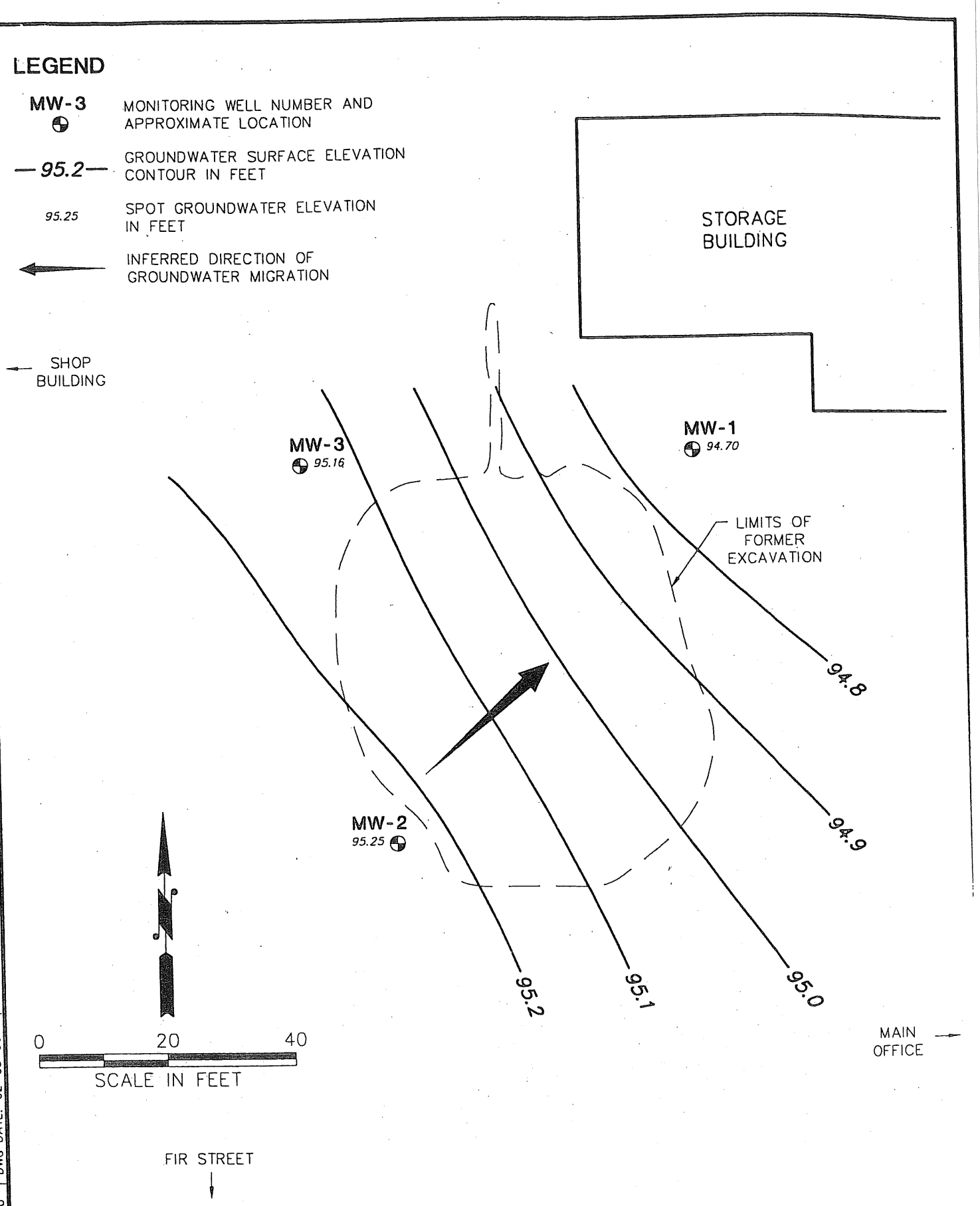
LOCATION MAP

WOLFKILL YARD

MOUNT VERNON, WASHINGTON

FIGURE 1

JOB NO.: 9-91M-12700-0 | DWG DATE: 02-03-99 | SCALE: N.T.S. | DESIGN BY: JK | FILE NAME: LOCATION.DWG



JOB NO.: 9-91M-12700-0 | DWG DATE: 02-03-99 | SCALE: 1"=20' | DESIGN BY: JK | FILE NAME: SITE.DWG

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11335 N.E. 122nd Way, Suite 100
Kirkland, WA, U.S.A. 98034-6918

