

Final
Preliminary Assessment/Site Inspection Report
12 Consent Order Sites and 8 PI/PAOC Sites

Former Vieques Naval Training Range
Vieques, Puerto Rico



Prepared for
Department of the Navy
NAVFAC ATLANTIC

Contract No. N62470-02-D-3052
CTO-039

VOLUME 2 - APPENDICES

Appendix H
Well Completion Diagrams

Appendix H
SWMU 1



PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW01	SHEET 1	OF 1
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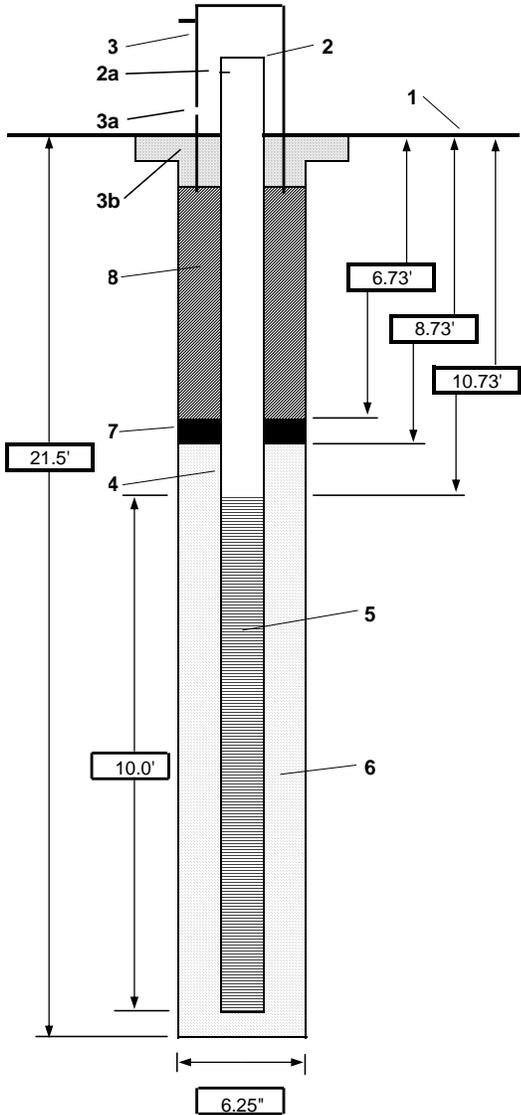
WELL COMPLETION DIAGRAM

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1, Camp Garcia Landfill**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon to rock, switched to 6-1/4" OD air hammer.**

WATER LEVELS : **19.19 ft btoc** START : **01/14/04 @ 1400** END : **01/15/04 @ 1700** LOGGER : **J. Swenfurth**



1- Ground elevation at well	<u>51.77 ft amsl</u>
2- Top of casing elevation	<u>54.47 ft amsl</u>
a) vent hole?	<u>None</u>
3- Above Ground Casing	<u>4 in X 4 in X 3 ft high galvanized aluminium</u>
a) weep hole?	<u>None</u>
b) concrete pad dimensions	<u>3 ft X 3 ft X 4 in</u>
4- Dia./type of well casing	<u>2 inch</u> <u>Schedule 40 PVC</u>
5- Type/slot size of screen	<u>Schedule 40 PVC</u> <u>0.010 inch slot</u>
6- Type screen filter	<u>20-30 sand (TEC Materials)</u>
a) Quantity used	<u>8-100 lb bags</u>
7- Type of seal	<u>Pure Gold - medium chips, 3/8 inch diameter</u>
a) Quantity used	<u>3/4 bag</u>
8- Grout	<u>Ponce Cement ASTM C-150, Type I, Grey</u>
a) Grout mix used	<u>Portland Cement, water, sand</u>
b) Method of placement	<u>2 inch diameter tremmie pipe</u>
c) Vol. of well casing grout	<u>8.8 gallons</u>
Development method	<u>Grundfos pump with vinyl tubing,</u> <u>with 2-inch diameter surge block.</u>
Development time	<u>5 hours</u>
Volume purged	<u>170 gallons</u>
Comments	<u>2 - 2 inch diameter bollards installed</u>
	<u> </u>



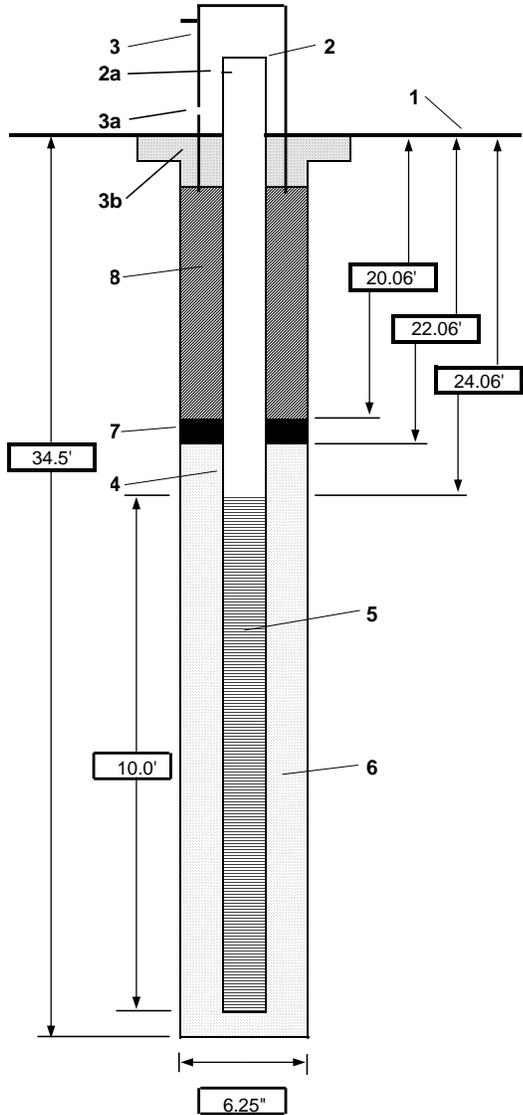
PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW02	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1, Camp Garcia Landfill**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon to rock, switched to 6-1/4" OD air hammer.**

WATER LEVELS : **25.75 ft btoc** START : **01/15/04 @ 1400** END : **01/15/04 @ 1730** LOGGER : **J. Swenfurth**



1- Ground elevation at well	16.04 ft amsl
2- Top of casing elevation	18.98 ft amsl
a) vent hole?	None
3- Above Ground Casing	4 in X 4 in X 3 ft high galvanized aluminium
a) weep hole?	None
b) concrete pad dimensions	3 ft X 3 ft X 4 in
4- Dia./type of well casing	2 inch Schedule 40 PVC
5- Type/slot size of screen	Schedule 40 PVC 0.01 inch slot
6- Type screen filter	20-30 sand (TEC Materials)
a) Quantity used	4-100 lb bags
7- Type of seal	Pure Gold - medium chips, 3/8 inch diameter
a) Quantity used	1 bag
8- Grout	Ponce Cement ASTM C-150, Type I, Grey Portland Cement, water, sand
a) Grout mix used	
b) Method of placement	2 inch diameter tremmie pipe
c) Vol. of well casing grout	26.2 gallons
Development method	Grundfos pump with vinyl tubing, with 2-inch diameter surge block.
Development time	3.5 hours
Volume purged	72 gallons
Comments	2 - 2 inch Bollards installed



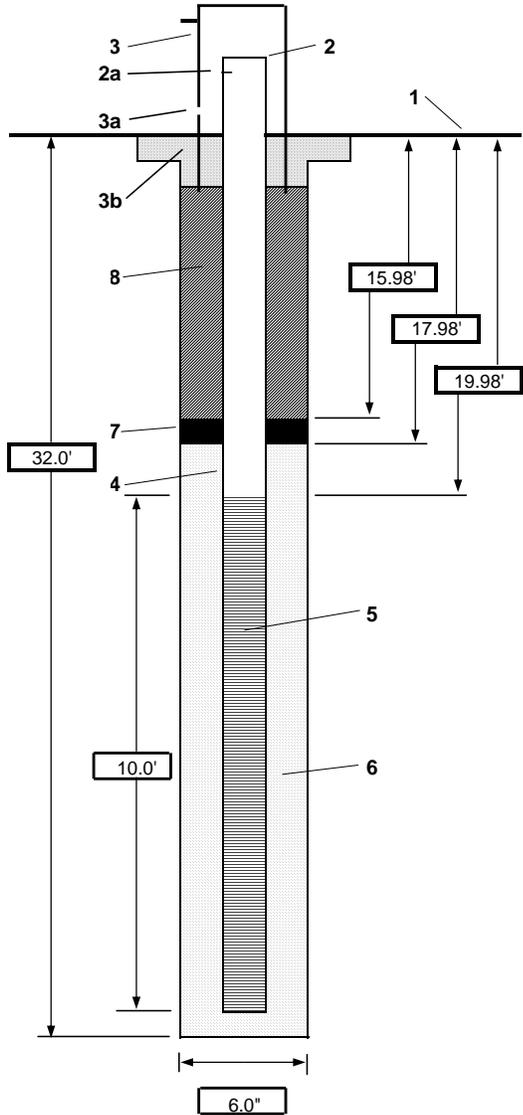
PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW03	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1, Camp Garcia Landfill**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon sampler.**

WATER LEVELS : **19.05 ft btoc** START : **01/16/04 @ 1130** END : **01/16/04 @ 1745** LOGGER : **J. Swenfurth**



1- Ground elevation at well	<u>12.75 ft amsl</u>
2- Top of casing elevation	<u>15.32 ft amsl</u>
a) vent hole?	<u>None</u>
3- Above Ground Casing	<u>4 in X 4 in X 3 ft high galvanized aluminium</u>
a) weep hole?	<u>None</u>
b) concrete pad dimensions	<u>3 ft X 3 ft X 4 in</u>
4- Dia./type of well casing	<u>2 inch</u> <u>Schedule 40 PVC</u>
5- Type/slot size of screen	<u>Schedule 40 PVC</u> <u>0.01 inch slot</u>
6- Type screen filter	<u>20-30 sand (TEC Materials)</u>
a) Quantity used	<u>2.5-100 lb bags</u>
7- Type of seal	<u>Pure Gold - medium chips, 3/8 inch diameter</u>
a) Quantity used	<u>1 bag</u>
8- Grout	<u>Ponce Cement ASTM C-150, Type I, Grey</u> <u>Portland Cement, water, sand</u>
a) Grout mix used	<u>2 inch diameter tremmie pipe</u>
b) Method of placement	<u>20.9 gallons</u>
c) Vol. of well casing grout	
Development method	<u>Grundfos pump with vinyl tubing, 2 inch surge</u> <u>block/Peristaltic pump with TFE tubing</u>
Development time	<u>28.0 hours</u>
Volume purged	<u>20 gallons</u>
Comments	<u>2 - 2 inch Bollards installed</u>



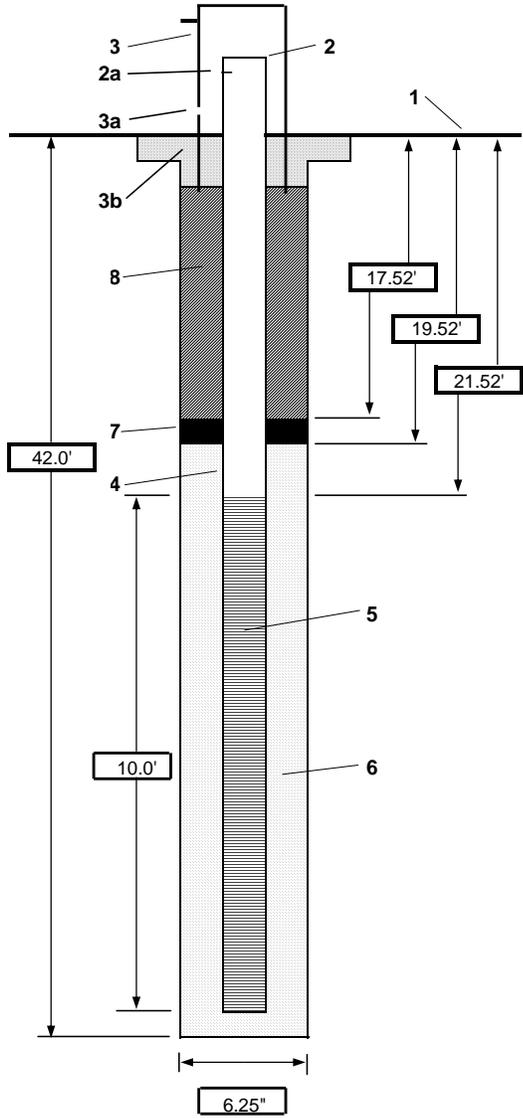
PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW04	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1, Camp Garcia Landfill**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon to rock, switched to 6-1/4" OD air hammer.**

WATER LEVELS : **21.09 ft btoc** START : **01/17/04 @ 1100** END : **01/17/04 @ 1530** LOGGER : **J. Swenfurth**



1- Ground elevation at well	16.12 ft amsl
2- Top of casing elevation	18.76 ft amsl
a) vent hole?	None
3- Above Ground Casing	4 in X 4 in X 3 ft high galvanized aluminium
a) weep hole?	None
b) concrete pad dimensions	3 ft X 3 ft X 4 in
4- Dia./type of well casing	2 inch Schedule 40 PVC
5- Type/slot size of screen	Schedule 40 PVC 0.01 inch slot
6- Type screen filter	20-30 sand (TEC Materials)
a) Quantity used	2.5-100 lb bags
7- Type of seal	Pure Gold - medium chips, 3/8 inch diameter
a) Quantity used	1/2 bag
8- Grout	Ponce Cement ASTM C-150, Type I, Portland cement (1-bag), water, sand (3 bags)
a) Grout mix used	
b) Method of placement	2 inch diameter tremmie pipe
c) Vol. of well casing grout	22.9 gallons
Development method	12V Whale pump with vinyl tubing, 2 inch surge block/Peristaltic pump with TFE tubing
Development time	37.5 hours
Volume purged	70 gallons
Comments	
	2 - 2 inch diameter bollards installed



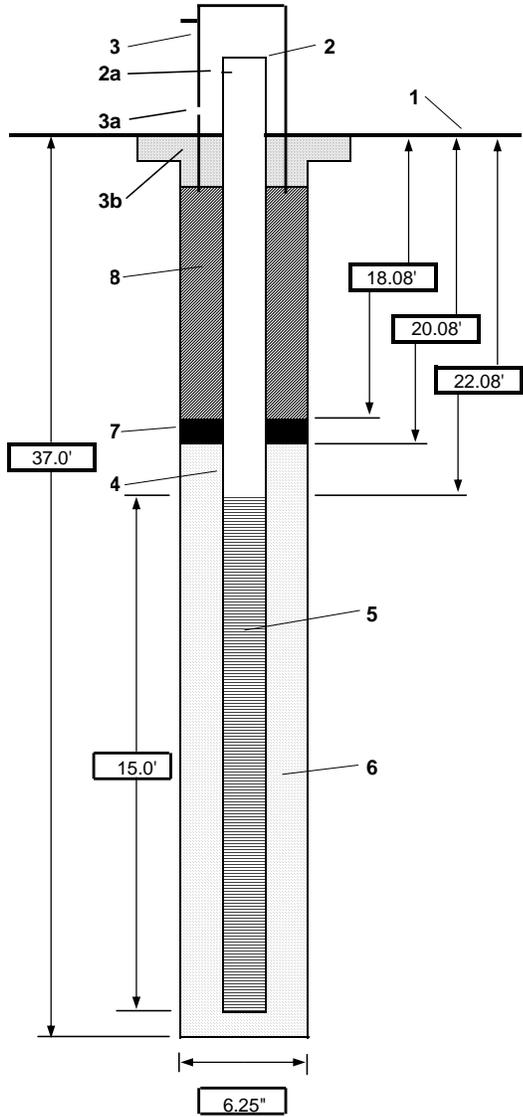
PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW05	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1, Camp Garcia Landfill**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon to rock, switched to 6-1/4" OD air hammer.**

WATER LEVELS : **23.70 ft btoc** START : **01/17/04 @ 1745** END : **01/23/04 @ 0900** LOGGER : **J. Swenfurth**



1- Ground elevation at well	16.17 ft amsl
2- Top of casing elevation	19.04 ft amsl
a) vent hole?	None
3- Above Ground Casing	4 in X 4 in X 3 ft high galvanized aluminium
a) weep hole?	None
b) concrete pad dimensions	3 ft X 3 ft X 4 in
4- Dia./type of well casing	2 inch Schedule 40 PVC
5- Type/slot size of screen	Schedule 40 PVC 0.01 inch slot
6- Type screen filter	20-30 sand (TEC Materials)
a) Quantity used	4 -100 lb bags
7- Type of seal	Pure Gold - medium chips, 3/8 inch diameter
a) Quantity used	1/2 - bag
8- Grout	Ponce Cement ASTM C-150, Type I, Grey Portland Cement, water, sand
a) Grout mix used	
b) Method of placement	2 inch diameter tremmie pipe
c) Vol. of well casing grout	23.6 gallons
Development method	12V Whale pump with vinyl tubing, 2-inch diameter surge block.
Development time	19.25 hours
Volume purged	20 gallons
Comments	
	2 - 2 inch diameter bollards installed

Appendix H
SWMU 10



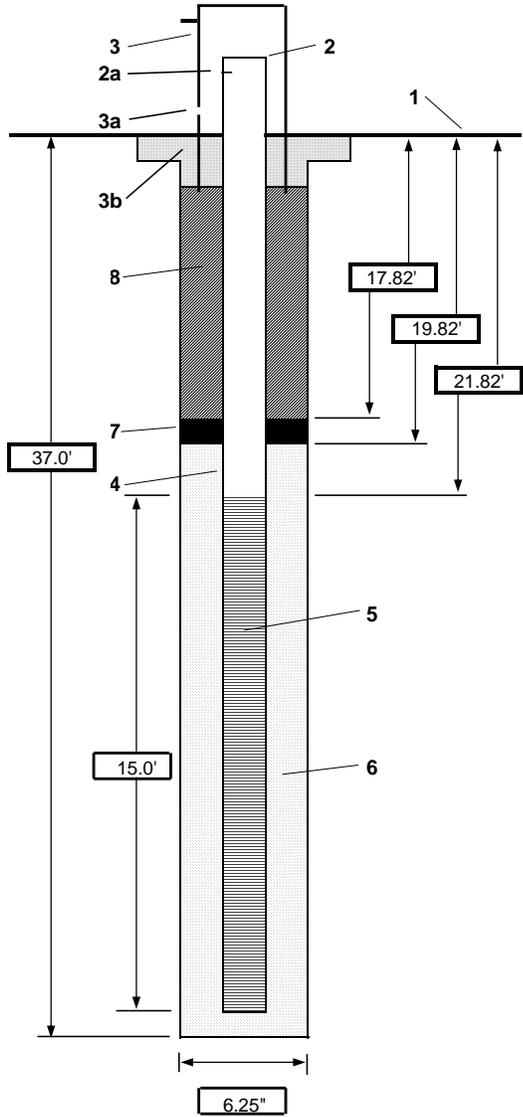
PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW10MW02	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 10, Sewage Treatment Lagoons**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon to rock, switched to 6-1/4" OD air hammer.**

WATER LEVELS : **34.28 ft. btoc** START : **01/19/04 @ 1445** END : **01/20/04 @ 1200** LOGGER : **J. Swenfurth**



1- Ground elevation at well	27.18 ft amsl
2- Top of casing elevation	30.44 ft amsl
a) vent hole?	None
3- Above Ground Casing	4 in X 4 in X 3 ft high galvanized aluminium
a) weep hole?	None
b) concrete pad dimensions	3 ft X 3 ft X 4 in
4- Dia./type of well casing	2 inch Schedule 40 PVC
5- Type/slot size of screen	Schedule 40 PVC 0.010 inch slot
6- Type screen filter	20-30 sand (TEC Minerals)
a) Quantity used	4-100 lb bags
7- Type of seal	Pure Gold - medium chips, 3/8 inch diameter
a) Quantity used	5 bags
8- Grout	Ponce Cement ASTM C-150, Type I, Grey Portland cement, water, sand
a) Grout mix used	
b) Method of placement	2 inch diameter tremmie pipe
c) Vol. of well casing grout	23.3 gallons
Development method	Grundfos pump with vinyl tubing with 2-inch diameter surge block.
Development time	25.8 hours
Volume purged	35 gallons
Comments	
	2 - 2 inch diameter bollards installed.