GROUNDWATER CONTOUR MAP FOR 1/28/99

WOLFKILL YARD

MOUNT VERNON, WASHINGTON

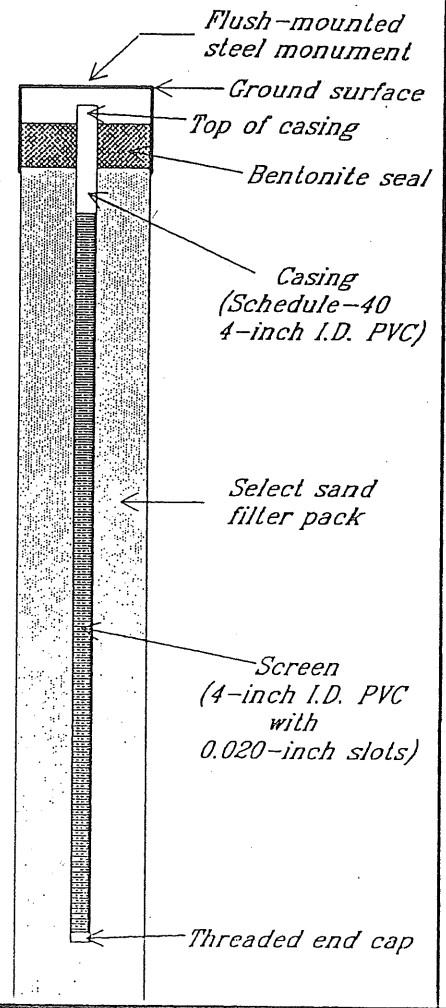
FIGURE 2

PROJECT *Wolfkill Yard* W.O. *W-6588* WELL NO. *MW-1*

Elevation reference: *100.00 feet*
Ground surface elevation: *99.69 feet* **Casing elevation:** *99.43 feet*

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Asphalt*					
	Loose, moist, brown, silty fine SAND.		S-1	4	0	2/19/90
5	*becomes saturated*					
	gray with rust mottling		S-2	7	0	
10	*Loose to medium dense, saturated, gray, silty SAND.*		S-3	15	0	
15	*Medium dense, saturated, gray, silty SAND with gravel.*					
	Very stiff, wet, tannish-gray, clayey SILT with some fine sand		S-4	25	0	
20	*Boring terminated at 19 feet.*					
25						
30						

AS-BUILT DESIGN



TESTING

Well completed: *13 February 1990*

LEGEND

I 2-inch O.D. split-spoon sample

▽ 2/19/90 Observed groundwater level (2/19/90)

RZA

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
1400 140th Ave NE
Bellevue, Washington 98005

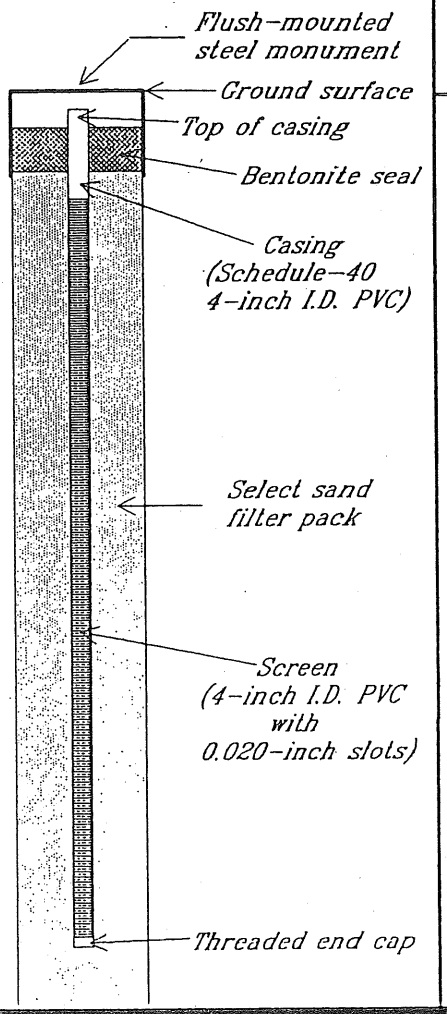
Drilling started: *13 February 1990* Drilling completed: *13 February 1990* Logged by: *TJP*

PROJECT *Wolfkill Yard* W.O. *W-6588* WELL NO. *MW-2*

Elevation reference: *100.00 feet*
Ground surface elevation: *101.13 feet* Casing elevation: *100.64 feet*

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Asphalt*					
	Moist, dark brown, silty fine SAND with gravel and some coarse sand					
	Loose, moist, brown, silty fine SAND		S-1	5	0	
5	*becomes saturated*					2/19/90
	becomes gray; petroleum hydrocarbon odor		S-2	4	23	
10	*Dense, saturated, gray, coarse sandy GRAVEL, trace to some silt; no petroleum hydrocarbon odor*		S-3	36	0	
15						
	Stiff, wet, tannish-gray, clayey SILT with some sand and trace gravel.		S-4	13	0	
20	*Boring terminated at 19 feet.*					
25						
30						

AS-BUILT DESIGN



TESTING

Well completed: *13 February 1990*

LEGEND

I 2-inch O.D. split-spoon sample

▽ 2/19/90 Observed groundwater level (2/19/90)

RZA

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
1400 140th Ave NE
Bellevue, Washington 98005

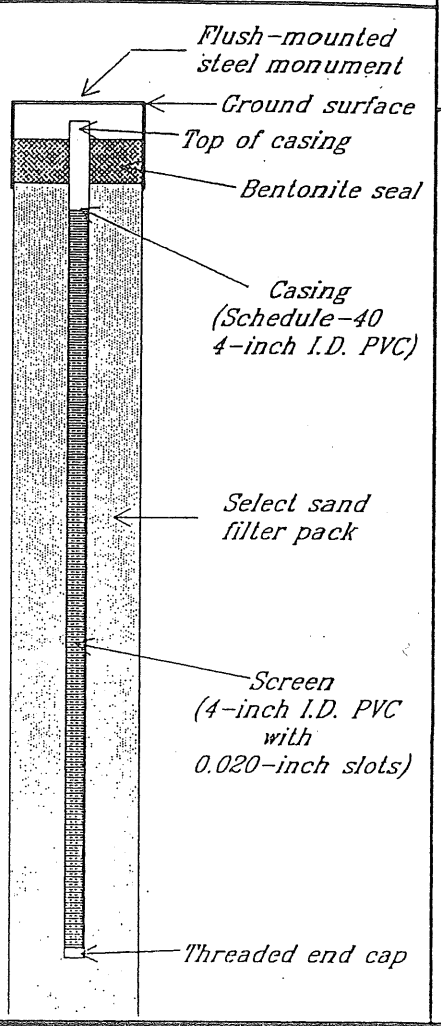
Drilling started: *13 February 1990* Drilling completed: *13 February 1990* Logged by: *MP*

PROJECT *Wolfkill Yard* W.O. *W-6588* WELL NO. *MW-3*

Elevation reference: *100.00 feet*
Ground surface elevation: *100.28 feet* Casing elevation: *100.03 feet*

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*Asphalt*					
	Very loose to loose, moist, brown, silty fine SAND; slight petroleum hydrocarbon odor.					
	some medium sand		S-1	4	0	
5	*becomes gray and saturated*					7/19/90
			S-2	7	0	
	Loose, saturated, grayish-tan, silty, fine SAND with fine sandy silt laminae; slight petroleum hydrocarbon odor.					
10	*Medium dense, saturated, tannish-gray, medium to coarse SAND with gravel, some silt, and some fine sand.*		S-3	17	0	
	Very stiff, saturated, tan, fine sandy SILT with some coarse sand and gravel and silty sand laminae.					
15	*Very stiff, wet, tannish-gray with rust mottling, fine sandy SILT with some clay and trace coarse sand*		S-4	23	0	
20	*Boring terminated at 19 feet.*					
25						
30						