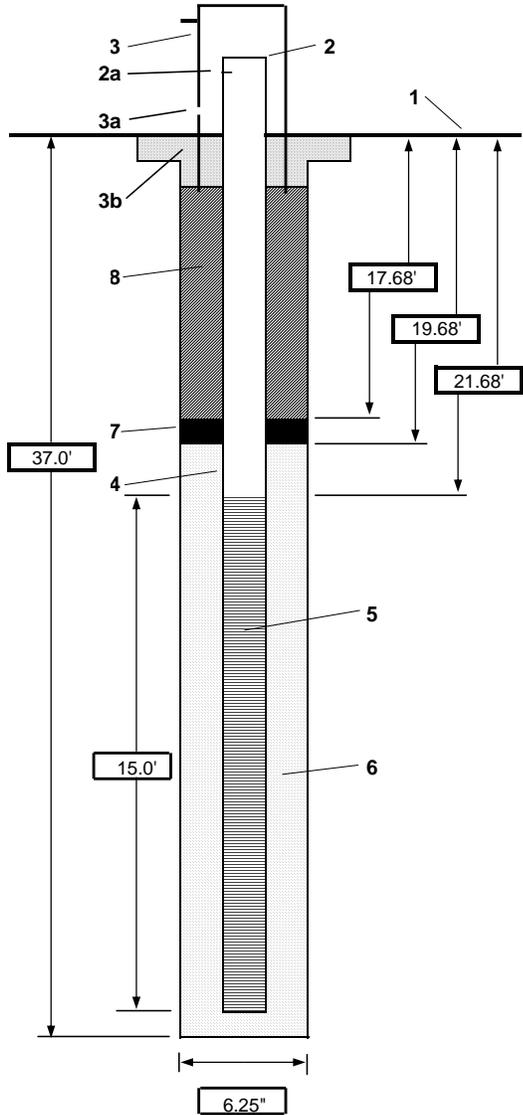
PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW10MW03	SHEET 1	OF 1
WELL COMPLETION DIAGRAM			

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 10, Sewage Treatment Lagoons**

DRILLING CONTRACTOR : **Geoworks, Inc.**

DRILLING METHOD AND EQUIPMENT USED : **Mobile B-61, 6" OD HSA's with 2" split spoon to rock, switched to 6-1/4" OD air hammer.**

WATER LEVELS : **34.02 ft btoc** START : **01/19/04 @ 1645** END : **01/20/04 @ 1230** LOGGER : **J. Swenfurth**



1- Ground elevation at well	27.48 ft amsl
2- Top of casing elevation	30.30 ft amsl
a) vent hole?	None
3- Above Ground Casing	4 in X 4 in X 3 ft high galvanized aluminium
a) weep hole?	None
b) concrete pad dimensions	3 ft X 3 ft X 4 in
4- Dia./type of well casing	2 inch Schedule 40 PVC
5- Type/slot size of screen	Schedule 40 PVC 0.010 inch slot
6- Type screen filter	20-30 sand (TEC Minerals)
a) Quantity used	4-100 lb bags
7- Type of seal	Pure Gold - medium chips, 3/8 inch diameter
a) Quantity used	5 bags
8- Grout	Ponce Cement ASTM C-150, Type I, Grey Portland cement, water, sand
a) Grout mix used	
b) Method of placement	2 inch diameter tremmie pipe
c) Vol. of well casing grout	23.1 gallons
Development method	Grundfos pump with vinyl tubing, 2 inch surge block/12V Whale pump with vinyl tubing
Development time	22.82 hours
Volume purged	21 gallons
Comments	
	2 - 2 inch diameter bollards installed.

Appendix H PI-PAOC Sites



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-03

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PI-4

LOCATION : PI-4

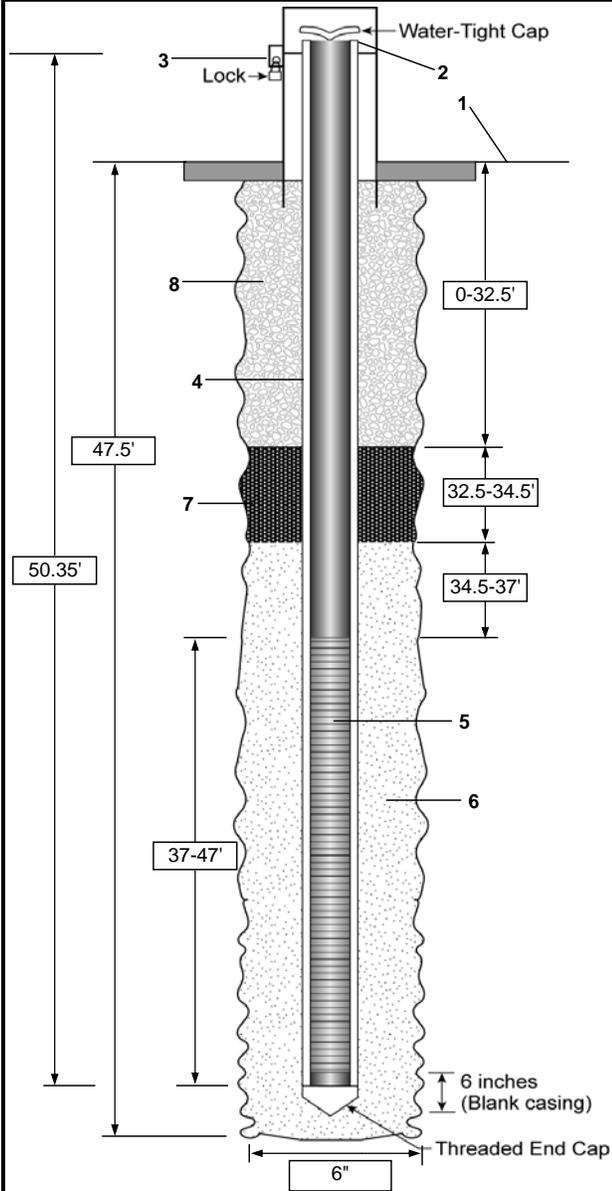
DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 46.03 BTOC

START : 1/23/2006

END : 1/23/2006 LOGGER : J. Sathaye



1- Ground elevation at well	<u>~41.0'</u>
2- Top of casing elevation	<u>44.10'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>7 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~25 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite Powder. x 47lbs cement</u>
b) Method of placement	<u>Poured from surface</u>
c) Vol. of well casing grout	<u>~ 50gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~ 49.50 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-04

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PI-4

LOCATION PI-4

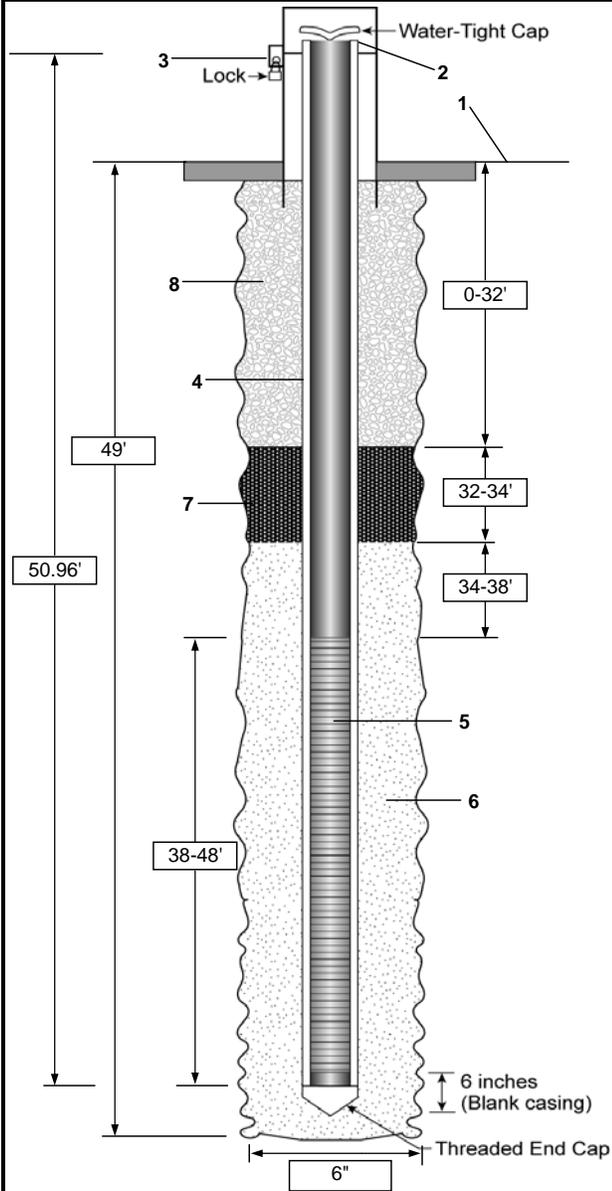
DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 43.71 BTOC

START : 1/24/2006

END : 1/27/2006 LOGGER : J. Sathaye



1- Ground elevation at well	<u>~38.6'</u>
2- Top of casing elevation	<u>41.28'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>6 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~ 25 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite. 10 x 47lbs cement</u>
b) Method of placement	<u>Poured from surface</u>
c) Vol. of well casing grout	<u>~ 55 gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~85 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-05

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PI-4

LOCATION PI-4

DRILLING CONTRACTOR : Geoworks, Inc.

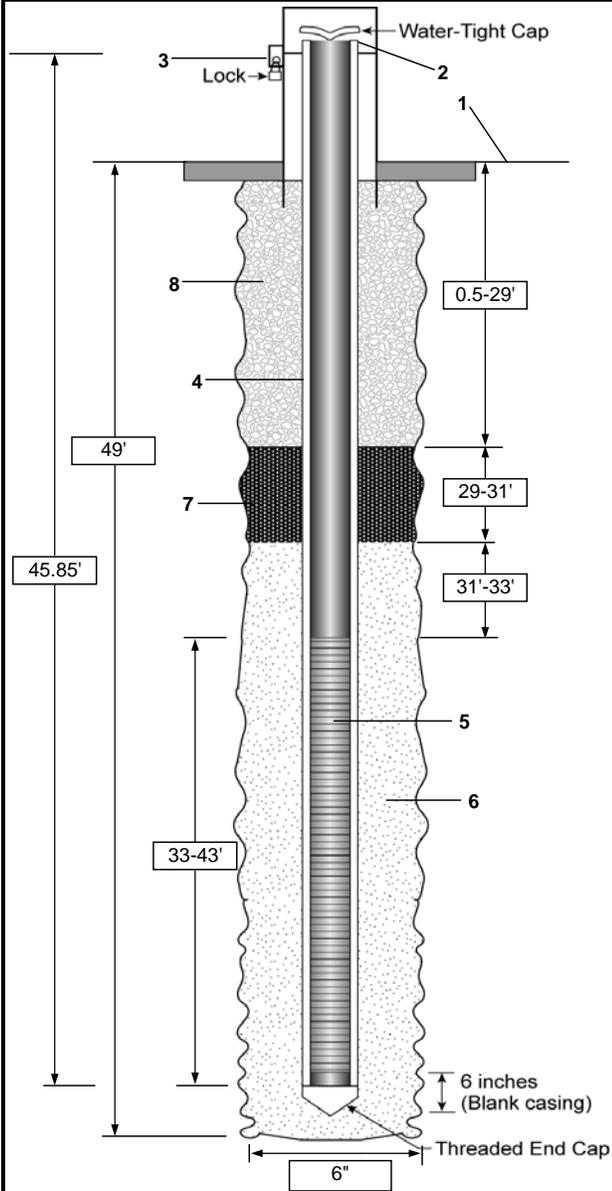
DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 37.46 BTOC

START : 1/19/2006

END : 1/23/06

LOGGER : J. Sathaye



1- Ground elevation at well	<u>~32.1</u>
2- Top of casing elevation	<u>34.71'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>7 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~ 25 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite Powder. x 47lbs cement</u>
b) Method of placement	<u>Poured from Surface</u>
c) Vol. of well casing grout	<u>~ 23 gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~102 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-01

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PI-7

LOCATION : PI-7

DRILLING CONTRACTOR : Geoworks, Inc.

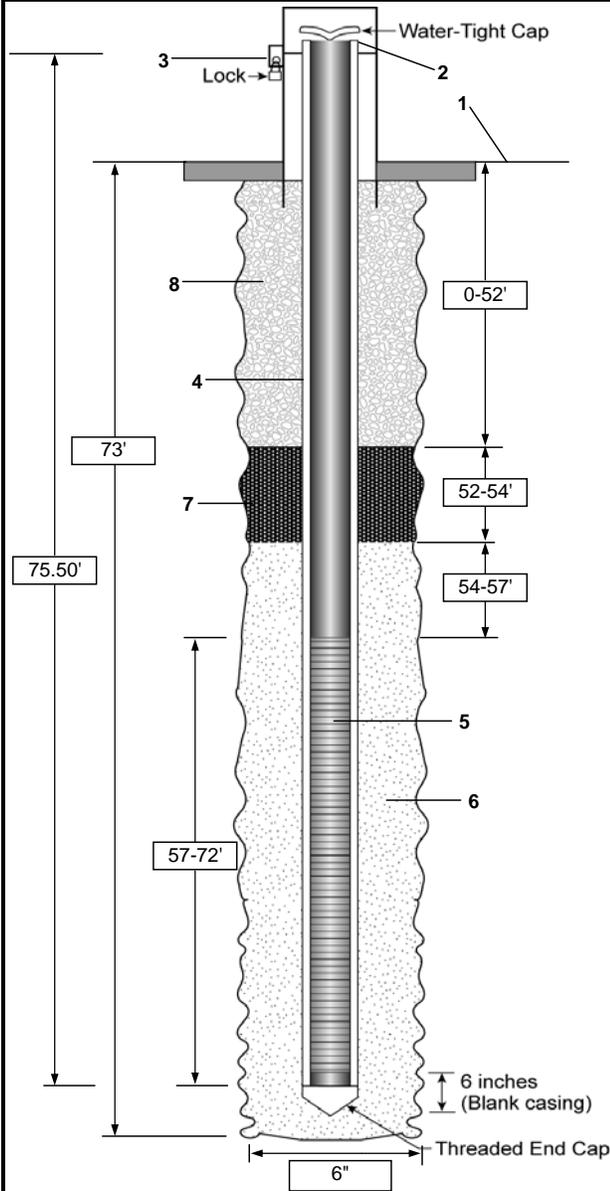
DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 64.80' BTOC

START : 2/23/2006

END : 3/2/2006

LOGGER : J. Sathaye



1- Ground elevation at well	<u>~103.4'</u>
2- Top of casing elevation	<u>106.67'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>8 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~25 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite Powder. 9.5x 47lbs cement</u>
b) Method of placement	<u>Tremie pipe from 30' ft</u>
c) Vol. of well casing grout	<u>~75 gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~41 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-02

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PI-7

LOCATION : PI-7

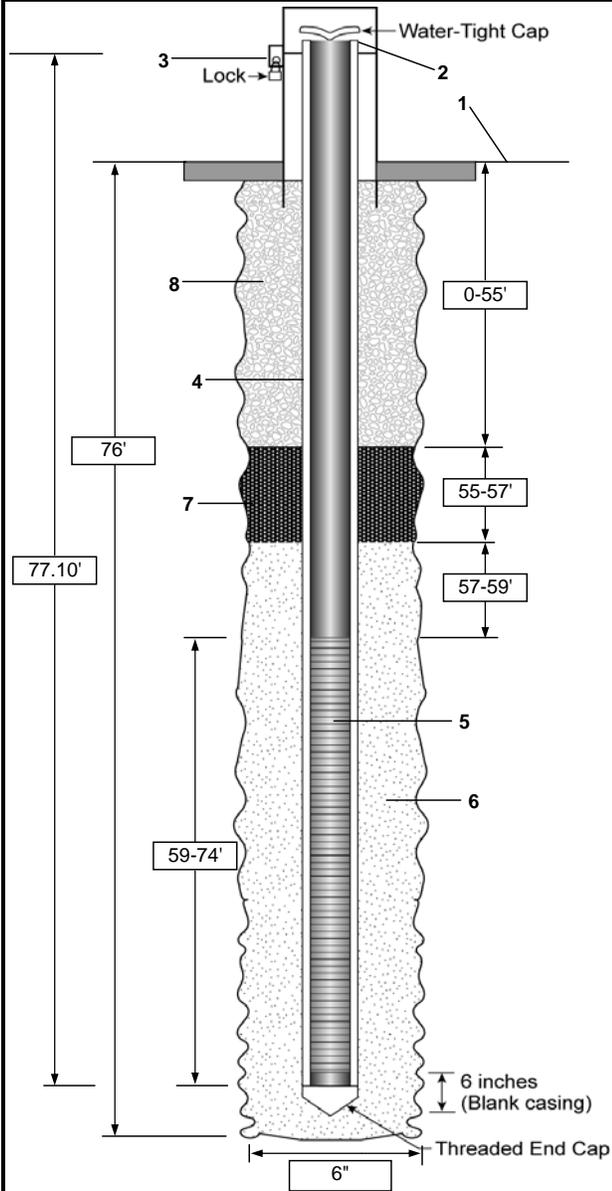
DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 66.29' BTOC

START : 2/20/2006

END : 2/22/2006 LOGGER : J. Sathaye



1- Ground elevation at well	<u>~107.4'</u>
2- Top of casing elevation	<u>110.21'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>7 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~30 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite Powder. 9.5x 47lbs cement</u>
b) Method of placement	<u>Tremie pipe from 30' ft</u>
c) Vol. of well casing grout	<u>~69 gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~31 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-01

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PAOC-L

LOCATION PAOC-L

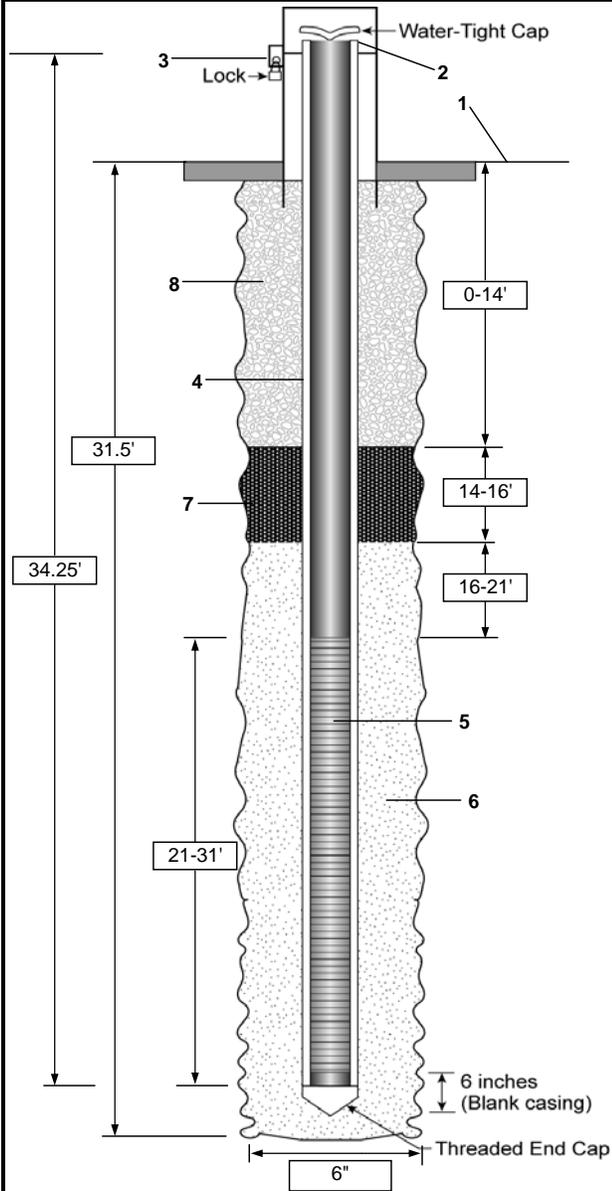
DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 24.65 BTOC

START : 2/15/2006

END : 3/13/2006 LOGGER : Lisa Carter



1- Ground elevation at well	<u>~78.7'</u>
2- Top of casing elevation	<u>81.74'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>4 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~ 25 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite Powder.</u>
b) Method of placement	<u>Poured from surface</u>
c) Vol. of well casing grout	<u>~ 60 gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~ 13 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-02

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PAOC-N

LOCATION PAOC-N

DRILLING CONTRACTOR : Geoworks, Inc.