AS-BUILT DESIGN



TESTING

Well completed: *14 February 1990*

LEGEND

I 2-inch O.D. split-spoon sample

▽ 7/19/90 Observed groundwater level (2/19/90)

RZA
RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
1400 140th Ave NE
Bellevue, Washington 98005

Drilling started: *14 February 1990* Drilling completed: *14 February 1990* Logged by: *EJP*

AGRA Earth & Environmental
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Portland, Oregon
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February 8, 1999

AGRA Earth & Environmental
11335 NE 122nd Way, Suite 100
Kirkland, WA 98034

Attention: Jeff Kaspar

Dear Mr. Kaspar

RE: Analytical Results For Project 9-91M-12700-0

Attached are the results for the samples submitted on January 29, 1999 from the above referenced project. For your reference, our project number associated with these samples is WA990067

The samples were analyzed for at the AGRA Earth & Environmental Portland Chemistry Laboratory. All analyses were conducted in accordance with applicable QA/QC guidelines. The results apply only to the samples submitted.

Please feel free to contact me if you have any questions regarding this report, or if I can be of any assistance in any other matter.

Respectfully submitted,

AGRA Earth & Environmental

Sean Gormley
Laboratory Manager

Project: Wolfkill Feedland Fertilizer
Project No.: 9-91M-12700-0
Project Manager: Jeff Kaspar
Sample Matrix: Water

Service Request No.: WA990067
Report Date: 2/4/99
Report No.: 99006701
C.O.C. No.: 02908

Gasoline Range Petroleum Hydrocarbons & BTEX
EPA Methods 5030/8021B and WDOE/ODEQ Method NWTPH-Gx
µg/L(ppb)

Sample Name:	MW-1	MW-2	MW-3	Lab Blank	**Method Reporting Limit**
Lab Code:	0067-1	0067-2	0067-3	0067-MB	
Gasoline:	1290	564	ND	ND	50
Benzene:	25.8	ND	ND	ND	0.50
Toluene:	5.39	3.52	ND	ND	0.50
Ethylbenzene:	18.0	4.02	ND	ND	0.50
Total Xylenes:	38.9	7.40	ND	ND	1.50
Sample Date:	1/28/99	1/28/99	1/28/99	2/2/99	
Analysis Date:	2/2/99	2/2/99	2/2/99	2/2/99	
Surrogate Recovery: (a,a,a-Trifluorotoluene):					**AEE Acceptance Limits**
Gasoline Analysis(FID):	109%	105%	98%	99%	66%-144%
BTEX Analysis(PID):	99%	98%	92%	93%	61%-130%

ND Not Detected

Signature of Chemist

QA/QC Review

AGRA
ENGINEERING GLOBAL SOLUTIONS

Project: Wolfkill Feedland Fertilizer
Project No.: 9-91M-12700-0
Project Manager: Jeff Kaspar
Sample Matrix: Water

Service Request No.: WA990067
Report Date: 2/4/99
Report No.: 99006702
C.O.C. No.: 02908

QC Data Report
Blank Spike Recoveries
Gasoline Range Petroleum Hydrocarbons & BTEX
EPA Methods 5030/8021B & WDOE/ODEQ Method NWTPH-G
ug/L(ppb)

Sample Name: / **Lab Code:**	Lab Blank 0067-MB	Spike Level (ug/L)	Blank Spike (BS)	Percent Recovery (BS)	Blank Spike Duplicate (BSD)	Percent Recovery (BSD)	Relative Percent Difference	AEE Acceptance Limits
Gasoline:	<50.0	1000	957	96	976	98	2	74%-109%
Benzene:	<0.50	20.0	19.9	100	20.6	103	3	72%-129%
Toluene:	<0.50	20.0	20.0	100	20.7	104	3	74%-124%
Ethylbenzene:	<0.50	20.0	18.7	94	19.4	97	4	71%-126%
Total Xylenes:	<1.50	60.0	60.1	100	62.2	104	3	77%-125%
Sample Date:	2/2/99	~	2/2/99	~	2/2/99	~	~	
Analysis Date:	2/2/99	~	2/2/99	~	2/2/99	~	~	
							Control Limits	
Surrogate Recovery (a,a,a-Trifluorotoluene):								
Gasoline Analysis(FID):	99%	~	108%	~	110%	~	66% - 144%	
BTEX Analysis(PID):	93%	~	95%	~	94%	~	61% - 130%	

ND Not Detected
Spike Source: Ultra Scientific RGO-601, Lot # M-0910
Spike Source: Accustandard WA-VPH Lot # A7060438

Signature of Chemist

QA/QC Review

AGRA
ENGINEERING GLOBAL SOLUTIONS

Project: Wolfkill Feedland Fertilizer
Project No.: 9-91M-12700-0
Project Manager: Jeff Kaspar
Sample Matrix: Water

Service Request No.: WA990067
Report Date: 2/4/99
Report No.: 99006703
C.O.C.: 02908

QC Data Report
Matrix Spike Recoveries
BTEX Compounds
EPA Methods 5030/8021B
ug/L (ppb)

Sample Name: / **Lab Code:**	Batch QC 0071-11	Spike Level (ug/L)	Matrix Spike (MS)	Percent Recovery (MS)	Matrix Spike Duplicate (DMS)	Percent Recovery (DMS)	AEE Acceptance Limits	Relative Percent Difference (RPD)
Benzene	<0.50	20.0	20.1	100	20.6	103	44%-162%	2
Toluene	<0.50	20.0	20.5	102	18.6	93	62%-139%	10
Ethylbenzene	<0.50	20.0	19.0	95	17.1	86	49%-146%	11
Total Xylenes	<1.50	60.0	60.5	101	43.0	72	46%-143%	34
Sample Date:	1/29/99	~	1/29/99	~	1/29/99	~	~	
Analysis Date:	2/2/99	~	2/2/99	~	2/2/99	~	~	
Surrogate Recovery:							**AEE Acceptance Limits**	
a,a,a-Trifluorotoluene:	93%	~	92%	~	93%	~	61% - 130%	
4-Bromofluorobenzene:	97%	~	94%	~	98%	~	72% - 120%	

ND Not Detected
Spike Source: Accustandard WA-VPH Lot # A7060438.

Signature of Chemist

QA/QC Review

AGRA
ENGINEERING GLOBAL SOLUTIONS

Project: Wolfkill Feedland Fertilizer
Project No.: 9-91M-12700-0
Project Manager: Jeff Kaspar
Sample Matrix: Water

Service Request No.: WA990067
Report Date: 2/4/99
Report No.: 99006705
C.O.C. No.: 02908

Semi-Volatile Petroleum Products
NWTPH-Dx
mg/L (ppm)

Sample Name	Lab Code	Sample Date	Extraction Date	Analysis Date	Diesel Result	Fuel/Lube Oil Result	Surrogate Recovery O-Terphenyl
MW-1	0067-1	1/28/99	2/2/99	2/4/99	<0.25	<0.50	76
MW-2	0067-2	1/28/99	2/2/99	2/4/99	0.29(a)	<0.50	88
MW-3	0067-3	1/28/99	2/2/99	2/4/99	0.25(a)	<0.50	89
Lab Blank	0037-MB	2/2/99	2/2/99	2/4/99	<0.25	<0.50	77

(a) Chromatographic evidence suggests the possible presence of highly weathered diesel.

Acceptance Criteria: 50%-150%

Signature of Chemist

QA/QC Review

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Project: Wolfkill Feedland Fertilizer
Project No.: 9-91M-12700-0
Project Manager: Jeff Kaspar
Sample Matrix: Water

Service Request No.: WA990067
Report Date: 2/8/99
Report No.: 99006706
C.O.C. No.: 0298

QC Data Report - Duplicate Summary
Semi-Volatile Petroleum Hydrocarbons
NWTPH-Dx
mg/L(ppm)

Sample Name:	Batch QC	Sample	Relative Percent
Lab Code:	0066-1	Duplicate	Difference
Diesel:	<0.25	<0.25	(a)
Fuel/Lube Oil:	<0.50	<0.50	(a)
Acceptance Limits:	~	~	<25
Sample Date:	1/28/99	1/28/99	~
Extraction Date:	2/2/99	2/2/99	~
Analysis Date:	2/4/99	2/4/99	~
Surrogate Recovery:			**Control Limits**
O-Terphenyl:	80%	79%	50%-150%

ND Not Detected

(a) Not applicable when sample concentration is less than the method reporting limit.