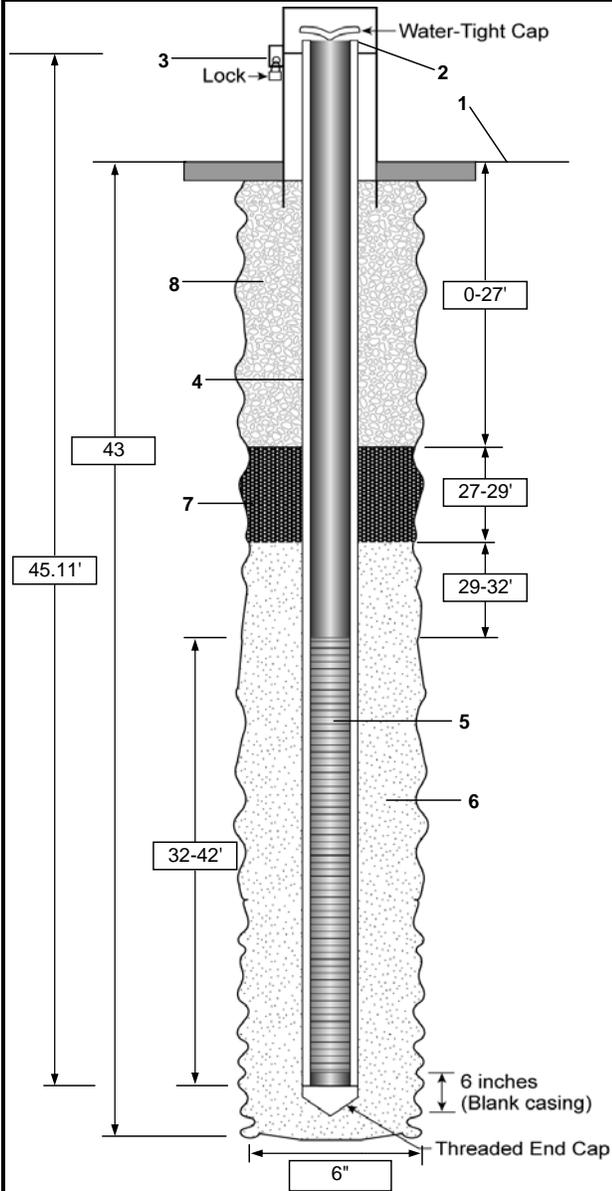
DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 34.31 BTOC

START : 2/1/2006

END : 2/2/2006

LOGGER : J. Sathaye



1- Ground elevation at well	<u>~74.2'</u>
2- Top of casing elevation	<u>77.05'</u>
3- Wellhead protection cover type	<u>Metal locking cover with 4 cement filled bollards</u>
a) concrete pad dimensions	<u>3 X 3'</u>
4- Dia./type of well casing	<u>2" Sch. 40 PVC</u>
5- Screen slot size	<u>10 slot (0.01")</u>
6- Type screen filter	<u>Clean Standard Sand & Silica</u>
a) Quantity used	<u>7 bags (50 lbs bags)</u>
7- Type of seal	<u>3/8" bentonite chips</u>
a) Quantity used	<u>~ 25 lbs</u>
8- Grout	
a) Grout mix used	<u>20:1 ratio of Cement and Bentonite Powder.</u>
b) Method of placement	<u>Poured from surface</u>
c) Vol. of well casing grout	<u>~ 35 gallons</u>
Development method	<u>Surge and submersible pump</u>
Volume purged during development	<u>~42 gallons</u>

Comments



PROJECT NUMBER
183719.FI.02

WELL NUMBER
MW-01

SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : East Vieques PAOC-U

LOCATION PAOC-U

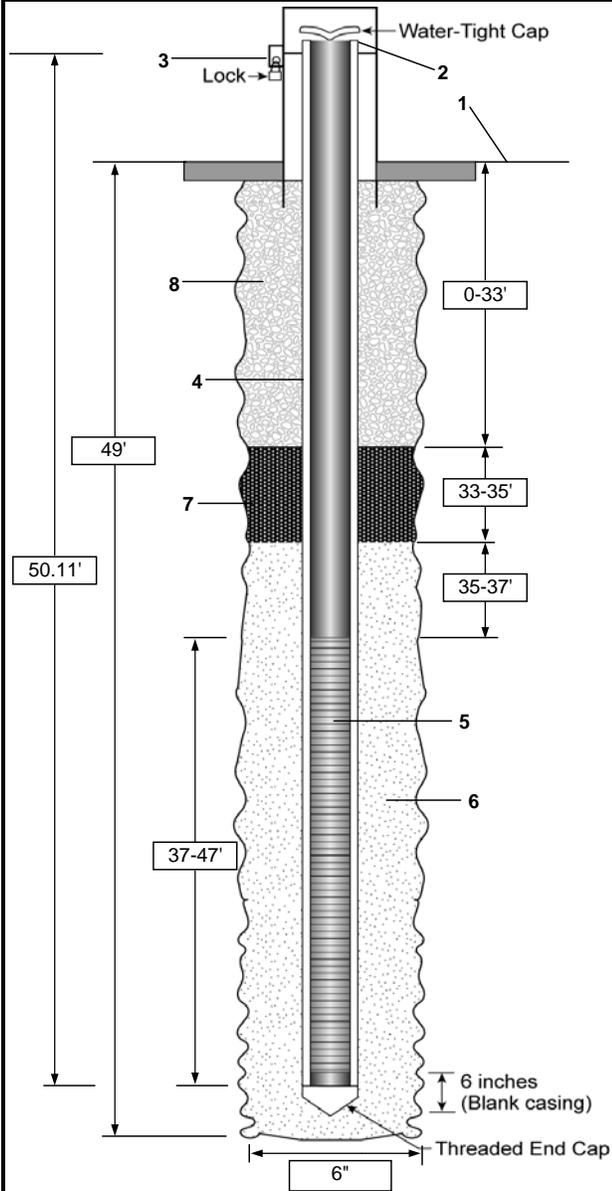
DRILLING CONTRACTOR : Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : Mobile Drill B-61, Hollow Stem Auger, Air Hammer

WATER LEVEL : 40.8' BTOC

START : 2/14/2006

END : 2/17/2006 LOGGER : Lisa Carter



1- Ground elevation at well	<u> -61.0' </u>
2- Top of casing elevation	<u> 63.86' </u>
3- Wellhead protection cover type	<u> Metal locking cover with 4 cement filled bollards </u>
a) concrete pad dimensions	<u> 3 X 3' </u>
4- Dia./type of well casing	<u> 2" Sch. 40 PVC </u>
5- Screen slot size	<u> 10 slot (0.01") </u>
6- Type screen filter	<u> Clean Standard Sand & Silica </u>
a) Quantity used	<u> 7 bags (50 lbs bags) </u>
7- Type of seal	<u> 3/8" bentonite chips </u>
a) Quantity used	<u> ~ 25 lbs </u>
8- Grout	
a) Grout mix used	<u> 20:1 ratio of Cement and Bentonite Powder </u>
b) Method of placement	<u> Poured from surface </u>
c) Vol. of well casing grout	<u> ~120 gallons </u>
Development method	<u> Surge and submersible pump </u>
Volume purged during development	<u> ~66 gallons </u>

Comments

Appendix I
Well Development Logs

Appendix I
SWMU 1



PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW01	SHEET 1 OF 1
WELL DEVELOPMENT LOG		

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1**

DEVELOPMENT CONTRACTOR : **CH2M HILL**

DEVELOPMENT METHOD AND EQUIPMENT USED : **Grundfos pump with vinyl tubing, 2-inch diameter surge block.**

START WATER LEVELS : **17.76 ft btoc** END : **19.15 ft btoc** LOGGER : **I. Lynch**

MAXIMUM DRAWDOWN DURING PUMPING: **2.8 ft at 0.8 gpm**

RANGE AND AVERAGE DISCHARGE RATE: **0.6 - 0.8 gpm**

TOTAL QUANTITY OF WATER DISCHARGED: **170 gallons**

DISPOSITION OF DISCHARGE WATER: **Contained in 55-gallon drums**

Date/ Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
01/17/2004 1350							Turned pump on, rate @ 0.8 gpm Orangish red, very silty
1405	13.0	19.25	>1000	--	--	--	Clearing up
1410	18.0	19.20	>1000	27.60	6.64	474	Lt orange, odorless, low silt
1440	30.0	19.70	420	27.60	6.61	458	Lt orange, opaque, odorless
1442							Pumped silt off bottom, surged well
1450							Turned pump on, rate @ 0.8 gpm Orange, very silty
1515	50.0	20.50	>1000	27.80	6.61	464	Lt orange, opaque, odorless, silty
1530	62.0	20.55	520	27.80	6.60	461	Lt orange, opaque, odorless, low silt
1535	66.0	20.60	220	27.80	6.61	460	Lt orange, opaque, odorless, low silt
1545	72.0	20.58	237	27.80	6.60	459	White, opaque, odorless
1546							Turned pump off Surge well
1551							Turned pump on, rate @ 0.8 gpm Orange, odorless, very silty
1600	79.0	20.10	>1000	27.80	6.59	458	Lt orange, opaque, odorless, silty
1615	91.0	20.21	367	27.80	6.60	461	White, opaque, odorless
1630	100.0	20.56	265	27.80	6.59	460	White, opaque, odorless
1645	110.0	20.58	161	27.80	6.60	459	White, opaque, odorless
1647							Turned pump off
01/18/2004 1200		17.80					Surge well
1230							Turned pump on, rate @ 0.8 gpm Orange, very silty
1245	122.0	18.75	220	28.00	6.70	465	White, opaque, odorless
1300	134.0	18.95	129	27.80	6.60	460	Clearing up
1315	145.0	19.05	71	27.80	6.60	461	Clearing up
1330	150.0	19.15	73.5	27.80	6.60	459	Clear, odorless
1345	160.0	19.18	37.8	27.80	6.61	460	Clear, odorless
1400	166.0	19.15	23.7	27.80	6.61	461	Clear, odorless
1402							Turned pump off. development complete.



PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW02	SHEET 1 OF 1
WELL DEVELOPMENT LOG		

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1**

DEVELOPMENT CONTRACTOR : **CH2M HILL**

DEVELOPMENT METHOD AND EQUIPMENT USED : **Grundfos pump with vinyl tubing, 2-inch diameter surge block.**

START WATER LEVELS : **26.15 ft btoc** END : **29.25 ft btoc** LOGGER : **I. Lynch**

MAXIMUM DRAWDOWN DURING PUMPING: **3.1 ft**

RANGE AND AVERAGE DISCHARGE RATE: **0.4 gpm**

TOTAL QUANTITY OF WATER DISCHARGED: **72 gallons**

DISPOSITION OF DISCHARGE WATER: **Contained in 55-gallon drums**

Date/ Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
01/18/2004 1425							Turned pump on, rate @ 0.4 gpm Lt brown, odorless, very silty
1445	8.0	29.20	>1000	28.00	6.77	5,385	Tan, odorless, silty Surged well
1500	12.0	30.08	>1000	28.00	6.79	5,400	Tan, odorless, silty
1515	16.0	31.30	>1000	28.00	6.80	5,469	Tan, odorless, silty
1530	22.0	33.90	>1000	28.00	6.83	5,463	Clearing, opaque
1535							Turned pump off
01/19/2004 1450		26.25					
1500							Turned pump on, rate @ 0.3 gpm
1515	26.0	28.55	>1000	28.00	6.88	5,567	Lt brown, odorless, silty
1530	31.0	28.60	908	28.60	6.87	5,566	Lt brown, odorless, silty
1532							Turned pump off Surged well
1536							Turned pump on, rate @ 0.4 gpm
1545	35.0	28.70	>1000	28.60	6.88	5,564	Lt brown, odorless, silty
1600	45.0	28.90	332	28.60	6.87	5,501	White, opaque, odorless, low silt
1615	52.0	28.90	151	28.60	6.90	5,457	Clear, odorless
1616							Turned pump off Surged well
1620							Turned pump on, rate @ 0.4 gpm
1630	58.0	28.90	71.1	28.60	6.90	5,435	Clear, odorless
1645	65.0	29.10	21	28.60	6.89	5,440	Clear, odorless
1700	72.0	29.25	10.1	28.60	6.89	5,438	Clear, odorless
1710							Turned pump off. Development complete.



PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW1MW05	SHEET 1 OF 1
WELL DEVELOPMENT LOG		

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 1**

DEVELOPMENT CONTRACTOR : **CH2M HILL**

DEVELOPMENT METHOD AND EQUIPMENT USED : **Whale pump with vinyl tubing, 2-inch diameter surge block.**

START WATER LEVELS : **36.50 ft** END : **36.55 ft** LOGGER : **I. Lynch**

MAXIMUM DRAWDOWN DURING PUMPING: **4.0 ft (Dry)**

RANGE AND AVERAGE DISCHARGE RATE: **0.13 gal/min**

TOTAL QUANTITY OF WATER DISCHARGED: **20 gallons**

DISPOSITION OF DISCHARGE WATER: **Contained in 55-gallon drum**

Date/ Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
01/22/2004 0800	0.8	36.50					Well pumped dry Orange, odorless, silty
1300	1.6	37.41	>1000				Well pumped dry Orange, odorless, silty
1400		39.00					Check water level
1500		38.60					Check water level
1600		38.55					Check water level
1700		38.52					Check water level
01/24/2004 1230		36.01	>1000	27.40	7.25	4,857	Surge well, purged dry Lt orange, opaque, odorless
1700	5.0	35.70	>1000	27.40	7.36	4,774	Lt orange, odorless, very silty
01/25/2004 1630		33.45					Turned pump on
1634	8.0	39.00	>1000	27.40	7.75	4,964	Tan, opaque, odorless, silty
01/26/2004 1045		33.71					Surge well Turned pump on
	10.0	39.00	>1000	27.50	7.46	4,978	Tan, opaque, odorless, silty
1600	12.0	39.00	>1000	27.50	7.60	4,889	Orange, odorless, very silty
01/27/2004 1300		36.40					Surge well Purged dry
	14.0	39.00	>1000	27.50	7.60	4,874	Purged dry Orange, odorless, very silty
1530		36.51					Surge well Purged dry
	16.0	39.00	>1000	27.50	7.58	4,869	Orange, odorless, very silty
01/28/2004 1600	18.0	36.61	>1000	28.20	7.60	4,997	Purged dry Orange, odorless, silty
01/29/2004 0915	20.0	36.55	>1000	27.90	7.61	5,052	Purged dry Odorless, silty
							Turned pump off. Development completed.

Appendix I
SWMU 10



PROJECT NUMBER 183719.FI.ZZ	WELL NUMBER CGW10MW02	SHEET 1 OF 2
WELL DEVELOPMENT LOG		

PROJECT : **AFWTF Phase I RFI** LOCATION : **SWMU 10**

DEVELOPMENT CONTRACTOR : **CH2M HILL**

DEVELOPMENT METHOD AND EQUIPMENT USED : **Grundfos pump with new disposable vinyl tubing**

START WATER LEVELS : **34.21 ft btoc** END : **39.0 ft btoc** LOGGER : **I. Lynch, M. Brown**

MAXIMUM DRAWDOWN DURING PUMPING: **5.87 ft (Dry)**

RANGE AND AVERAGE DISCHARGE RATE: **0.03 gpm to 0.13 gpm (max)**

TOTAL QUANTITY OF WATER DISCHARGED: **35 gallons**

DISPOSITION OF DISCHARGE WATER: **Contained in 55-gallon drum**

Date/Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
01/23/2004 1145	6.0						Turned pump on
1200							Pumped dry. Turned pump off.
1720		34.20					Surged well
1725							Turned pump on
1727	7.0	40.00	>1000	28.10	6.22	23,300	Tan, odorless, silty, very turbid
							Allowed well to recharge overnight
01/24/2004 1100		34.18					Surged well with surge block Purged dry
1130	11.0	40.00	>1000	27.90	6.30	23,462	Tannish orange, odorless, very silty
1645	14.0	35.22	>1000	27.80	6.25	22,997	Purged dry Tannish orange, odorless, silty
01/25/2004 1400		34.06					Surged well Turned pump on, rate @ .13 gal/min
1420	15.0	40.00	>1000	27.90	6.37	22,922	Tan, opaque, odorless, silty
01/26/2004 1420		34.21					Turned pump off Surged well
1445							Pumping rate @ .03 gal/min Pumped dry
1540		38.00	>1000	29.42	6.28	21,195	Pumped dry Orange, odorless, turbid
1541							Turned pump off
01/27/2004 0845		32.26					Water level reading taken.
0850							Surged well
0905		34.95					Turned pump on
0920	18.0	Dry		29.02	6.30	21,349	Orange, odorless, very turbid and silty
1420		34.38					
1430							Turned pump on
1431		35.31	768				
1435		35.40	888				



PROJECT NUMBER
183719.FI.ZZ

WELL NUMBER
CGW10MW03

SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : **AFWTF Phase I RFI**

LOCATION : **SWMU 10**

DEVELOPMENT CONTRACTOR : **CH2M HILL**

DEVELOPMENT METHOD AND EQUIPMENT USED : **Grundfos pump and Whale pump with vinyl tubing**

START WATER LEVELS : **33.99 ft btoc**

END : **39.0 ft btoc**

LOGGER : **I. Lynch, M. Brown**

MAXIMUM DRAWDOWN DURING PUMPING: **5.55 ft (Dry)**

RANGE AND AVERAGE DISCHARGE RATE: **0.13 gal/min**

TOTAL QUANTITY OF WATER DISCHARGED: **21 gallons**

DISPOSITION OF DISCHARGE WATER: **Contained in 55-gallon drum**

Date/Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
01/23/2004 1250							Turned pump on
1305	4.0						Well pumped dry
1740		35.30					Surged well
1744	8.0	39.00	>1000	26.70	7.19	4,135	Pumped dry Tan, odorless, very silty
01/24/2004 1145		33.75					Surged well Turn pump on, rate @ .13 gal/min
1215	12.0	39.00	>1000	28.75	7.20	4,080	Pumped dry Orange, very silty
1630	15.0	33.79	>1000	28.70	7.18	3,993	Pumped dry Still silty
01/26/2004 1620		34.75					Turn pump on, rate @ .05 gal/min
1635		36.10	>1000	27.40	7.31	3,792	
1650		37.00	121	27.30	7.30	3,788	
1655							Turned pump off
01/27/2004 0935		34.40					Surged well
0936		39.00	>1000	27.50	7.32	3,639	Turned pump on, rate @ 0.25 gal/min Orange, odorless, very silty
0940							Pumped well dry
1500	16.0		74.9	28.55	7.52	3,681	Clear to opaque, odorless
1505							Turned pump off
01/28/2004 0800							Used Whale pump
0810	19.0	33.80	74.2	28.20	7.44	3,760	Opaque to clear, odorless
0811							Pumped well dry
1500		34.81					Turned pump on
1505	21.0	39.00	56.9	28.10	7.58	3,699	Clear, odorless Turned pump off. Development completed.



PROJECT NUMBER
183719.FI.ZZ

WELL NUMBER
CGW10MW05

SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : **AFWTF Phase I RFI**

LOCATION : **SWMU 10**

DEVELOPMENT CONTRACTOR : **CH2M HILL**

DEVELOPMENT METHOD AND EQUIPMENT USED : **Grundfos pump with vinyl tubing**

START WATER LEVELS : **33.8 ft btoc**

END : **38.9 ft btoc**

LOGGER : **I. Lynch**

MAXIMUM DRAWDOWN DURING PUMPING: **5.05 ft**

RANGE AND AVERAGE DISCHARGE RATE: **0.197 gpm**

TOTAL QUANTITY OF WATER DISCHARGED: **55 gallons**

DISPOSITION OF DISCHARGE WATER: **Contained in 55-gallon drum**

Date/ Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
01/25/2004 1300	1.0	33.80	>1000	27.50	6.58	7,000	Orange, odorless, silty
1335	8.0	37.70	182	27.90	6.69	7,295	Opaque white, odorless
1336							Turn pump off Surged well
1340							Turn pump on, rate @ 1 gal/min Pumped dry
1348	16.0	43.00	>1000	27.90	6.59	7,602	Orange, silty
1350							Turned pump off
01/26/2004 0900		33.80					Surged well
0920							Turn pump on, rate @ 0.21 gpm
0945							Increase pump rate to 0.29 gpm
0950		37.92	>1000	27.68	6.68	7,087	Orange, odorless, silty
1005		38.23	446	28.70	6.93	7,098	Opaque white, odorless
1020		38.24	26	29.22	6.85	6,945	Clear, odorless
1022							Surged well
1035							Turned pump on, rate @ 0.29 gpm
1050		38.35	>1000	29.68	6.89	7,139	Orange, silty
1105		38.55	157	29.95	6.87	7,208	Opaque, odorless
1106							Turned pump off, surged well
1120							Turned pump on
1135		38.80	>1000	29.34	6.85	7,184	Opaque, yellow, odorless
1150		40.00	207	29.41	6.85	7,200	Clear, odorless
1205		39.84	11.3	29.25	6.87	7,209	Clear, odorless
1220	55.0	38.90	5.46	29.11	6.84	7,190	Turned pump off. Development complete.

Appendix I

PI-PAOC Sites

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (Color, odor, sheen, sediment, etc.)
0830	18.25	49.73*	-	-	-	-	*Top of pump. Well dry
1455	18.25	43.78	>1000	29.48	7.14	3.191	Surge well. 200 ml/min
1505	18.75	46.57	>1000	30.25	6.89	3.283	
1515	19.25	48.15	>1000	30.59	6.87	3.240	300 ml/min
1525	19.75	50.02*	>1000	30.58	6.95	3.170	*Top of pump. Well dry
1527	Turned pump off.						
2/27/06 0812	19.75	43.35	>1000	28.66	6.70	3.390	Surge well. 1200 ml/min
0822	24.00	50.20*	>1000	29.44	6.89	3.453	*Top of pump. Well dry
0822	Turned pump off.						
1611	24.00	43.68	>1000	29.25	7.10	3.391	Surge well. 1200 ml/min
1621	27.00	48.40	>1000	29.74	6.87	3.471	
1628	30.00	48.80*	>1000	29.84	6.87	3.481	*Top of pump.
1628	Turned pump off.						
2/28/06 0952	30.00	43.49	>1000	29.20	6.46	3.342	Surge well. 1200 ml/min
1002	33.5	49.06*	>1000	29.65	6.78	3.438	*Top of pump.
1005	Turned pump off.						
1638	35.00	43.74	>1000	29.13	6.90	3.408	Surge well. 1200 ml/min
1648	39.00	49.40*	>1000	29.24	6.87	3.401	*Top of pump.
1649	Turned pump off.						
3/1/06 0754	39.00	43.4	>1000	28.71	6.65	3.539	Surge well. 1200 ml/min
0804	43.00	48.68*	>1000	28.75	6.97	3.557	*Top of pump.
0804	Turned pump off.						
1620	43.00	43.59	>1000	28.84	7.16	3.544	Surge well. 1200 ml/min
1630	47.00	49.42*	>1000	28.95	7.02	3.612	*Top of pump.
1630	Turned pump off.						
3/2/06 0734	47.00	43.42	>1000	28.97	6.76	3.495	Surge well.
0744	51.00	49.49*	>1000	28.94	6.90	3.515	*Top of pump.
0745	Turned pump off.						
1535	51.00	43.58	>1000	29.24	7.18	3.460	Surge well. 1200 ml/min
1543	55.00	49.15*	>1000	29.33	6.91	3.566	*Top of pump.
1543	Turned pump off.		>1000				
3/3/06 0750	55.00	43.49	>1000	28.75	6.46	3.368	Surge well. 1200 ml/min
0800	59.00	49.23*	>1000	29.10	6.85	3.420	*Top of pump.
0802	Turned pump off.		>1000				
1450	59.00	43.71	>1000	29.52	7.13	3.370	Surge well. 1200 ml/min
1500	63.00	49.18*	>1000	29.44	6.85	3.475	*Top of pump.
1501	Turned pump off.						
Notes:							



PROJECT NUMBER
183719.FI.02

WELL NUMBER
PI4 - MW-04

WELL DEVELOPMENT LOG

PROJECT : NAVFAC - Atlantic, East Vieques

LOCATION : PI-4

Date: 3/7/2006 to 3/15/2006

DEVELOPMENT CONTRACTOR : CH2M HILL

DEVELOPMENT METHOD AND EQUIPMENT USED : Stainless Steel Mega Monsoon pump w/ control box, Surge Block, YSI 600XLM, Herin WLI, Hach Turbidity meter.

START WATER LEVELS : 43.54 ft BTOC START : 43.54 END : 48.20 LOGGER : W Trevathan/B. Collow

MAXIMUM DRAWDOWN DURING PUMPING: 49.32 ft BTOC

RANGE AND AVERAGE DISCHARGE RATE: 200 ml/min

TOTAL QUANTITY OF WATER DISCHARGED: 63 Gallons

DISPOSITION OF DISCHARGE WATER: 55 Gallons Drums TD =50.96 ft BTOC

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (Color, odor, sheen, sediment, etc.)
3/7/06 16:31	Pump on	43.54	>1000	29.4	7.19	1.853	540 ml/min
16:38	Pump on	45.85	135	29.62	7.03	1.760	780 ml/min
16:41	Pump on	46.80	157	30.08	7.03	1.650	
16:42	66.5	47.00	86.5	29.03	7.03	1.605	780 ml/min
16:49		49.32	138	29.92	7.04	1.454	810 ml/min Dry. Turned pump off.
3/8/06 15:45		43.47					Static DTW
15:51	Pump on	44.40	>1000	29.68	7.21	3.623	Pumping sand.
16:00		47.10	101	29.48	7.05	3.647	Still much sand. 520 ml/min
16:04		47.88	182	29.88	7.02	3.71	Still much sand. 600ml/min
16:09		49.04	136	29.93	7.01	3.742	Still much sand. 500 ml/min
16:12	70.5	Well pumps dry.					
3/13/06 10:00		43.53	Static DTW				Pump on.
10:04		44.60	113	29.07	6.90	3.291	V. fine sand. 430 ml/min
10:24		47.47	13.2	29.09	6.78	3.313	V. fine sand. 450 ml/min.
10:34		48.48	32.6	30.1	6.79	3.33	V. fine sand. 450 ml/min.
10:38	75	Well pumps dry.					
3/14/06 10:07		43.54	177	27.7	7.00	3.402	pump on.
10:25		46.20	19.2	29.5	6.95	3.432	V. fine sand. 450 ml/min.
10:35		47.21	16.9	29.9	6.95	3.445	V. fine sand. 500 ml/min
10:45		48.25	12.4	30.4	6.93	3.511	V. fine sand. 500 ml/min
10:55	81	48.87	59.0	30.6	6.94	3.514	Pump off.
3/15/06 14:58	81	43.50	26.5	28.7	7.02	3.415	Install v. carefully. Pump on. 200ml/min
15:20	82	45.25	149	29.1	7.03	3.411	V. fine sand. 200 ml/min
15:30	82.5	45.93	25.6	29.5	7.01	3.416	200 ml/min
15:40	83.0	46.35	19.4	29.7	7.03	3.419	200 ml/min
15:50	83.5	46.84	15.1	29.9	7.01	3.42	200 ml/min
16:00	84.0	47.40	10.6	30.1	7.02	3.418	200 ml/min
16:10	84.5	47.81	7.1	30.2	7.00	3.420	200 ml/min
16:20	85.0	48.20	4.9	30.3	7.01	3.419	Pump off.
Development Complete.							

Notes:

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (Color, odor, sheen, sediment, etc.)
3/13/06 1537		37.32	Static WL				Pump on.
0843		38.16	347	28.9	7.01	1.553	750 ml/min
0855		40.02	218	29.5	7.04	1.563	290 ml/min
0918	52	Well pumps dry.					
3/14/06 0835		37.36	>1000	28.5	7.22	1.632	Pump on. 600 ml/min
0845		38.75	204	29.5	7.21	1.632	Much fine sand. 600 ml/min
0855		39.55	127	29.5	7.22	1.635	Much fine sand. 600 ml/min
0905		39.91	63	29.3	7.20	1.638	Much fine sand. 550 ml/min
0925	58	43.07	95	29.4	7.21	1.637	Much fine sand. 650 ml/min
3/16/06 0955	58	37.30	23.8	29.2	7.18	1.601	Pump hung at - 4.40' 170 ml/min
1015	58.8	38.59	58.5	30.6	7.11	1.603	150 ml/min
1035	59.5	38.88	27.6	30.8	7.09	1.604	150 ml/min
1055	60.3	39.12	22.4	31.3	7.09	1.612	150 ml/min
1115	61	39.20	17.1	31.4	7.10	1.611	150 ml/min
1127	61.4	Pump kicks off - stop for today.					
	Jeep battery won't start well. Low voltage is why pump kicked off on its own.						
3/17/06 0815	61.4	37.32	546	28.8	7.15	1.610	Pump on. Left in place overnight.
0830	62	37.81	180	29.1	7.11	1.608	150 ml/min
0845	62.6	38.05	140	29.3	7.13	1.614	150 ml/min
0900	63.2	38.32	46.3	29.6	7.09	1.611	
0915	63.8	38.64	16.7	29.7	7.11	1.614	
0930	64.4	38.35	9.63	29.9	7.13	1.610	
0945	65	39.02	9.56	29.9	7.14	1.612	Pump off.
	Development complete.						
Notes:							

Appendix J
Groundwater Sampling Data Sheets

Appendix J
SWMU 1

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Client: US Navy
 Location: SWMU 1
 Event: AFWTF Phase I RFI
 Date: 02/06/2004 02/07/2004
 Weather: Scattered rain, light wind
Temperature in the 80s

Project Number: 183719.FI.ZZ
 Well ID: CGW1MW04
 Sample ID: CGW1GW04-R01
 MS/MSD: YES / NO
 Sample Team: I. Lynch, B. Brice
M. Stinnett

Total Depth: 34.17 FT.(BTOC) Measuring Device: Electronic WLI
 Depth to water: (-) 21.12 FT.(BTOC) Date and Time: 02/06/2004 @ 0910
 Water Column: 13.05 FT. WELL DIAMETER
(x) 0.163 GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
 Well Volume: 2.12 GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)
 Minimum Purge Volume: 6.36 GAL. (x 3 well volumes)
 Purge Device: QED micropurge bladder pump with TFE bladder and tubing. Average flow @ 0.105 gpm.
 Sample Time: 02/07/2004 @ 0930
 Sample Appearance: Clear, odorless

FIELD PARAMETERS

Time	Depth to Water, FT	Purged Vol. (gals)	pH	Cond. µmhos/cm	Temp., °C	DO	ORP	Turbidity	Color / Odor / Comments
0930									Turn pump on, rate @ 0.105 gpm Very silty, odorless
1054	24.48	2.0	7.05	4,116	28.48	7.50	176.00	>1000	Tan, odorless, silty
1110	24.85	2.5	7.10	4,112	28.73	7.24	205.40	>1000	Tan, odorless, silty
1125	25.01	3.0	7.12	4,098	28.51	7.31	215.00	>1000	Tan, odorless, silty
1200	25.90	4.0	7.13	4,088	28.50	7.33	217.00	>1000	Tan, odorless, silty
1235	25.90	5.0	7.11	4,098	28.70	7.49	224.00	>1000	Tan, odorless, silty
1325	26.07	6.5	7.12	4,097	29.45	7.41	229.00	>1000	Tan, odorless, silty
1410	26.00	7.6	7.67	4,095	28.60	7.01	231.00	>1000	Tan, odorless, silty
1515	26.00	9.0	7.11	4,098	28.50	7.42	248.00	>1000	Tan, odorless, silty
1530	26.10	10.5	7.11	4,100	28.50	7.30	239.00	>1000	Tan, odorless, silty
02/07/2004									
0900	20.35								Turn pump on, rate @ 0.105 gpm
0918	22.70	11.5	7.22	4,251	28.13	8.05	209.30	76.1	Clear, odorless
0930	22.80							51.0	Began collecting samples Clear, odorless
0955	22.90							23.2	Clear, odorless
1020	22.95							14.5	Clear, odorless
1040	23.01							7.7	Clear, odorless
Notes: Dissolved metals samples filtered with a 0.45 micron filter.									
- Split sample with EPA.									

Signed by: I. Lynch

02/07/2004
Date and Time

Appendix J
SWMU 10

Appendix J
PI-PAOC Sites

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Client: NAVFAC -Atlantic
 Location: Vieques - PI-4
 Event: _____
 Date: 4/4/2006
 Weather: P Cloudy w/Breeze
high 80°~ 87°

Well ID: EPI04-MW3
 Sample ID: EPI04-GW3-06B
 MS/MSD: YES / **(NO)**
 Sample Team: Chris Hayslip
Kenji Butler

Project Number: 183719.FI.02

Total Depth: 50.35 FT.(BTOC) Measuring Device: Heron WLI, YSI, and Hach Turbidity Meter
 Depth to water: (-) 46.03 FT.(BTOC) Date and Time: 4/4/06 1530
 Water Column: 4.32 FT. WELL DIAMETER
(x) 0.163 GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
 Well Volume: 0.7 GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)
 Total Purge Volume: 5.0 GAL.
 Purge Device: Stainless Steel Monsoon Pump w/ Control Box
 Sample Time: 1645
 Sample Appearance: Clear

FIELD PARAMETERS

Time	Purged Vol. (gals)	DTW (ft) BTOC	pH	Cond. µmhos/cm	Temp., °C	DO (%)	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Flow Rate
1537	0	46.03	6.78	1776	28.88	6.82	252.7	999	0.89	Brownish, 200ml/min
1542	0.75	46.04	6.78	1775	29.54	7.36	269.7	999	0.89	
1547	1.00	46.04	6.78	1773	29.54	7.74	277.1	783	0.89	
1552	1.40	46.04	6.78	1763	29.88	8.29	287.2	355	0.88	
1557	1.80	46.04	6.79	1759	29.97	8.53	289.1	205	0.88	
1602	2.20	46.04	6.80	1738	29.99	8.66	287.0	66.3	0.87	
1607	2.60	46.05	6.80	1734	29.98	8.79	287.5	52.3	0.87	
1612	3.00	46.09	6.81	1712	30.21	9.98	287.0	27.0	0.87	clear
1617	3.30	46.09	6.81	1706	30.14	8.94	288.2	17.0	0.85	
1622	3.40	46.12	6.81	1692	30.16	9.09	288.8	10.8	0.84	
1627	3.80	46.13	6.80	1683	30.03	9.14	291.3	8.61	0.84	
1632	4.20	46.13	6.81	1674	30.21	9.25	292.6	6.90	0.84	
1637	4.60	46.13	6.81	1671	30.14	9.29	291.9	6.75	0.84	
1642	5.00	46.13	6.81	1672	30.19	9.30	290.8	6.23	0.84	

Signed by: Kenji Butler

Date and Time 4/4/06 1710

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Client: NAVFAC -Atlantic
 Location: Vieques - PI-4
 Event: _____
 Date: 4/5/2006
 Weather: P Cloudy, Humid Windy
-85F

Well ID: EPI04 - MW05
 Sample ID: EPI04-GW5-06B
 MS/MSD: YES / **(NO)**
 Sample Team: Chris Hayslip
Kenji Butler

Project Number: 183719.FI.02

Total Depth: 45.85 FT.(BTOC) Measuring Device: Heron WLI, YSI, and Hach Turbidity Meter
 Depth to water: (-) 37.46 FT.(BTOC) Date and Time: 4/5/06 1610
 Water Column: 8.39 FT. WELL DIAMETER
(x) 0.163 GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]
 Well Volume: 1.4 GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)
 Total Purge Volume: 5.8 GAL.
 Purge Device: Stainless Steel Monsoon Pump w/ Control Box
 Sample Time: 1740
 Sample Appearance: Clear

FIELD PARAMETERS

Time	Purged Vol. (gals)	DTW (ft) BTOC	pH	Cond. µmhos/cm	Temp., °C	DO (%)	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Flow Rate
1620	0	37.46	6.75	4647	28.50	3.73	164.7	>1000	2.47	Brown & cloudy. 300ml/min
1625	0.30	37.60	6.75	4698	28.71	3.91	178.0	>1000	2.50	
1630	0.60	37.60	6.73	4841	28.97	3.75	188.6	>1000	3.58	
1635	0.90	29.55	7.48	1900	29.27	3.93	84.0	>1000	0.97	
1640	1.30	37.65	6.69	5430	29.21	4.20	203.8	>1000	2.92	
1645	1.60	37.65	6.68	5554	29.28	4.30	209.3	299	2.98	
1650	2.00	37.67	6.68	5633	29.31	4.56	211.2	131	3.03	
1655	2.30	37.64	6.67	5668	29.06	4.48	210.2	53.9	3.05	
1700	2.70	37.65	6.66	5647	29.11	4.40	214.4	187	3.04	
1705	3.10	37.65	6.66	5817	24.1	4.52	222.1	113	3.13	
1710	3.50	37.65	6.67	5913	29.09	4.57	217.2	34.7	3.19	Clear
1715	4.00	37.67	6.66	5987	29.07	4.64	204.1	15.5	3.23	
1720	4.50	37.68	6.66	6020	28.99	4.67	194.8	9.8	3.25	
1725	5.00	37.67	6.66	6034	28.99	4.64	186.7	10.3	3.27	
1730	5.40	37.67	6.66	6084	28.93	4.69	181.5	9.67	3.30	
1735	5.80	37.67	6.66	6127	28.89	4.72	180.8	9.42	3.36	

Signed by: Chris Hayslip

Date and Time 4/5/06 1755

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Client: NAVFAC -Atlantic
 Location: Vieques - PI-7
 Event: _____
 Date: 4/6/2006
 Weather: Cloudy Hot Humid
-89F°

Well ID: EPI07-MW3
 Sample ID: EPI07-GW03-06B
 MS/MSD: YES / **(NO)**
 Sample Team: Chris Hayslip
Kenji Butler

Project Number: 183719.FI.02

Total Depth: 75.31 FT.(BTOC)
 Depth to water: (-) 46.15 FT.(BTOC)
 Water Column: 29.16 FT.