Signature of Chemist

QA/QC Review

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AGRA Earth & Environmental Portland Chemistry Laboratory

Sample Receipt Documentation Form

Project: Wolf Hill Feed and Fertilizer	Cooler Temperatures: 4.8, 3.2, 2.2, 4.0, 1.0
SR No.: WA990067	
Date: 1/29/99	
Time: 12:21	
Temperature of Cooler Upon Receipt (Record to the Right):	
Received By: PH	

Section One: Shipping/Delivery Issues

1.	Method of Sample Delivery: 1Z8E1 256 01400108 UPS			
2.	Airbill or Courier Receipt Number:			
3.	Is a copy of the airbill or courier receipt available to be placed in the job file?	(Yes)	No	NA

Section Two: Sample Custody Issues

4.	Are custody seals on the shipping container intact?	Yes	No	(NA)
5.	Is a COC or other sample transmittal document present?	(Yes)	No	NA
6.	Is the COC complete?	(Yes)	No	NA
7.	Are the sample seals intact?	Yes	No	(NA)
8.	Does the COC match the samples received?	(Yes)	No	NA

Section Three: Sample Integrity Issues

9.	Are all sample containers intact and not leaking?	(Yes)	No	NA
10.	Are all samples preserved properly?	(Yes)	No	NA
11.	Are all samples within holding time for the required tests?	(Yes)	No	NA
12.	*Were all samples received at the proper temperature?	(Yes)	No	NA
13.	Are samples for volatiles and other headspace sensitive parameters free of headspace or bubbles?	(Yes)	No	NA

Section Four: Sample Containers Received:

14.	4 oz. glass jars:	19.	2oz. amber (MeOH):
15.	8 oz. glass jars:	20.	Encore samplers:
16.	40ml VOA vials: 10	21.	500ml plastic:
17.	1 liter glass: 3	22.	1liter plastic: 3
18.	Other (describe):		

*Temperatures for: water and soil samples = 4°C-6°C, MeOH jars = 25°C, air = not required

~~* Containers listed on COC did not match what was~~ received for each sample SC 2/8/99

Reviewed By:

Laboratory Manager or Designee

AGRA Earth & Environmental
ENGINEERING GLOBAL SOLUTIONS

02908

AGRA
Earth & Environmental
11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

CHAIN OF CUSTODY

PROJECT	Wolf Kill Feedlot Fertilizer
PROJECT No.	99Im12700-0
CLIENT	AGRA
PHONE No.	(425)820-4669
PROJECT MANAGER	Jeff Kaspar
PHONE No.	
SAMPLER'S NAME (please print)	Jeffrey Kaspar
PHONE No.	
SAMPLER'S SIGNATURE	

SAMPLE I.D.	DATE	TIME	MATRIX	PRESERVATIVE	CONTAINERS No.	CONTAINERS VOL.
1. MW-1	1/28/99	11:00	W	HCl in vials	2 VOAs	
2. MW-2	1/28/99	↓	W	↓	1 Liter Glass	
3. MW-3	1/28/99	11:30	W	↓	1 Liter Plastic	
4.						
5.						
6.						
7.						
8.						
9.						
10.						