Measuring Device: Heron WLI, YSI, and Hach Turbidity Meter
 Date and Time: 4/6/06 1334

WELL DIAMETER
 (x) 0.163 GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]

Well Volume: 4.8 GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Total Purge Volume: 5.2 GAL.

Purge Device: Stainless Steel Monsoon Pump w/ Control Box

Sample Time 1545

Sample Appearance Clear

FIELD PARAMETERS

Time	Purged Vol. (gals)	DTW (ft) BTOC	pH	Cond. µmhos/cm	Temp., °C	DO (%)	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Flow Rate
1334	0	46.15	6.73	1674	27.67	2.58	92.6	999	0.84	280 ml/min
1339	0.25	47.35	6.40	1672	27.93	2.47	131.5	632	0.84	
1344	0.50	47.65	6.47	1675	28.12	2.79	153.8	220	0.84	
1349	0.75	48.05	6.54	1671	28.21	2.96	166.7	123	0.84	200 ml/min
1354	0.90	98.35	6.57	1672	28.99	3.20	175.1	88.7	0.84	
1359	1.20	48.67	6.59	1659	27.89	3.43	173.6	81.4	0.83	
1404	1.40	49.00	6.47	1657	27.20	3.62	172.6	74.3	0.83	
1409	1.60	99.31	6.49	1657	27.14	3.74	170.2	74.8	0.83	
1414	1.80	49.59	6.51	1653	27.14	3.81	172.8	67.2	0.83	
1419	2.00	49.88	6.54	1658	27.39	3.98	182.0	65.6	0.83	200 ml/min
1424	2.20	50.18	6.55	1652	27.53	4.10	189.7	62.2	0.83	
1429	2.40	50.52	6.57	1846	27.64	4.25	199.4	45.2	0.83	
1434	2.60	50.61	6.58	1657	27.73	4.34	206.6	32.9	0.83	
1439	2.80	50.67	6.58	1651	27.78	4.29	210.3	25.8	0.83	
1444	3.00	50.92	6.59	1658	28.04	4.51	214.8	20.9	0.83	
1449	3.20	51.30	6.60	16544	28.30	4.53	216.5	20.0	0.83	
1454	3.40	51.78	6.61	1660	28.55	4.58	218.5	13.2	0.83	
1459	3.60	51.99	6.61	1661	28.41	4.60	220.8	14.0	0.83	
1504	3.80	52.30	6.62	1663	28.41	4.60	233.9	11.3	0.83	
1509	4.0	52.56	6.63	1663	28.99	4.56	226.3	6.79	0.83	225 ml/min
1514	4.2	52.83	6.64	1663	28.49	4.61	229	5.34	0.83	
1519	4.4	53.02	6.64	1665	28.51	4.62	230.1	4.77	0.83	
1524	4.6	53.24	6.65	1666	28.46	4.63	230.2	3.98	0.83	
1529	4.8	53.45	6.65	1665	28.55	4.65	230	4.33	0.87	
1534	5.0	53.60	6.65	1667	28.66	4.48	235.6	3.12	0.83	
1539	5.2	53.64	6.65	1667	28.54	4.54	237.3	3.9	0.83	

Signed by: Chris Hayslip

Date and Time 4/6/06 1610

GROUNDWATER SAMPLING DATA SHEET

CH2M HILL, INC.

Client: NAVFAC -Atlantic
 Location: Vieques - PAOC-U
 Event: _____
 Date: 4/3/2006
 Weather: P. Cloudy, Windy Humid
-86° F

Well ID: EPAU-MW1
 Sample ID: EPAU-GW01-06B
 MS/MSD: YES NO
 Sample Team: Chris Hayslip
Kenji Butler

Project Number: 183719.FI.02

Total Depth: 50 FT.(BTOC)
 Depth to water: (-) 45.21 FT.(BTOC)
 Water Column: 4.79 FT.

Measuring Device: Heron WLI and Hach Turbidity Meter
 Date and Time: 4/3/2006 1230

WELL DIAMETER
 (x) 0.163 GAL/FT. [(2" DIA.= .163 GAL/FT.) (4" DIA. = .653 GAL/FT.)]

Well Volume: 0.8 GAL. (1" DIA.= .041 GAL/FT.) (1 1/4 " DIA.= .064 GAL/FT.)

Total Purge Volume: 7.5 GAL.

Purge Device: Stainless Steel Monsoon Pump w/ Control Box

Sample Time: 1355

Sample Appearance: Clear

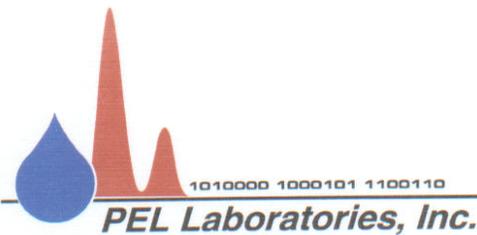
FIELD PARAMETERS

Time	Purged Vol. (gals)	DTW (ft) BTOC	pH	Cond. µmhos/cm	Temp., °C	DO (%)	ORP mV	Turbidity NTUs	Salinity ppt	Color / Odor / Flow Rate
1236	0	45	7.04	1682	29.53	7.63	167	999	0.84	No Odor. 300 ml/min
1241	0.75	45.69	6.96	1673	30.27	7.88	201	999	0.84	
1245	1.00	45.70	6.96	1679	30.73	8.94	216.8	999	0.84	
1251	1.50	45.83	6.96	1677	30.65	9.39	224.6	880	0.84	
1256	2.00	45.83	6.96	1687	30.38	9.8	232.8	255	0.84	
1301	2.50	45.83	6.96	1686	30.42	9.98	239.5	346	0.84	
1306	3.00	45.83	6.96	1687	30.38	9.8	232.8	255	0.84	350 ml/min
1311	3.50	45.84	6.96	1686	30.14	10.35	245.9	28.8	0.84	
1316	4.00	45.85	6.96	1683	30.30	10.38	248	19.2	0.84	350 ml/min
1321	4.50	45.78	6.96	168.5	30.02	10.40	250.2	11.3	0.84	
1326	5.00	45.73	6.96	140.8	30.47	10.47	251.7	11.1	0.84	
1331	5.50	45.72	6.96	141.2	30.50	10.54	252.8	7.97	0.84	
1336	6.00	45.73	6.96	142.2	30.62	10.6	254.2	6.18	0.84	
1341	6.50	45.73	6.96	142.8	30.45	10.62	255.5	5.57	0.84	
1346	7.00	45.73	6.96	142.6	30.60	10.62	256.5	5.11	0.84	350 ml/min
1351	7.50	45.73	6.96	142.9	30.64	10.63	257	4.65	0.84	

Signed by: Chris Hayslip

Date and Time 4/3/06 1400

Appendix K
IDW Disposal Information



Florida Department of Health #E84207
July 1, 2004 - June 30, 2005

CWA - Extractable Organics, General Chemistry, Metals,
Pesticides-herbicides-PCB's, Volatile Organics
RCRA/CERCLS - Extractable Organics, General Chemistry, Metals
Pesticides-Herbicides-PCB's, Volatile Organics

- CERTIFICATE OF ANALYSIS -

Report Date: 07/29/2004

To: Marty Clasen
CH2M Hill
4350 W. Cypress St.
Tampa, FL 33607
United States

W (813)874-0777
F (813)874-3056

PROJECT ID: Vieques IDW
WORK ORDER: 2407016
DATE RECEIVED: Wednesday, July 21, 2004

Project Notes:

(t): Short Hold Time Analysis Date

Samples reported on dry weight basis

PEL Contact: Mark Gudnason / extension: 242

4420 Pendola Point Road • Tampa, Florida 33619
(813)247-2805 • FAX: (813)248-1537
Website: www.pelab.com

PEL Laboratories, Inc.

DATA QUALIFIER CODES

State of Florida, Department of Environmental Protection &
Department of Health & Rehabilitative Services / NELAC

- J** Estimated value; value not accurate. This code shall be used in the following instances:
1. Surrogate recovery limits have been exceeded.
 2. No known quality control criteria exists for the component
 3. The reported value failed to meet the established quality control criteria for either precision or accuracy
 4. The sample matrix interfered with the ability to make an accurate determination
 5. If the data is questionable because of improper laboratory or field protocols (e.g. composite sample was collected instead of a grab sample)

Note: a “J” value shall be accompanied by justification for it’s use, and shall not be used if another code applies (e.g. L, V, Y, Q).

- L** Off-scale high. Actual value is known to be greater than the value given. To be used when the concentration of the analyte is above the acceptable limit for quantitation (exceeds the linear range of the highest calibration standard) and the calibration curve is known to exhibit a negative deflection.
- Q** Sample held beyond acceptable holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for the sample preparation or analysis.
- U** Indicates that the compound was analyzed for but not detected. This shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory reporting limit. Unless requested by the client, values less than the reporting limit shall not be reported.
- V** Indicates that the analyte was detected in both the sample and the associated method blank.
Note: The value in the blank shall not be subtracted from associated samples.
- Y** The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
-

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

PEL Lab# : 240701601

Collection Information:

Client ID : East IDW SOIL

Sample Date: 7/19/2004 2:00:00 PM

Matrix : S

ND = Less than RL

Parameter	Method	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Flash Point	1010	120	07/23/2004 12:00		Fahrenheit		1
Sulfide	376.1	ND	07/25/2004 12:06	7/25/2004	mg/Kg	226	1
Arsenic	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	0.5	1
Barium	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	10	1
Cadmium	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	0.05	1
Chromium	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	0.5	1
Lead	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	0.5	1
Selenium	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	0.1	1
Silver	6010 TCLP	ND	07/26/2004 18:45	7/26/2004	mg/L	0.5	1
Mercury	7470 TCLP	ND	07/26/2004 15:42	7/23/2004	mg/L	0.02	1
1,1-Dichloroethene	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
1,2-Dichloroethane	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
2-Butanone	8260 TCLP	ND	07/23/2004 13:59		ug/l	50	1
Benzene	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
Carbon tetrachloride	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
Chlorobenzene	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
Chloroform	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
Tetrachloroethene	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
Trichloroethene	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
Vinyl chloride	8260 TCLP	ND	07/23/2004 13:59		ug/l	10	1
1,2-Dichloroethane-d4(SURR)	8260 TCLP	103	07/23/2004 13:59		%	(80 - 120)	1
4-Bromofluorobenzene(SURR)	8260 TCLP	86	07/23/2004 13:59		%	(86 - 115)	1
Dibromofluoromethane(SURR)	8260 TCLP	98.4	07/23/2004 13:59		%	(86 - 118)	1
Toluene d8(SURR)	8260 TCLP	96.4	07/23/2004 13:59		%	(88 - 110)	1
1,4-Dichlorobenzene	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
2,4,5-Trichlorophenol	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
2,4,6-Trichlorophenol	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
2,4-Dinitrotoluene	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
2-Methylphenol (o-Cresol)	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
4-Methylphenol	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	20	1
Hexachlorobenzene	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
Hexachlorobutadiene	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
Hexachloroethane	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
Nitrobenzene	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
Pentachlorophenol	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	40	1
Pyridine	8270 TCLP	ND	07/24/2004 19:57	7/23/2004	ug/l	8	1
2,4,6-Tribromophenol(SURR)	8270 TCLP	61.5	07/24/2004 19:57	7/23/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR)	8270 TCLP	57.5	07/24/2004 19:57	7/23/2004	%	(43 - 116)	1
2-Fluorophenol(SURR)	8270 TCLP	58	07/24/2004 19:57	7/23/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR)	8270 TCLP	62.5	07/24/2004 19:57	7/23/2004	%	(35 - 114)	1
Phenol-d5(SURR)	8270 TCLP	52.5	07/24/2004 19:57	7/23/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR)	8270 TCLP	62.5	07/24/2004 19:57	7/23/2004	%	(33 - 141)	1
Cyanide	9012	ND	07/26/2004 11:37	7/23/2004	mg/Kg	0.562	1
pH	9045	8.67	(†) 07/23/2004 10:50		pH		1

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

PEL Lab# : 240701602

Collection Information:

Client ID : East IDW WATER

Sample Date: 7/19/2004 3:00:00 PM

Matrix : W

ND = Less than RL

Parameter	Method	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Flash Point	1010	105	07/23/2004 9:00		Fahrenheit		1
pH	150.1	7.86	(†) 07/21/2004 17:00		pH		1
Sulfide	376.1	ND	07/25/2004 12:35		mg/L	2	1
Arsenic	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	0.5	1
Barium	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	10	1
Cadmium	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	0.05	1
Chromium	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	0.5	1
Lead	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	0.5	1
Selenium	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	0.1	1
Silver	6010 TCLP	ND	07/26/2004 15:24	7/22/2004	mg/L	0.5	1
Mercury	7470 TCLP	ND	07/26/2004 15:31	7/23/2004	mg/L	0.02	1
1,1-Dichloroethene	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
1,2-Dichloroethane	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
2-Butanone	8260 TCLP	ND	07/23/2004 10:41		ug/l	50	1
Benzene	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
Carbon tetrachloride	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
Chlorobenzene	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
Chloroform	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
Tetrachloroethene	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
Trichloroethene	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
Vinyl chloride	8260 TCLP	ND	07/23/2004 10:41		ug/l	10	1
1,2-Dichloroethane-d4(SURR)	8260 TCLP	96.8	07/23/2004 10:41		%	(80 - 120)	1
4-Bromofluorobenzene(SURR)	8260 TCLP	97.4	07/23/2004 10:41		%	(86 - 115)	1
Dibromofluoromethane(SURR)	8260 TCLP	109	07/23/2004 10:41		%	(86 - 118)	1
Toluene d8(SURR)	8260 TCLP	102	07/23/2004 10:41		%	(88 - 110)	1
1,4-Dichlorobenzene	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
2,4,5-Trichlorophenol	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
2,4,6-Trichlorophenol	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
2,4-Dinitrotoluene	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
2-Methylphenol (o-Cresol)	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
4-Methylphenol	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	20	1
Hexachlorobenzene	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
Hexachlorobutadiene	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
Hexachloroethane	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
Nitrobenzene	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
Pentachlorophenol	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	40	1
Pyridine	8270 TCLP	ND	07/29/2004 11:30	7/28/2004	ug/l	8	1
2,4,6-Tribromophenol(SURR)	8270 TCLP	59	07/29/2004 11:30	7/28/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR)	8270 TCLP	54.5	07/29/2004 11:30	7/28/2004	%	(43 - 116)	1
2-Fluorophenol(SURR)	8270 TCLP	46.5	07/29/2004 11:30	7/28/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR)	8270 TCLP	55.5	07/29/2004 11:30	7/28/2004	%	(35 - 114)	1
Phenol-d5(SURR)	8270 TCLP	42.5	07/29/2004 11:30	7/28/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR)	8270 TCLP	67	07/29/2004 11:30	7/28/2004	%	(33 - 141)	1
Cyanide	9012	ND	07/26/2004 11:07	7/22/2004	ug/L	10	1

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

QC SUMMARY

METHOD: 376.1

Method Blank 149760

Matrix : SQ

Associated Lab Samples : 149760 149761 149762 149767 149768 240701601 240701701

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Sulfide	ND	7/25/2004	7/25/2004	mg/Kg	200	1

Method Blank 149773

Matrix : WQ

Associated Lab Samples : 149773 149774 149775 149776 149777 149778 240701602 240701702

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Sulfide	ND	7/25/2004		mg/L	2	1

Method Blank 149778

Matrix : WQ

Associated Lab Samples : 149773 149774 149775 149776 149777 149778 240701602 240701702

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Sulfide	ND	7/25/2004		mg/L	2	1

LABORATORY CONTROL SAMPLE 149761 Matrix : SQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Sulfide	mg/Kg	500	520	104	(80-120)

LABORATORY CONTROL SAMPLE 149774 Matrix : WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Sulfide	mg/L	5	5.2	104	(80-120)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 6010 TCLP

Method Blank 149400

Matrix : WQ

Associated Lab Samples : 149400 149401 149402 149403 149404 240701502 240701602

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Arsenic	ND	7/26/2004	7/22/2004	mg/L	0.5	1
Barium	ND	7/26/2004	7/22/2004	mg/L	10	1
Cadmium	ND	7/26/2004	7/22/2004	mg/L	0.05	1
Chromium	ND	7/26/2004	7/22/2004	mg/L	0.5	1
Lead	ND	7/26/2004	7/22/2004	mg/L	0.5	1
Selenium	ND	7/26/2004	7/22/2004	mg/L	0.1	1
Silver	ND	7/26/2004	7/22/2004	mg/L	0.5	1

Method Blank 149697

Matrix : WQ

Associated Lab Samples : 149697 149698 149699 149700 149701 240701501 240701601

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Arsenic	ND	7/26/2004	7/26/2004	mg/L	0.5	1
Barium	ND	7/26/2004	7/26/2004	mg/L	10	1
Cadmium	ND	7/26/2004	7/26/2004	mg/L	0.05	1
Chromium	ND	7/26/2004	7/26/2004	mg/L	0.5	1
Lead	ND	7/26/2004	7/26/2004	mg/L	0.5	1
Selenium	ND	7/26/2004	7/26/2004	mg/L	0.1	1
Silver	ND	7/26/2004	7/26/2004	mg/L	0.5	1

LABORATORY CONTROL SAMPLE 149401 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Arsenic	mg/L	5	4.91	98.2	(80-120)
Barium	mg/L	5	5.17	103.4	(80-120)
Cadmium	mg/L	5	4.99	99.8	(80-120)
Chromium	mg/L	5	4.97	99.4	(80-120)
Lead	mg/L	5	4.88	97.6	(80-120)
Selenium	mg/L	5	5.18	103.6	(80-120)
Silver	mg/L	5	5.12	102.4	(80-120)

LABORATORY CONTROL SAMPLE 149698 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Arsenic	mg/L	5	4.67	93.4	(80-120)
Barium	mg/L	5	4.93	98.6	(80-120)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 6010 TCLP

LABORATORY CONTROL SAMPLE

149698

Matrix : WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Cadmium	mg/L	5	4.82	96.4	(80-120)
Chromium	mg/L	5	4.78	95.6	(80-120)
Lead	mg/L	5	4.76	95.2	(80-120)
Selenium	mg/L	5	5.04	100.8	(80-120)
Silver	mg/L	5	4.93	98.6	(80-120)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 7470 TCLP

Method Blank 149453

Matrix : WQ

Associated Lab Samples : 149453 149454 149455 149456 149457 149458 240701502 240701601 240701602

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Mercury	ND	7/26/2004	7/23/2004	mg/L	0.02	1

Method Blank 149458

Matrix : WQ

Associated Lab Samples : 149453 149454 149455 149456 149457 149458 240701502 240701601 240701602

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Mercury	ND	7/26/2004	7/23/2004	mg/L	0.02	1

LABORATORY CONTROL SAMPLE 149454 Matrix : WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Mercury	mg/L	0.03	0.0273	91	(80-120)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 8260 TCLP

Method Blank 0723104BLK11

Matrix : WQ

Associated Lab Samples : 072304LCS11 072304LCS12 0723104BLK11 0723104BLK12 240701501 240701501MS 240701501MSD
240701502 240701502MS 240701502MSD 240701601 240701602

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1-Dichloroethene	ND	7/23/2004		ug/l	10	1
1,2-Dichloroethane	ND	7/23/2004		ug/l	10	1
2-Butanone	ND	7/23/2004		ug/l	50	1
Benzene	ND	7/23/2004		ug/l	10	1
Carbon tetrachloride	ND	7/23/2004		ug/l	10	1
Chlorobenzene	ND	7/23/2004		ug/l	10	1
Chloroform	ND	7/23/2004		ug/l	10	1
Tetrachloroethene	ND	7/23/2004		ug/l	10	1
Trichloroethene	ND	7/23/2004		ug/l	10	1
Vinyl chloride	ND	7/23/2004		ug/l	10	1
1,2-Dichloroethane-d4(SURR) (S)	103	7/23/2004		%	(80 - 120)	1
4-Bromofluorobenzene(SURR) (S)	100	7/23/2004		%	(86 - 115)	1
Dibromofluoromethane(SURR) (S)	111	7/23/2004		%	(86 - 118)	1
Toluene d8(SURR) (S)	106	7/23/2004		%	(88 - 110)	1

Method Blank 0723104BLK12

Matrix : WQ

Associated Lab Samples : 072304LCS11 072304LCS12 0723104BLK11 0723104BLK12 240701501 240701501MS 240701501MSD
240701502 240701502MS 240701502MSD 240701601 240701602

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,1-Dichloroethene	ND	7/23/2004		ug/l	10	1
1,2-Dichloroethane	ND	7/23/2004		ug/l	10	1
2-Butanone	ND	7/23/2004		ug/l	50	1
Benzene	ND	7/23/2004		ug/l	10	1
Carbon tetrachloride	ND	7/23/2004		ug/l	10	1
Chlorobenzene	ND	7/23/2004		ug/l	10	1
Chloroform	ND	7/23/2004		ug/l	10	1
Tetrachloroethene	ND	7/23/2004		ug/l	10	1
Trichloroethene	ND	7/23/2004		ug/l	10	1
Vinyl chloride	ND	7/23/2004		ug/l	10	1
1,2-Dichloroethane-d4(SURR) (S)	96.8	7/23/2004		%	(80 - 120)	1
4-Bromofluorobenzene(SURR) (S)	91.2	7/23/2004		%	(86 - 115)	1
Dibromofluoromethane(SURR) (S)	106	7/23/2004		%	(86 - 118)	1
Toluene d8(SURR) (S)	104	7/23/2004		%	(88 - 110)	1

LABORATORY CONTROL SAMPLE 072304LCS11

Matrix : WQ

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 8260 TCLP

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,1-Dichloroethene	ug/l	200	181	90.5	(75-150)
1,2-Dichloroethane	ug/l	200	213	106	(86-120)
2-Butanone	ug/l	600	622	104	(83-127)
Benzene	ug/l	200	192	96	(82-129)
Carbon tetrachloride	ug/l	200	196	98	(74-140)
Chlorobenzene	ug/l	200	187	93.5	(87-117)
Chloroform	ug/l	200	216	108	(83-127)
Tetrachloroethene	ug/l	200	189	94.5	(87-124)
Trichloroethene	ug/l	200	188	94	(82-127)
Vinyl chloride	ug/l	200	192	96	(66-128)
1,2-Dichloroethane-d4(SURR) (S)	ug/l	50	50.1	100	(80-120)
4-Bromofluorobenzene(SURR) (S)	ug/l	50	47	94	(86-115)
Dibromofluoromethane(SURR) (S)	ug/l	50	54.5	109	(86-118)
Toluene d8(SURR) (S)	ug/l	50	51.8	104	(88-110)

LABORATORY CONTROL SAMPLE 072304LCS12 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,1-Dichloroethene	ug/l	200	184	92	(75-150)
1,2-Dichloroethane	ug/l	200	205	102	(86-120)
2-Butanone	ug/l	600	627	104	(83-127)
Benzene	ug/l	200	184	92	(82-129)
Carbon tetrachloride	ug/l	200	186	93	(74-140)
Chlorobenzene	ug/l	200	176	88	(87-117)
Chloroform	ug/l	200	211	106	(83-127)
Tetrachloroethene	ug/l	200	192	96	(87-124)
Trichloroethene	ug/l	200	182	91	(82-127)
Vinyl chloride	ug/l	200	179	89.5	(66-128)
1,2-Dichloroethane-d4(SURR) (S)	ug/l	50	56.8	114	(80-120)
4-Bromofluorobenzene(SURR) (S)	ug/l	50	50.6	101	(86-115)
Dibromofluoromethane(SURR) (S)	ug/l	50	51.6	103	(86-118)
Toluene d8(SURR) (S)	ug/l	50	51.8	104	(88-110)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 8270 TCLP

Method Blank 149532

Matrix : WQ

Associated Lab Samples : 149532 149533 149535 149536 240701501 240701501MS 240701601

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,4-Dichlorobenzene	ND	7/24/2004	7/23/2004	ug/l	4	1
2,4,5-Trichlorophenol	ND	7/24/2004	7/23/2004	ug/l	4	1
2,4,6-Trichlorophenol	ND	7/24/2004	7/23/2004	ug/l	4	1
2,4-Dinitrotoluene	ND	7/24/2004	7/23/2004	ug/l	4	1
2-Methylphenol (o-Cresol)	ND	7/24/2004	7/23/2004	ug/l	4	1
4-Methylphenol	ND	7/24/2004	7/23/2004	ug/l	10	1
Hexachlorobenzene	ND	7/24/2004	7/23/2004	ug/l	4	1
Hexachlorobutadiene	ND	7/24/2004	7/23/2004	ug/l	4	1
Hexachloroethane	ND	7/24/2004	7/23/2004	ug/l	4	1
Nitrobenzene	ND	7/24/2004	7/23/2004	ug/l	4	1
Pentachlorophenol	ND	7/24/2004	7/23/2004	ug/l	20	1
Pyridine	ND	7/24/2004	7/23/2004	ug/l	4	1
2,4,6-Tribromophenol(SURR) (S)	59.5	7/24/2004	7/23/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR) (S)	52.7	7/24/2004	7/23/2004	%	(43 - 116)	1
2-Fluorophenol(SURR) (S)	41.8	7/24/2004	7/23/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR) (S)	56.5	7/24/2004	7/23/2004	%	(35 - 114)	1
Phenol-d5(SURR) (S)	31	7/24/2004	7/23/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR) (S)	63.1	7/24/2004	7/23/2004	%	(33 - 141)	1

Method Blank 149535

Matrix : WQ

Associated Lab Samples : 149532 149533 149535 149536 240701501 240701501MS 240701601

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,4-Dichlorobenzene	ND	7/24/2004	7/23/2004	ug/l	8	1
2,4,5-Trichlorophenol	ND	7/24/2004	7/23/2004	ug/l	8	1
2,4,6-Trichlorophenol	ND	7/24/2004	7/23/2004	ug/l	8	1
2,4-Dinitrotoluene	ND	7/24/2004	7/23/2004	ug/l	8	1
2-Methylphenol (o-Cresol)	ND	7/24/2004	7/23/2004	ug/l	8	1
4-Methylphenol	ND	7/24/2004	7/23/2004	ug/l	20	1
Hexachlorobenzene	ND	7/24/2004	7/23/2004	ug/l	8	1
Hexachlorobutadiene	ND	7/24/2004	7/23/2004	ug/l	8	1
Hexachloroethane	ND	7/24/2004	7/23/2004	ug/l	8	1
Nitrobenzene	ND	7/24/2004	7/23/2004	ug/l	8	1
Pentachlorophenol	ND	7/24/2004	7/23/2004	ug/l	40	1
Pyridine	ND	7/24/2004	7/23/2004	ug/l	8	1
2,4,6-Tribromophenol(SURR) (S)	62.8	7/24/2004	7/23/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR) (S)	57.5	7/24/2004	7/23/2004	%	(43 - 116)	1

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 8270 TCLP

Method Blank 149535

Matrix : WQ

Associated Lab Samples : 149532 149533 149535 149536 240701501 240701501MS 240701601

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
2-Fluorophenol(SURR) (S)	58.5	7/24/2004	7/23/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR) (S)	64	7/24/2004	7/23/2004	%	(35 - 114)	1
Phenol-d5(SURR) (S)	51.5	7/24/2004	7/23/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR) (S)	64.5	7/24/2004	7/23/2004	%	(33 - 141)	1

Method Blank 150197

Matrix : WQ

Associated Lab Samples : 150197 150198 240701502 240701502ms 240701602

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
1,4-Dichlorobenzene	ND	7/29/2004	7/28/2004	ug/l	4	1
2,4,5-Trichlorophenol	ND	7/29/2004	7/28/2004	ug/l	4	1
2,4,6-Trichlorophenol	ND	7/29/2004	7/28/2004	ug/l	4	1
2,4-Dinitrotoluene	ND	7/29/2004	7/28/2004	ug/l	4	1
2-Methylphenol (o-Cresol)	ND	7/29/2004	7/28/2004	ug/l	4	1
4-Methylphenol	ND	7/29/2004	7/28/2004	ug/l	10	1
Hexachlorobenzene	ND	7/29/2004	7/28/2004	ug/l	4	1
Hexachlorobutadiene	ND	7/29/2004	7/28/2004	ug/l	4	1
Hexachloroethane	ND	7/29/2004	7/28/2004	ug/l	4	1
Nitrobenzene	ND	7/29/2004	7/28/2004	ug/l	4	1
Pentachlorophenol	ND	7/29/2004	7/28/2004	ug/l	20	1
Pyridine	ND	7/29/2004	7/28/2004	ug/l	4	1
2,4,6-Tribromophenol(SURR) (S)	58	7/29/2004	7/28/2004	%	(10 - 122)	1
2-Fluorobiphenyl(SURR) (S)	60	7/29/2004	7/28/2004	%	(43 - 116)	1
2-Fluorophenol(SURR) (S)	46.4	7/29/2004	7/28/2004	%	(21 - 120)	1
Nitrobenzene-d5(SURR) (S)	61.6	7/29/2004	7/28/2004	%	(35 - 114)	1
Phenol-d5(SURR) (S)	35.4	7/29/2004	7/28/2004	%	(10 - 94)	1
p-Terphenyl-d14(SURR) (S)	66.5	7/29/2004	7/28/2004	%	(33 - 141)	1

LABORATORY CONTROL SAMPLE 149533

Matrix : WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,4-Dichlorobenzene	ug/l	40	28.9	72.2	(26-101)
2,4,5-Trichlorophenol	ug/l	40	31.8	79.5	(9-131)
2,4,6-Trichlorophenol	ug/l	40	35.3	88.2	(8-130)
2,4-Dinitrotoluene	ug/l	40	36.6	91.5	(39-144)
2-Methylphenol (o-Cresol)	ug/l	40	34.4	86	(6-114)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 8270 TCLP

LABORATORY CONTROL SAMPLE 149533 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
4-Methylphenol	ug/l	40	30.8	77	(6-104)
Hexachlorobenzene	ug/l	40	36.1	90.2	(35-135)
Hexachlorobutadiene	ug/l	40	35.2	88	(48-92)
Hexachloroethane	ug/l	40	28	70	(22-96)
Nitrobenzene	ug/l	40	33	82.5	(37-136)
Pentachlorophenol	ug/l	40	35.5	88.8	(17-131)
Pyridine	ug/l	40	24.9	62.2	(22-70)
2,4,6-Tribromophenol(SURR) (S)	ug/l	200	117	58.5	(10-122)
2-Fluorobiphenyl(SURR) (S)	ug/l	100	54.9	54.9	(43-116)
2-Fluorophenol(SURR) (S)	ug/l	200	84.4	42.2	(21-120)
Nitrobenzene-d5(SURR) (S)	ug/l	100	58.8	58.8	(35-114)
Phenol-d5(SURR) (S)	ug/l	200	61.8	30.9	(10-94)
p-Terphenyl-d14(SURR) (S)	ug/l	100	53.3	53.3	(33-141)

LABORATORY CONTROL SAMPLE 149536 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,4-Dichlorobenzene	ug/l	80	62.8	78.5	(26-101)
2,4,5-Trichlorophenol	ug/l	80	73.9	92.4	(9-131)
2,4,6-Trichlorophenol	ug/l	80	70.2	87.8	(8-130)
2,4-Dinitrotoluene	ug/l	80	75.6	94.5	(39-144)
2-Methylphenol (o-Cresol)	ug/l	80	72.5	90.6	(6-114)
4-Methylphenol	ug/l	80	68.9	86.1	(6-104)
Hexachlorobenzene	ug/l	80	73	91.2	(35-135)
Hexachlorobutadiene	ug/l	80	78.8	98.5 *	(48-92)
Hexachloroethane	ug/l	80	63.1	78.9	(22-96)
Nitrobenzene	ug/l	80	69.8	87.2	(37-136)
Pentachlorophenol	ug/l	80	75.7	94.6	(17-131)
Pyridine	ug/l	80	99.1	124 *	(22-70)
2,4,6-Tribromophenol(SURR) (S)	ug/l	400	244	61	(10-122)
2-Fluorobiphenyl(SURR) (S)	ug/l	200	115	57.5	(43-116)
2-Fluorophenol(SURR) (S)	ug/l	400	212	53	(21-120)
Nitrobenzene-d5(SURR) (S)	ug/l	200	122	61	(35-114)
Phenol-d5(SURR) (S)	ug/l	400	178	44.5	(10-94)
p-Terphenyl-d14(SURR) (S)	ug/l	200	124	62	(33-141)

LABORATORY CONTROL SAMPLE 150198 **Matrix :** WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
1,4-Dichlorobenzene	ug/l	40	34.4	86	(26-101)
2,4,5-Trichlorophenol	ug/l	40	33.5	83.8	(9-131)
2,4,6-Trichlorophenol	ug/l	40	34.2	85.5	(8-130)
2,4-Dinitrotoluene	ug/l	40	38	95	(39-144)
2-Methylphenol (o-Cresol)	ug/l	40	35.4	88.5	(6-114)
4-Methylphenol	ug/l	40	32.4	81	(6-104)
Hexachlorobenzene	ug/l	40	33.1	82.8	(35-135)
Hexachlorobutadiene	ug/l	40	35.6	89	(48-92)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 8270 TCLP

LABORATORY CONTROL SAMPLE 150198

Matrix : WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Hexachloroethane	ug/l	40	35.7	89.2	(22-96)
Nitrobenzene	ug/l	40	36	90	(37-136)
Pentachlorophenol	ug/l	40	31.4	78.5	(17-131)
Pyridine	ug/l	40	13.4	33.5	(22-70)
2,4,6-Tribromophenol(SURR) (S)	ug/l	200	127	63.5	(10-122)
2-Fluorobiphenyl(SURR) (S)	ug/l	100	63.9	63.9	(43-116)
2-Fluorophenol(SURR) (S)	ug/l	200	99.4	49.7	(21-120)
Nitrobenzene-d5(SURR) (S)	ug/l	100	64.5	64.5	(35-114)
Phenol-d5(SURR) (S)	ug/l	200	73	36.5	(10-94)
p-Terphenyl-d14(SURR) (S)	ug/l	100	69.3	69.3	(33-141)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

METHOD: 9012

Method Blank 149395

Matrix : WQ

Associated Lab Samples : 149395 149396 149397 149398 149399 240701602 240701702

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Cyanide	ND	7/26/2004	7/22/2004	ug/L	10	1

Method Blank 149490

Matrix : SQ

Associated Lab Samples : 149490 149491 149492 149493 149494 240701601 240701701

Parameter	Results	Analysis Date	Prep Date	Units	RL	Dilution Factor
Cyanide	ND	7/26/2004	7/23/2004	mg/Kg	0.497	1

LABORATORY CONTROL SAMPLE 149396 Matrix : WQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Cyanide	ug/L	250	212	84.8	(74-108)

LABORATORY CONTROL SAMPLE 149491 Matrix : SQ

PARAMETER	UNITS	SPIKE CONC	LCS RESULT	SPIKE % REC	% REC LIMITS
Cyanide	mg/Kg	12.4	12.4	100	(75-106)

- CERTIFICATE OF ANALYSIS -



FLDOH #E84207

To: Marty Clasen
CH2M Hill

WORK ORDER: 2407016

PROJECT ID: Vieques IDW

Brian C. Spann	Laboratory Manager
David Cantillo	Quality Assurance
Mark Gudnason	Senior Project Manager
Lisa Pelo	Volatiles Team Leader
Thomas Scott	Semi-Volatiles Team Leader

CompuChem

a division of Liberty Analytical Corporation

501 Madison Avenue

Cary, N.C. 27513

Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE

SDG # 9539

PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS: EPI04-IDW2-06B.

The 1 soil sample listed above was received intact, properly refrigerated at 5.6°C, with proper documentation, in sealed shipping containers, on April 10, 2006. The sample was scheduled for the requested analyses of the volatile fraction. Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), SW-846, 3rd Edition, Update 3, 8260B was used to prepare and analyze the sample. All pertinent Quality Assurance notices are included in the narrative section, and all pertinent Laboratory notices for SDG 9539 are included in the sample data sections.

Analysis holding time requirements were met for the sample. The pH value for the sample is equal to 5. The system monitoring compounds (SMCs) met recovery criteria in the analyses of the sample, and all of the internal standards met retention time and response criteria in the analyses of the sample.

All Bromofluorobenzene (BFB) abundance criteria were met for tunes associated to this SDG. Overall QC criteria were met for all initial and continuing calibration standards associated to this SDG. Manual quantitations were performed on one or more of the process files associated with this SDG. The associated method blanks met all quality control criteria. The associated Laboratory Control Samples (LCS) met all accuracy and precision criteria.

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 above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.



Kenneth Grzybowski

Analyst II

April 28, 2006

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EPI04-IDW2-06B

Lab Name: COMPUCHEM

Method: 8260B

Lab Code: LIBRTY

Case No.:

SAS No.:

SDG No.: 9539

Matrix: (soil/water) WATER

Lab Sample ID: 953901

Sample wt/vol: 5 (g/ml) ML

Lab File ID: 953901A59

Level: (low/med) LOW

Date Received: 04/10/06

% Moisture: not dec. _____

Date Analyzed: 04/12/06

GC Column: ZB-624 ID: 0.32 (mm)

Dilution Factor: 5.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-01-4	Vinyl Chloride	25	U
75-35-4	1,1-Dichloroethene	25	U
78-93-3	2-butanone	63	U
67-66-3	Chloroform	25	U
56-23-5	Carbon Tetrachloride	25	U
71-43-2	Benzene	25	U
107-06-2	1,2-Dichloroethane	25	U
79-01-6	Trichloroethene	25	U
127-18-4	Tetrachloroethene	25	U
108-90-7	Chlorobenzene	25	U

FORM I VOA

CompuChem

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501 Madison Avenue

Cary, N.C. 27513

Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE

SDG # 9539

PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:

EPI04-IDW2-06B

The one solid sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping container, on April 10, 2006. The sample was scheduled for the requested analyses of the semivolatile fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8270C were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the semivolatile fraction only.

Semivolatiles

Extraction and analysis holding time requirements were met for this sample.

There were no TCLP project analytes identified above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Tailing factor criteria were met for pentachlorophenol and benzidine. The breakdown criterion was met for DDT. These three compounds have been added to the DFTPP solution and analyzed together.

Overall QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogates met recovery criteria in the analyses of this sample.

All of the internal standards met response and retention time criteria in the analyses of this sample.

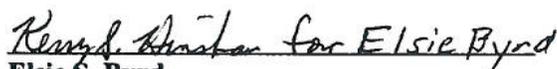
The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG.

The associated Laboratory Control Sample (LCS) prepared and analyzed along with these samples met all quality control criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

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 above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.


Elsie S. Byrd
Senior Scientist I
May 5, 2006

AMENDED
DATA

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EPI04-IDW2-06B

Lab Name: COMPUCHEM Method: 8270C
 Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 9539
 Matrix: (soil/water) WATER Lab Sample ID: 953901
 Sample wt/vol: 100 (g/mL) ML Lab File ID: 953901A64
 Level: (low/med) LOW Date Received: 04/10/06
 % Moisture: _____ decanted: (Y/N)____ Date Extracted: 04/13/06
 Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/17/06
 Injection Volume: 1.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: _____

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

110-86-1-----	Pyridine	50	U
106-46-7-----	1,4-Dichlorobenzene	50	U
95-48-7-----	2-Methylphenol	50	U
108-39-4-----	3-Methylphenol	100	U
106-44-5-----	4-Methylphenol	100	U
67-72-1-----	Hexachloroethane	50	U
98-95-3-----	Nitrobenzene	50	U
87-68-3-----	Hexachlorobutadiene	50	U
88-06-2-----	2,4,6-Trichlorophenol	50	U
95-95-4-----	2,4,5-Trichlorophenol	50	U
121-14-2-----	2,4-Dinitrotoluene	50	U
118-74-1-----	Hexachlorobenzene	50	U
87-86-5-----	Pentachlorophenol	100	U

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501 Madison Avenue

Cary, N.C. 27513

Tel: 919/379-4100 Fax: 919/379-4050

SDG NARRATIVE
SDG # 9539
PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:
EPI04-IDW2-06D

The one solid sample listed above was received intact, properly refrigerated with proper documentation, in sealed shipping containers, on April 10, 2006. The sample was scheduled for the requested analyses of the pesticide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction (Method 3550B), and Method 8081A were used to prepare and analyze this sample, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the pesticide fraction only.

Pesticides TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no pesticide-TCLP analytes confirmed by dual column analysis above the Quantitation Limit (QL) in any of these samples.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of these samples.

The associated method blank met all quality control criteria.

There is no associated duplicate matrix spikes for this SDG. Duplicate Laboratory Control Samples (LCS/LCSD) were analyzed instead. The recovery of heptachlor was biased high in the LCS. The RPD of heptachlor epoxide was above acceptance limits in the comparison of the MS and MSD.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

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 above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Kenny S. Amador for Elsie Byrd
Elsie S. Byrd
Senior Scientist I
May 4, 2006

**AMENDED
DATA**

SDG NARRATIVE

SDG # 9539

The indicated Sample Delivery Group (SDG) consisting of one (1) solid sample was received into the laboratory information management system (LIMS) on April 10, 2006 intact and in good condition with Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The temperature of the samples upon receipt was 5.6°C. Sample ID's reported in this data package are noted by the receiving department on the COC if they differ from those listed by the samplers on the COC.

The sample was prepared following the TCLP leaching procedure and analyzed in accordance with SW846 methodology for TCLP metals.

INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within allowable limits.

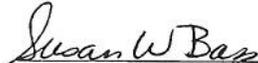
SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW, LCSWD, & PBW) were found to be within acceptable ranges and the sample was prepared and analyzed within the specified holding times.

MATRIX RELATED QUALITY CONTROL:

No matrix spikes or duplicates were requested with this case.

The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.



Susan W. Bass
Senior Chemist
April 23, 2006

SW846- METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EPI04-IDW2-06B

b Name: COMPUCHEM Contract: _____
 Lab Code: LIBRTY Case No.: _____ SAS No.: _____ SDG No.: 9539
 Matrix (soil/water): WATER Lab Sample ID: 953901
 Level (low/med): LOW Date Received: 4/10/2006
 % Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	8.1	B		P
7440-39-3	Barium	1230	B		P
7440-43-9	Cadmium	0.45	B		P
7440-47-3	Chromium	0.77	B		P
7439-92-1	Lead	2.5	B		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	14.7	B		P
7440-22-4	Silver	0.50	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
 Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments: _____



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HC + full + EDD
(summ. only) CD

04-May-06

ADRIENNE JONES
CH2M HILL, INC.
5700 CLEVELAND STREET
SUITE 101
VIRGINIA BEACH, VA 23462

Subject:

Report of Data-Project: CTO-039 IDW Workorder: 9539

Attn.: ADRIENNE JONES

Enclosed are the results of analytical work performed in accordance with the referenced account number.

This report covers sample(s) appearing on the attached listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097.

Sincerely,

CompuChem

A Division of Liberty Analytical

Attachment

TOTAL NUMBER
OF PAGES _____



ANALYTICAL RESULTS

Project: 9539

Project ID: CTO-039 IDW/183719.FI.02/N6247

Solid results are reported on a dry weight basis.

Lab ID: 953901 Date Collected: 4/7/2006 09:30 Matrix: Leachate Soil
Sample ID: EPI04-IDW2-06B Date Received: 4/10/2006 15:50

Parameters	Results	Units	Report Limit	DF	Prepared	By	Analyzed	By	CAS No.	Qual	RegLmt
IGNITABILITY 1010 SOIL Analytical Method: EPA 1010											
Ignitability	>140	OF	NA	1			4/14/2006		2152		
REACTIVE CYANIDE 9014 SOIL Analytical Method: SW846 9014											
Reactive Cyanide	125U	mg/kg	125	1			4/14/2006		2477		
REACTIVE SULFIDE 9034 SOIL Analytical Method: SW846 9034											
Reactive Sulfide	62.5U	mg/kg	62.5	1			4/17/2006		2477		
CORROSIVITY 9040B SOIL Analytical Method: SW846 9040B											
Corrosivity	9.25	PH UNITS	NA	1			4/17/2006		2477		

REPORT OF LABORATORY ANALYSIS

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CompuChem

a Division of Liberty Analytical Corp.

501 Madison Avenue Cary, NC 27513

**SDG NARRATIVE
SDG # 9538**

The indicated Sample Delivery Group (SDG) consisting of one (1) aqueous sample was received into the laboratory information management system (LIMS) on April 10, 2006 intact and in good condition with Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The temperature of the samples upon receipt was 5.6°C. Sample ID's reported in this data package are noted by the receiving department on the COC if they differ from those listed by the samplers on the COC.

The sample was prepared following the TCLP leaching procedure and analyzed in accordance with SW846 methodology for TCLP metals.

INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within allowable limits.

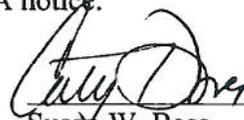
SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW, LCSWD, & PBW) were found to be within acceptable ranges and the sample was prepared and analyzed within the specified holding times.

MATRIX RELATED QUALITY CONTROL:

No matrix spikes or duplicates were requested with this case.

The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.


Susan W. Bass
Senior Chemist
April 23, 2006

**AMENDED
DATA**

SW846- METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EPI04-IDW1-06B

Lab Name: COMPUCHEM Contract: _____
 Lab Code: LIBRTY Case No.: _____ SAS No.: _____ SDG No.: 9538
 Matrix (soil/water): WATER Lab Sample ID: 953801
 Level (low/med): LOW Date Received: 4/10/2006
 % Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.6	U		P
7440-39-3	Barium	161	B		P
7440-43-9	Cadmium	0.20	U		P
7440-47-3	Chromium	8.4	B		P
7439-92-1	Lead	1.0	U		P
7439-97-6	Mercury	0.10	U		CV
7782-49-2	Selenium	6.1	B		P
7440-22-4	Silver	0.50	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments: _____

CompuChem

a division of Liberty Analytical Corporation

501 Madison Avenue

Cary, N.C. 27513

Tel: 919/379-4100 Fax: 919/379-4050

AMENDED SDG NARRATIVE

SDG # 9538

PROTOCOL: SW-846

SAMPLE IDENTIFICATIONS:

EPI04-IDW1-06B

The one aqueous sample listed above was received intact, properly refrigerated, with proper documentation, in sealed shipping containers, on April 10, 2006. The sample was scheduled for the requested analyses of the herbicide fraction. SW-846, 3rd Edition, Update 3, the Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311), Separatory Funnel extraction and Method 8151A were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the SDG narrative deals with the herbicide fraction only.

Herbicide-TCLP

Extraction and analysis holding time requirements were met for this sample.

There were no herbicide project analytes confirmed by dual column analysis above the Quantitation Limit (QL) in this sample.

Manual quantitations were performed on one or more of the process files associated with this SDG. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

The surrogate met recovery and retention time criteria in the analyses of this sample, with the following exceptions. The surrogate did not meet criteria on the CLPEST2 column. .

The associated method blank met all quality control criteria.

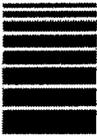
There is no associated duplicate matrix spikes for this SDG. Duplicate Laboratory Control Samples (LCS/LCSD) were analyzed instead. The associated LCS/LCSD met all accuracy and precision criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

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 above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.



Elsie S. Byrd
Senior Scientist I
March 10, 2006



SAMPLE SUMMARY

Project: 9538

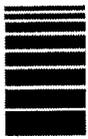
Project ID: CTO-039 IDW/183719.FI.02/N6247

Lab ID	Sample ID	Matrix	Date Collected	Date Received
953801	EPI04-IDW1-06B	Aqueous Leachate	4/7/2006 09:00	4/10/2006 15:50

REPORT OF LABORATORY ANALYSIS

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**AMENDED
DATA**



ANALYTICAL RESULTS

Project: 9538

Project ID: CTO-039 IDW/183719.F1.02/N6247

Solid results are reported on a dry weight basis.

Lab ID: 953801 Date Collected: 4/7/2006 09:00 Matrix: Aqueous Leachate
Sample ID: EPI04-IDW1-06B Date Received: 4/10/2006 15:50

Parameters	Results	Units	Report Limit	DF	Prepared	By	Analyzed	By	CAS No.	Qual	RegLmt
IGNITABILITY 1010 WATER Analytical Method: EPA 1010											
Ignitability	>140	0F	NA	1			4/14/2006		2152		
REACTIVE CYANIDE 9014 WATER Analytical Method: SW846 9014											
Reactive Cyanide	125U	mg/kg	125	1			4/14/2006		2477		
REACTIVE SULFIDE 9034 WATER Analytical Method: SW846 9034											
Reactive Sulfide	62.5U	mg/kg	62.5	1			4/17/2006		2477		
CORROSIVITY 9040B WATER Analytical Method: SW846 9040B											
Corrosivity	8.00	PH UNITS	NA	1			4/17/2006		2477		

Appendix L Survey Data

Year 2000 Survey Data

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 4	SS-01	2005176.0	244552.0	18° 07' 13.248" N	65° 24' 50.655" W		
	SS-02	2005178.0	244551.0	18° 07' 13.316" N	65° 24' 50.672" W		
	SS-03	2005179.0	244549.0	18° 07' 13.339" N	65° 24' 50.750" W		
	SS-04	2005179.0	244547.0	18° 07' 13.340" N	65° 24' 50.826" W		
	SS-05	2005177.0	244546.0	18° 07' 13.270" N	65° 24' 50.849" W		
	SS-06	2005162.0	244528.0	18° 07' 12.768" N	65° 24' 51.440" W		
	SS-07	2005160.0	244530.0	18° 07' 12.718" N	65° 24' 51.391" W		
	SS-08	2005160.0	244532.0	18° 07' 12.702" N	65° 24' 51.324" W		
	SS-09	2005161.0	244534.0	18° 07' 12.731" N	65° 24' 51.244" W		
	SS-10	2005162.0	244534.0	18° 07' 12.796" N	65° 24' 51.243" W		
	SS-11	2005163.0	244542.0	18° 07' 12.801" N	65° 24' 50.989" W		
	SS-12	2005163.0	244543.0	18° 07' 12.796" N	65° 24' 50.940" W		

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 6/7	SS-01	2005186.0	244553.0	18° 07' 13.565" N	65° 24' 50.608" W		
	SS-02	2005186.0	244564.0	18° 07' 13.559" N	65° 24' 50.233" W		
	SS-03	2005186.0	244570.0	18° 07' 13.552" N	65° 24' 50.021" W		
	SS-04	2005188.0	244573.0	18° 07' 13.633" N	65° 24' 49.948" W		
	SS-05	2005193.0	244573.0	18° 07' 13.778" N	65° 24' 49.944" W		
	SS-06	2005198.0	244569.0	18° 07' 13.943" N	65° 24' 50.079" W		
	SS-07	2005198.0	244562.0	18° 07' 13.944" N	65° 24' 50.292" W		
	SS-08	2005199.0	244555.0	18° 07' 13.977" N	65° 24' 50.531" W		
	SS-09	2005195.0	244550.0	18° 07' 13.837" N	65° 24' 50.726" W		
	SS-10	2005189.0	244550.0	18° 07' 13.655" N	65° 24' 50.716" W		

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 10	SS-01	2004996.7	245011.4	18° 07' 07.656" N	65° 24' 34.980" W		
	SS-02	2004980.1	245002.6	18° 07' 07.113" N	65° 24' 35.271" W		
	SS-03	2004980.6	244980.1	18° 07' 07.120" N	65° 24' 36.037" W		
	SS-04	2004998.8	244971.9	18° 07' 07.706" N	65° 24' 36.322" W		
	WW-01	2005002.7	245029.9	--	--		

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE AOC F	SS-01	2004717.1	246385.8	18° 06' 59.150" N	65° 23' 48.128" W		
	SS-02	2004709.7	246389.2	18° 06' 58.911" N	65° 23' 48.010" W		
	SS-03	2004708.5	246395.2	18° 06' 58.875" N	65° 23' 47.805" W		
	SS-04	2004727.2	246403.2	18° 06' 59.485" N	65° 23' 47.541" W		
	SS-05	2004721.0	246395.0	18° 06' 59.281" N	65° 23' 47.816" W		

- Notes: - No elevation data was collected during the 2000 surveying effort.
 - Northing and Eastings were created by CH2M HILL by converting longitude and latitudes.
 - SWMU 10 sample point WW-01 was not surveyed during the 2000 survey effort. Northing and Easting coordinates were created from a CAD drawing created by the Surveyors.

Year 2004 Survey Data

	Station ID	Northing	Eastng	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 1							
	SS-01	2005615.372	246242.929	65 23 53.38269 W	18 7 28.29169 N	12.343	40.485
	SS-02	2005662.898	246283.788	65 23 52.01452 W	18 7 29.85405 N	14.437	47.352
	SS-03	2005615.588	246284.648	65 23 51.96433 W	18 7 28.31637 N	13.799	45.262
	SS-04	2005607.629	246319.850	65 23 50.76394 W	18 7 28.07252 N	13.369	43.849
	SS-05	2005537.756	246242.527	65 23 53.36199 W	18 7 25.76821 N	12.646	41.478
	SS-06	2005526.151	246300.366	65 23 51.39032 W	18 7 25.41541 N	11.657	38.235
	SS-07	2005576.025	246351.894	65 23 49.66044 W	18 7 27.05866 N	12.254	40.194
	SS-08	2005593.066	246375.727	65 23 48.85763 W	18 7 27.62274 N	12.204	40.027
	SS-09	2005536.306	246379.413	65 23 48.70718 W	18 7 25.77905 N	11.558	37.911
	SS-10	2005466.983	246309.029	65 23 51.06957 W	18 7 23.49553 N	11.736	38.495
	SS-11	2005457.902	246365.688	65 23 49.13914 W	18 7 23.22430 N	10.728	35.186
	SS-12	2005431.538	246418.045	65 23 47.34733 W	18 7 22.38938 N	10.801	35.427
	SS-13	2005444.663	246445.919	65 23 46.40540 W	18 7 22.82787 N	10.695	35.081
	SS-14	2005452.494	246483.539	65 23 45.12981 W	18 7 23.09837 N	10.105	33.144
	SS-15	2005391.179	246391.438	65 23 48.23408 W	18 7 21.06603 N	10.955	35.933
	SS-16	2005412.883	246377.240	65 23 48.72643 W	18 7 21.76563 N	10.782	35.366
	SS-17	2005383.360	246344.237	65 23 49.83546 W	18 7 20.79188 N	11.764	38.587
	SS-18	2005368.104	246360.429	65 23 49.27818 W	18 7 20.30273 N	10.775	35.341
	SS-19	2005483.225	246525.625	65 23 43.71245 W	18 7 24.11524 N	9.962	32.677
	SS-20	2005413.971	246546.301	65 23 42.97883 W	18 7 21.87252 N	8.635	28.323
	SS-21	2005359.787	246496.758	65 23 44.63931 W	18 7 20.09004 N	8.374	27.467
	SS-22	2005345.508	246472.966	65 23 45.44195 W	18 7 19.61577 N	8.823	28.938
	SS-23	2005341.769	246425.291	65 23 47.06122 W	18 7 19.47404 N	10.659	34.961
	SS-24	2005327.337	246432.417	65 23 46.81257 W	18 7 19.00786 N	10.004	32.814
	SS-25	2005296.927	246414.715	65 23 47.40096 W	18 7 18.01174 N	11.960	39.228
	SS-26	2005262.261	246439.065	65 23 46.55773 W	18 7 16.89506 N	11.841	38.839
	SS-27	2005285.946	246498.250	65 23 44.55591 W	18 7 17.69010 N	8.677	28.460
	SS-28	2005673.610	246237.753	65 23 53.58447 W	18 7 30.18281 N	14.528	47.651
	SS-29	2005336.171	246477.662	65 23 45.27813 W	18 7 19.31420 N	8.829	28.957
	SS-30	2005360.500	246603.295	65 23 41.01740 W	18 7 20.15828 N	7.928	26.003
	SS-31	2005176.876	246402.511	65 23 47.76277 W	18 7 14.10373 N	22.925	75.192
	SS-32	2005214.334	246470.848	65 23 45.45591 W	18 7 15.35040 N	11.372	37.299
	SS-33	2005263.550	246557.038	65 23 42.54723 W	18 7 16.98686 N	7.365	24.157
	SS-34	2005326.720	246687.307	65 23 38.14606 W	18 7 19.09561 N	6.887	22.589
	SS-35	2005168.016	246474.799	65 23 45.30106 W	18 7 13.84625 N	12.648	41.484
	SS-36	2005207.747	246551.604	65 23 42.70732 W	18 7 15.17041 N	7.881	25.848
	SS-37	2005233.274	246616.995	65 23 40.49531 W	18 7 16.02797 N	6.566	21.536
	SS-38	2005249.347	246640.209	65 23 39.71317 W	18 7 16.56030 N	6.439	21.119
	SS-39	2005131.877	246493.761	65 23 44.64037 W	18 7 12.67941 N	11.657	38.233
	SS-40	2005156.591	246563.442	65 23 42.28219 W	18 7 13.51233 N	6.712	22.017
	SS-41	2005665.370	246224.073	65 23 54.04597 W	18 7 29.90913 N	14.464	47.442
	SS-42	2005235.612	246651.471	65 23 39.32418 W	18 7 16.11853 N	6.189	20.300
	SS-43	2005212.422	246657.854	65 23 39.09690 W	18 7 15.36732 N	5.718	18.755
	SS-44	2005152.924	246594.394	65 23 41.22823 W	18 7 13.40620 N	6.155	20.189
	SS-45	2005098.355	246524.979	65 23 43.56414 W	18 7 11.60281 N	9.710	31.849
	SS-46	2005043.350	246541.405	65 23 42.98134 W	18 7 9.82152 N	8.519	27.943
	SS-47	2005129.478	246597.131	65 23 41.12480 W	18 7 12.64512 N	6.222	20.407
	SS-48	2005126.339	246694.237	65 23 37.82182 W	18 7 12.58414 N	4.265	13.988
	SS-49	2005259.380	246771.275	65 23 35.26136 W	18 7 16.94189 N	5.744	18.839
	SS-50	2005364.472	246464.855	65 23 45.72611 W	18 7 20.22886 N	9.528	31.251