ANALYSIS REQUESTED (circle, check box or write preferred method in box)

BTEX by EPA 602 / 8020	WTPH-G	BTEX / WTPH-G	WTPH-HCID	WTPH-D w/ WTPH-D EXTENDED	TPH by EPA 8015 MODIFIED	WTPH-418.1 MODIFIED	TPH by EPA 418.1	GC / MS EPA 624 / 8240 or EPA 8260 Volatiles	GC / MS EPA 625 / 8270 Semi-volatiles	VOCs EPA 601 / 8010 or EPA 602 / 8020	PCBs EPA 608 / 8080	LEAD EPA 6010 / EPA 7421 Total / Dissolved	TOTAL METALS	TCLP				
		X		X														
		X		X														
		X		X														

SAMPLE RECEIPT	LABORATORY	TURNAROUND TIME	SPECIAL INSTRUCTIONS / ADDITIONAL COMMENTS
TOTAL # CONTAINERS	SHIPPING I.D. / AIRBILL # UPS	☐ 8 HOUR	If gasoline range petroleum hydrocarbons are present please notify immediately.
CONDITION OF CONTAINERS	CARRIER	☐ 24 HOUR	
CONDITION OF SEALS	DOT DESIGNATION	☑ 1 WEEK	
	AGRA Portland	☐ 2 WEEK (standard)	
		☐ OTHER	

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
1. (Jeff Kaspar) AGRA	1/28/99	1:30 PM	1.		
2.			2.		
3. ~~Dan Hines AGRA~~ DH 1/29/99	1/29/99	DH 1/29/99 1225	3. Dan Hines / AGRA	1/29/99	1225

PAGE 1 OF 2

AGRA Earth & Environmental, Inc. (7/94)

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1.1A990067

Environmental Services Laboratory, Inc.

E S L

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 670-8520

February 11, 1999

Sean Gormley
AGRA Earth & Environmental
7477 SW Tech Center Drive

Portland, OR 97223-8025

TEL: (503)639-3400
FAX (503) 620-7892

RE: 9-91M-12700 Wolfeill Feedland Fertilizer Order No.: 9902043

Dear Sean Gormley,

Environmental Services Laboratory received 2 samples on 2/8/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
ICP Metals (ICPMET)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety, without the written approval from the Laboratory.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Kimberly Hill
Project Manager

Technical Review

Environmental Services Laboratory

Date: *11-Feb-99*

CLIENT:	AGRA Earth & Environmental	**Client Sample ID:**	MW1
Lab Order:	9902043	**Tag Number:**	
Project:	9-91M-12700 Wolfeill Feedland Fertilizer	**Collection Date:**	1/28/99
Lab ID:	9902043-01A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		**ICPMET**				Analyst: **jph**
Lead	ND	0.005		mg/L	1	2/9/99

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	

Environmental Services Laboratory

Date: *11-Feb-99*

CLIENT:	AGRA Earth & Environmental	**Client Sample ID:**	MW2
Lab Order:	9902043	**Tag Number:**	
Project:	9-91M-12700 Wolfeill Feedland Fertilizer	**Collection Date:**	1/28/99
Lab ID:	9902043-02A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS		ICPMET				Analyst: jph
Lead	0.00529	0.005		mg/L	1	2/9/99

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Environmental Services Laboratory

Date: *11-Feb-99*

CLIENT: AGRA Earth & Environmental
Work Order: 9902043
Project: 9-91M-12700 Wolfeill Feedland Fertilizer

QC SUMMARY REPORT
Method Blank

Sample ID: MB-120 Batch ID: 120 Test Code: ICPMET Units: mg/L Analysis Date 2/9/99 Prep Date: 2/9/99

Client ID: 9902043 Run ID: ICP_990209A SeqNo: 3513

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.05									
Cadmium	ND	0.002									
Chromium	ND	0.005									
Copper	ND	0.005									
Iron	ND	0.01									
Lead	ND	0.005									
Nickel	ND	0.005									
Silver	ND	0.005									
Zinc	ND	0.005									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: *11-Feb-99*

CLIENT: AGRA Earth & Environmental
Work Order: 9902043
Project: 9-91M-12700 Wolfeill Feedland Fertilizer

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID: 9902034-01A MS | Batch ID: 120 | Test Code: ICPMET | Units: mg/L | Analysis Date 2/9/99 | Prep Date: 2/9/99
Client ID: 9902043 | Run ID: ICP_990209A | SeqNo: 3514