Year 2004 Survey Data

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 1						
Monitoring Well						
MW-01 GROUND	2005778.884	246161.2765	65 23 56.23136 W	18 7 33.57287 N	15.771	51.729
MW-01 TOC	2005778.884	246161.2765	65 23 56.23136 W	18 7 33.57287 N	16.604	54.461
MW-02 GROUND	2005221.797	246830.5206	65 23 33.23042 W	18 7 15.74507 N	4.980	16.334
MW-02-TOC	2005221.797	246830.5206	65 23 33.23042 W	18 7 15.74507 N	5.786	18.978
MW-03 GROUND	2005132.939	246778.0231	65 23 34.97606 W	18 7 12.83411 N	3.886	12.746
MW-03 TOC	2005132.939	246778.0231	65 23 34.97606 W	18 7 12.83411 N	4.671	15.321
MW-04 GROND	2005117.678	246674.2096	65 23 38.49893 W	18 7 12.29411 N	4.912	16.111
MW-04 TOC	2005117.678	246674.2096	65 23 38.49893 W	18 7 12.29411 N	5.719	18.758
MW-05 GROUND	2004982.424	246621.5953	65 23 40.22799 W	18 7 7.87473 N	4.929	16.167
MW-05 TOC	2004982.424	246621.5953	65 23 40.22799 W	18 7 7.87473 N	5.804	19.037

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 2						
SS-01	2004120.158	246121.438	65 23 56.85107 W	18 6 39.63077 N	14.983	49.144
SS-02	2004137.371	246125.202	65 23 56.73072 W	18 6 40.19196 N	15.129	49.623
SS-03	2004151.038	246130.865	65 23 56.54424 W	18 6 40.63867 N	14.983	49.144
SS-04	2004165.478	246135.579	65 23 56.39037 W	18 6 41.11011 N	14.691	48.186
SS-05	2004162.432	246143.640	65 23 56.11497 W	18 6 41.01450 N	15.003	49.210
SS-06	2004148.127	246139.663	65 23 56.24384 W	18 6 40.54776 N	15.123	49.603
SS-07	2004131.799	246133.741	65 23 56.43795 W	18 6 40.01443 N	15.245	50.004
SS-08	2004118.941	246130.185	65 23 56.55315 W	18 6 39.59491 N	15.094	49.508
SS-09	2004129.674	246402.268	65 23 47.30769 W	18 6 40.05898 N	1.569	5.146
SS-10	2004132.553	246399.779	65 23 47.39359 W	18 6 40.15152 N	1.464	4.802
SS-11	2004122.486	246420.738	65 23 46.67657 W	18 6 39.83311 N	1.729	5.671
SS-12	2004124.073	246424.533	65 23 46.54825 W	18 6 39.88630 N	1.784	5.852
SB-01	2004103.666	246123.526	65 23 56.77278 W	18 6 39.09550 N	14.780	48.478
SB-02	2004138.445	246407.649	65 23 47.12863 W	18 6 40.34640 N	1.547	5.074

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 4						
SB-01	2005160.889	244546.110	65 24 50.87211 W	18 7 12.79550 N	17.214	56.463

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 5						
SS-01	2006206.867	254855.997	65 19 0.77922 W	18 7 51.10867 N	133.497	437.871
SS-02	2006205.567	254855.701	65 19 0.78872 W	18 7 51.06627 N	133.521	437.948
SS-03	2006204.004	254855.974	65 19 0.77877 W	18 7 51.01557 N	133.493	437.858
SS-04	2006202.507	254855.960	65 19 0.77860 W	18 7 50.96692 N	133.481	437.816

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 8						
SS-01	2006197.919	254858.887	65 19 0.67711 W	18 7 50.81895 N	133.232	437.000
SS-02	2006195.880	254856.148	65 19 0.76936 W	18 7 50.75153 N	133.257	437.081
SS-03	2006193.626	254855.827	65 19 0.77933 W	18 7 50.67810 N	133.421	437.621
SS-04	2006192.140	254854.169	65 19 0.83504 W	18 7 50.62913 N	133.299	437.221
SS-05	2006191.920	254852.497	65 19 0.89181 W	18 7 50.62128 N	133.417	437.606

Year 2004 Survey Data

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 10						
SS\SB-05	2005023.822	245057.723	65 24 33.41671 W	18 7 8.55736 N	6.725	22.058
SS\SB-06	2005004.020	245053.210	65 24 33.56134 W	18 7 7.91169 N	6.689	21.938
SS\SB-07	2005006.404	245010.093	65 24 35.02833 W	18 7 7.97083 N	6.715	22.026
SS\SB-08	2005024.201	245009.220	65 24 35.06594 W	18 7 8.54906 N	6.888	22.594
SS\SB-09	2004980.146	245055.931	65 24 33.45820 W	18 7 7.13670 N	6.723	22.050
SS\SB-10	2004951.657	245047.316	65 24 33.73844 W	18 7 6.20688 N	6.666	21.865
SS\SB-11	2004967.929	245005.522	65 24 35.16660 W	18 7 6.71809 N	6.773	22.215
SS\SB-12	2004981.379	245004.520	65 24 35.20666 W	18 7 7.15492 N	6.980	22.895
SS\SB-13	2004975.938	244980.409	65 24 36.02399 W	18 7 6.96777 N	6.725	22.057
SS\SB-14	2004956.888	244976.962	65 24 36.13270 W	18 7 6.34699 N	6.761	22.176
SS\SB-15	2004962.532	244931.453	65 24 37.68248 W	18 7 6.51112 N	6.762	22.178
SS\SB-16	2004983.485	244940.763	65 24 37.37526 W	18 7 7.19626 N	6.893	22.609
SS\SB-17	2005027.128	244979.904	65 24 36.06396 W	18 7 8.63172 N	6.799	22.300
SS\SB-18	2005006.929	244974.800	65 24 36.22850 W	18 7 7.97288 N	6.767	22.195
SS\SB-19	2005010.156	244936.470	65 24 37.53311 W	18 7 8.06148 N	6.755	22.155
SS\SB-20	2005028.134	244945.521	65 24 37.23337 W	18 7 8.64979 N	6.891	22.601

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 10 Monitoring Well						
MW-01 GROUND	2005101.614	244907.7397	65 24 38.55061 W	18 7 11.02254 N	10.331	33.886
MW-01 TOC	2005101.614	244907.7397	65 24 38.55061 W	18 7 11.02254 N	11.146	36.559
MW-02 GROUND	2004989.234	244953.7926	65 24 36.93484 W	18 7 7.38870 N	8.286	27.178
MW-02 TOC	2004989.234	244953.7926	65 24 36.93484 W	18 7 7.38870 N	9.278	30.432
MW-03 GROUND	2004987.05	245048.6153	65 24 33.70999 W	18 7 7.35803 N	8.377	27.477
MW-03 TOC	2004987.05	245048.6153	65 24 33.70999 W	18 7 7.35803 N	9.236	30.294
MW-04 GROUND	2004943.503	245070.6816	65 24 32.94039 W	18 7 5.95173 N	8.510	27.913
MW-04 TOC	2004943.503	245070.6816	65 24 32.94039 W	18 7 5.95173 N	9.352	30.675
MW-05 GROUND	2004945.008	244958.6634	65 24 36.74955 W	18 7 5.95300 N	8.412	27.591
MW-05 TOC	2004945.008	244958.6634	65 24 36.74955 W	18 7 5.95300 N	9.236	30.294

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE SWMU 12						
SS-01	2006473.473	254826.696	65 19 1.88970 W	18 7 59.76456 N	101.756	333.760
SS-02	2006471.105	254818.247	65 19 2.17598 W	18 7 59.68408 N	101.731	333.678
SS-03	2006470.491	254826.090	65 19 1.90903 W	18 7 59.66736 N	101.695	333.559
SS-04	2006469.368	254815.504	65 19 2.26852 W	18 7 59.62649 N	101.795	333.888
SS-05	2006468.276	254820.601	65 19 2.09475 W	18 7 59.59309 N	101.540	333.050

Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE AOC G						
SS-01	2004942.720	244907.591	65 24 38.48494 W	18 7 5.85686 N	7.578	24.856
SS-02	2004944.190	244909.817	65 24 38.40991 W	18 7 5.90561 N	7.442	24.409
SS-03	2004942.733	244912.245	65 24 38.32672 W	18 7 5.85928 N	7.291	23.916
SS-04	2004936.485	244912.596	65 24 38.31200 W	18 7 5.65630 N	7.283	23.887
SS-05	2004935.846	244909.658	65 24 38.41161 W	18 7 5.63426 N	7.384	24.219

Year 2004 Survey Data

	Station ID	Northing	Easting
AOC A	SB-01	2006180.562	254827.7866
	SB-02	2006177.067	254827.7866
	SB-03	2006171.94	254827.7866
	SB-04	2006179.086	254832.2914
	SB-05	2006185.532	254827.7866
	SB-06	2006179.164	254822.5051
	SB-07	2006186.387	254835.5535
	SB-08	2006185.61	254834.4662
	SB-09	2006184.911	254833.3788
	SB-10	2006184.212	254832.2137

Note: AOC A soil boring locations were not surveyed in 2004. Northing and Easting coordinates were interpreted from CAD drawings by CH2M HILL.

Year 2006 Survey Data

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PI-4	SS1/SB1/MW1	2004884.7999	244617.9951	65 24 48.290187 W	18 7 3.981151 N	11.338	37.200
	MW2	2004957.0278	244596.4827	65 24 49.068617 W	18 7 6.189525 N	12.836	42.114
	MW3	2005000.4187	244683.0502	65 24 46.144759 W	18 7 7.637034 N	13.442	44.101
	MW4	2004991.2154	244755.4263	65 24 43.679953 W	18 7 7.368665 N	12.581	41.275
	MW5	2004909.7970	244753.7016	65 24 43.702330 W	18 7 4.721043 N	10.579	34.707
	SS2/SB2	2004914	244621				
	SS3/SB3	2004971	244603				
	SS4/SB4	2004987	244586				
	SS5/SB5	2005004	244602				
	SS6/SB6	2004987	244619				
	SS7/SB7	2004987	244602				
	SS8/SB8	2004991	244707				
	SS9/SB9	2005066	244752				
	SS10/SB10	2005036	244795				
	SS11/SB11	2004973	244829				
	SS12/SB12	2004956	244767				
	SS13/SB13	2004917	244817				
	SS14/SB14	2005018	244692				
	SS15/SB15	2005019	244723				
	SW1	2004830.6070	244855.1850				

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PI-7	SS1/SB1/MW1	2005489.4183	243391.7145	65 25 30.267474 W	18 7 22.982607 N	32.514	106.674
	SS2/SB2/MW2	2005502.5062	243403.6946	65 25 29.866019 W	18 7 23.413215 N	33.592	110.211
	MW3	2005734.9425	243560.9409	65 25 24.623784 W	18 7 31.036906 N	56.358	184.902
	SS3/SB3	2005502	243406				
	SS4/SB4	2005505	243404				
	SS5/SB5	2005505	243397				
	SS6/SB6	2005502	243392				
	SS7/SB7	2005504	243384				
	SS8/SB8	2005521	243390				
	SS9/SB9	2005526	243394				
	SS10/SB10	2005525	243385				
	SS11/SB11	2005638	243472				
	SS12/SB12	2005629	243462				
	SS13/SB13	2005624	243487				
	SS14/SB14	2005614	243472				
	SS15/SB15	2005700	243529				
	SS16/SB16	2005701	243537				
	SS17/SB17	2005872	243555				
	SS18/SB18	2005885	243562				
	SS19/SB19	2005879	243572				
	SS20	2005541.786	243419.327				
	SS21/SB21	2005607.133	243491.786				
SS22	2005513.056	246509.478					

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PAOC-J	SS1/SB1	2005227	244302				
	SS2/SB2	2005253	244265				
	SS3/SB3	2005258	244299				
	SS4/SB4	2005258	244323				
	SS5/SB5	2005242	244284				
	SS6/SB6	2005225	244266				

Appendix E

Year 2006 Survey Data

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PAOC-K	SS1/SB1	2005272	244296				
	SS2/SB2	2005265	244306				
	SS3/SB3	2005272	244314				
	SS4/SB4	2005279	244306				
	SS5/SB5	2005272	244305				

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PAOC-L	SS1/SB1/MW1	2005262.6090	244349.9474	65 24 57.586833 W	18 7 16.018741 N	24.916	81.744
	SS2/SB2	2005259	244342				
	SS3/SB3	2005264	244348				
	SS4/SB4	2005259	244355				

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PAOC-N	SS1/SB1/MW1	2005308.7090	244487.4529	65 24 52.917470 W	18 7 17.706677 N	21.771	71.427
	MW-2	2005399.9531	244458.1927	65 24 53.967831 W	18 7 20.529920 N	23.485	77.049
	SS2/SB2	2005334	244480				
	SS3/SB3	2005334	244492				
	SS4/SB4	2005333	244505				

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PAOC-S	SS1/SB1/MW1	2005353.8852	244516.0024	65 24 51.966950 W	18 7 19.187515 N	22.056	72.361
	SS2/SB2	2005376	244521				
	SS3/SB3	2005360	244505				
	SS4/SB4	2005355	244538				
	SS5/SB5	2005342	244515				
	SS6/SB6	2004850	244834				
	SS7/SB7	2004807	244808				
	SS8/SB8	2004827	244876				
	SS9/SB9	2004757	244854				
	SS10/SB10	2004737	244934				
	SS11/SB11	2004700	245082				
	SS12/SB12	2004663	245231				
	SS13/SB13	2004627	245379				
	SS14/SB14	2004585	245525				
	SS15/SB15	2004540	245670				
	SS16/SB16	2004494	245815				
	SS17/SB17	2004449	245961				
	SS18/SB18	2004346	246068				
	SS19/SB19	2004233	246166				
	SS20/SB20	2004546.8230	245594.6190				
	SS21/SB21	2004558.0650	245583.3360				

	Station ID	Northing	Easting	Longitude	Latitude	Elevation (meters)	Elevation (feet)
SITE PAOC-U	SS1/SB1/MW1	2005218.3537	244527.9931	65 24 51.498842 W	18 7 14.786537 N	19.464	63.859
	SS2/SB2	2005282	244513				
	SS3/SB3	2005261	244507				
	SS4/SB4	2005255	244515				
	SS5/SB5	2005262	244524				
	SS6/SB6	2005234	244508				
	SS7/SB7	2005226	244551				
	SS8/SB8	2005203	244518				
	SS9/SB9	2005203	244528				
	SS10/SB10	2005282	244508				
	SS11/SB11	2005262	244513				
	SS12/SB12	2005262	244518				
	SS13/SB13	2005225	244557				

Notes: Coordinates shown to the fourth decimal point were surveyed using GPS.
 - All other coordinates were generated from GIS mapping.
 - All monitoring well locations were surveyed by a professional surveyor.

Appendix M
Geophysical Investigation

FINAL REPORT
GEOPHYSICAL INVESTIGATION-SWMU 1 SITE
FORMER CAMP GARCIA LANDFILL OF THE FORMER
ATLANTIC FLEET WEAPONS TRAINING FACILITY
EAST VIEQUES ISLAND, PUERTO RICO

Prepared for CH2M HILL, Inc.
Tampa, FL

Prepared by GeoView, Inc.
St. Petersburg, FL



February 26, 2004

Mr. Marty Clasen
CH2M HILL, Inc.
4350 W. Cypress Street, Suite 600
Tampa, Florida 33607

**Subject: Transmittal of Final Report for Geophysical Survey
SWMU 1 Site-Former Camp Garcia Landfill
East Vieques Island, Puerto Rico
GeoView Project Number 1660**

Dear Mr. Classen,

GeoView, Inc. (GeoView) is pleased to submit the final report that summarizes and presents the results of the geophysical investigation conducted at the SWMU 1 site in East Vieques Island, Puerto Rico. The site was within the former Camp Garcia Landfill area, which is part of the former Atlantic Fleet Weapons Training Facility property. Electromagnetics and Total Field Magnetics were used to determine the presence of buried metallic debris at the project site. GeoView appreciates the opportunity to have assisted you on this project. If you have any questions or comments about the report, please contact us.

GEOVIEW, INC.

Michael J. Wightman, P.G.
President

Florida Professional Geologist Number 1423

A Geophysical Services Company

4610 Central Avenue
St. Petersburg, FL 33771

Tel.: (727) 209-2334
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1.0 Introduction

A geophysical investigation conducted at the SWMU 1 site in East Vieques Island, Puerto Rico (Figure 1). The investigation was performed over a four-day period from January 27-30, 2004. The site was on the former Camp García Landfill area in the former Atlantic Fleet Weapons Training Facility property. The geophysical investigation was performed using Electromagnetics (EM) and Total Field Magnetism (magnetics). The purpose of the investigation was to determine the presence and identify the location of metallic debris that was reportedly buried at the site. This buried metallic debris is considered to be associated with former landfill activities. The boundaries of historical landfill activities based on the interpretation of aerial photographs by others are incorporated into the Final Results Section 3.3.

2.0 Description of Geophysical Investigation

The geophysical survey was performed along 18 predetermined transect lines (TR-1 to TR-18). The locations of the transect lines are shown on Figure 1. The transect lines were surveyed and cleared of brush prior to the start of the geophysical investigation. The geophysical investigation was conducted using a Geonics EM31-MK2 (EM-31) and a Geometrics G-858 Cesium Vapor Magnetometer (G-858). Discussions of the geophysical methods used for this study are provided in Appendix 2. Survey marks were established on the ground surface using pin flags and flagging tape. These survey marks were used as fiduciary (positioning) points to determine the position of the geophysical data as it was collected across the project site.

EM readings were collected every 5 feet (ft) along the transect lines. Both the terrain conductivity and in-phase responses were recorded with a total of 3,968 readings being collected.

Magnetometer readings were collected on 0.1-second intervals, with positioning marks collected at five-foot intervals. A total of 77,289 magnetic data readings were collected. The EM and magnetometer data were processed using EM-31 MK2[™] and MagMap[™] 2000 software, respectively. Microsoft Excel was then used to present the processed data as individual profiles showing instrument response versus distance.

3.0 Survey Results

3.1 Discussion of Instrument Response-EM

Background EM-31 response for the inphase response was calibrated to range from -5 to 5 parts per thousand (ppt). Several areas of gradual increases in the in-phase response above the normal background levels were observed. These gradual broad increases are likely due to local geological factors, specifically the presence of near-surface ferromagnetic (iron-bearing) rocks, rather than from the presence of buried metal debris.

The terrain conductivity portion of the EM-31 response was markedly affected by the presence of near-surface ferromagnetic rocks and the presence of brackish groundwater near the coastline. Because of the impact of these factors, which are not related to the presence of buried metallic debris, the terrain conductivity results were not used to identify areas of buried metallic debris.

3.2 Discussion of Instrument Response-Magnetometry

Background magnetometer readings (where buried metallic debris was not present) ranged, in general, from 38,000 to 39,000 gammas. In areas where buried metallic debris was present, magnetometer values ranged from 27,250 gammas to 47,780 gammas. Elevated magnetic readings were also observed in areas where highly ferromagnetic rocks were either present or, based from site observations, inferred to be close to the land surface. The change in magnetic readings caused by the presence of highly ferromagnetic rocks tended to be relatively gradual rather than abrupt.

3.3 Determination of Area of Buried Metallic Debris