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	36.09	0.05	5	31.25	96.8%	80	120	0			
Cadmium	.4907	0.002	0.5	0	98.1%	80	120	0			
Chromium	.5302	0.005	0.5	0.03323	99.4%	80	120	0			
Copper	.5202	0.005	0.5	0.01124	101.8%	80	120	0			
Iron	2.073	0.01	2	0.2653	90.4%	80	120	0			
Lead	.4895	0.005	0.5	0	97.9%	80	120	0			
Nickel	.4955	0.005	0.5	0.005066	98.1%	80	120	0			
Silver	.4773	0.005	0.5	0	95.5%	80	120	0			
Zinc	.5705	0.005	0.5	0.3073	52.6%	80	120	0			H

Sample ID: 9902034-01A MSD | Batch ID: 120 | Test Code: ICPMET | Units: mg/L | Analysis Date 2/9/99 | Prep Date: 2/9/99
Client ID: 9902043 | Run ID: ICP_990209A | SeqNo: 3515

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	36.02	0.05	5	31.25	95.2%	80	120	36.09	0.2%	20	
Cadmium	.4948	0.002	0.5	0	99.0%	80	120	0.4907	0.8%	20	
Chromium	.5346	0.005	0.5	0.03323	100.3%	80	120	0.5302	0.8%	20	
Copper	.5248	0.005	0.5	0.01124	102.7%	80	120	0.5202	0.9%	20	
Iron	2.075	0.01	2	0.2653	90.5%	80	120	2.073	0.1%	20	
Lead	.4934	0.005	0.5	0	98.7%	80	120	0.4895	0.8%	20	
Nickel	.5008	0.005	0.5	0.005066	99.1%	80	120	0.4955	1.1%	20	
Silver	.4808	0.005	0.5	0	96.2%	80	120	0.4773	0.7%	20	
Zinc	.5688	0.005	0.5	0.3073	52.3%	80	120	0.5705	0.3%	20	H

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: *11-Feb-99*

CLIENT: AGRA Earth & Environmental
Work Order: 9902043
Project: 9-91M-12700 Wolfeill Feedland Fertilizer

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: LCS-120 | Batch ID: 120 | Test Code: ICPMET | Units: mg/L | Analysis Date 2/9/99 | Prep Date: 2/9/99
Client ID: 9902043 | Run ID: ICP_990209A | SeqNo: 3512

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4.921	0.05	5	0	98.4%	90	110	0			
Cadmium	.482	0.002	0.5	0	96.4%	90	110	0			
Chromium	.486	0.005	0.5	0	97.2%	90	110	0			
Copper	.5008	0.005	0.5	0	100.2%	90	110	0			
Iron	1.968	0.01	2	0	98.4%	90	110	0			
Lead	.4801	0.005	0.5	0	96.0%	90	110	0			
Nickel	.482	0.005	0.5	0	96.4%	90	110	0			
Silver	.4722	0.005	0.5	0	94.4%	90	110	0			
Zinc	.4984	0.005	0.5	0	99.7%	90	110	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Environmental Services Laboratory

Date: *11-Feb-99*

CLIENT: AGRA Earth & Environmental
Work Order: 9902043
Project: 9-91M-12700 Wolfeill Feedland Fertilizer

QC SUMMARY REPORT
Initial Calibration Verification Standard

Sample ID: **CCVLOW** Batch ID: **120** Test Code: **ICPMET** Units: **mg/L** Analysis Date **2/9/99** Prep Date:

Client ID: **9902043** Run ID: **ICP_990209A** SeqNo: **3511**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	.5037	0.002	0.5	0	100.7%	90	110	0			
Chromium	.4908	0.005	0.5	0	98.2%	90	110	0			
Copper	.5034	0.005	0.5	0	100.7%	90	110	0			
Iron	.5185	0.01	0.5	0	103.7%	90	110	0			
Lead	.502	0.005	0.5	0	100.4%	90	110	0			
Nickel	.5038	0.005	0.5	0	100.8%	90	110	0			
Silver	.4916	0.005	0.5	0	98.3%	90	110	0			
Zinc	.5023	0.005	0.5	0	100.5%	90	110	0			

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank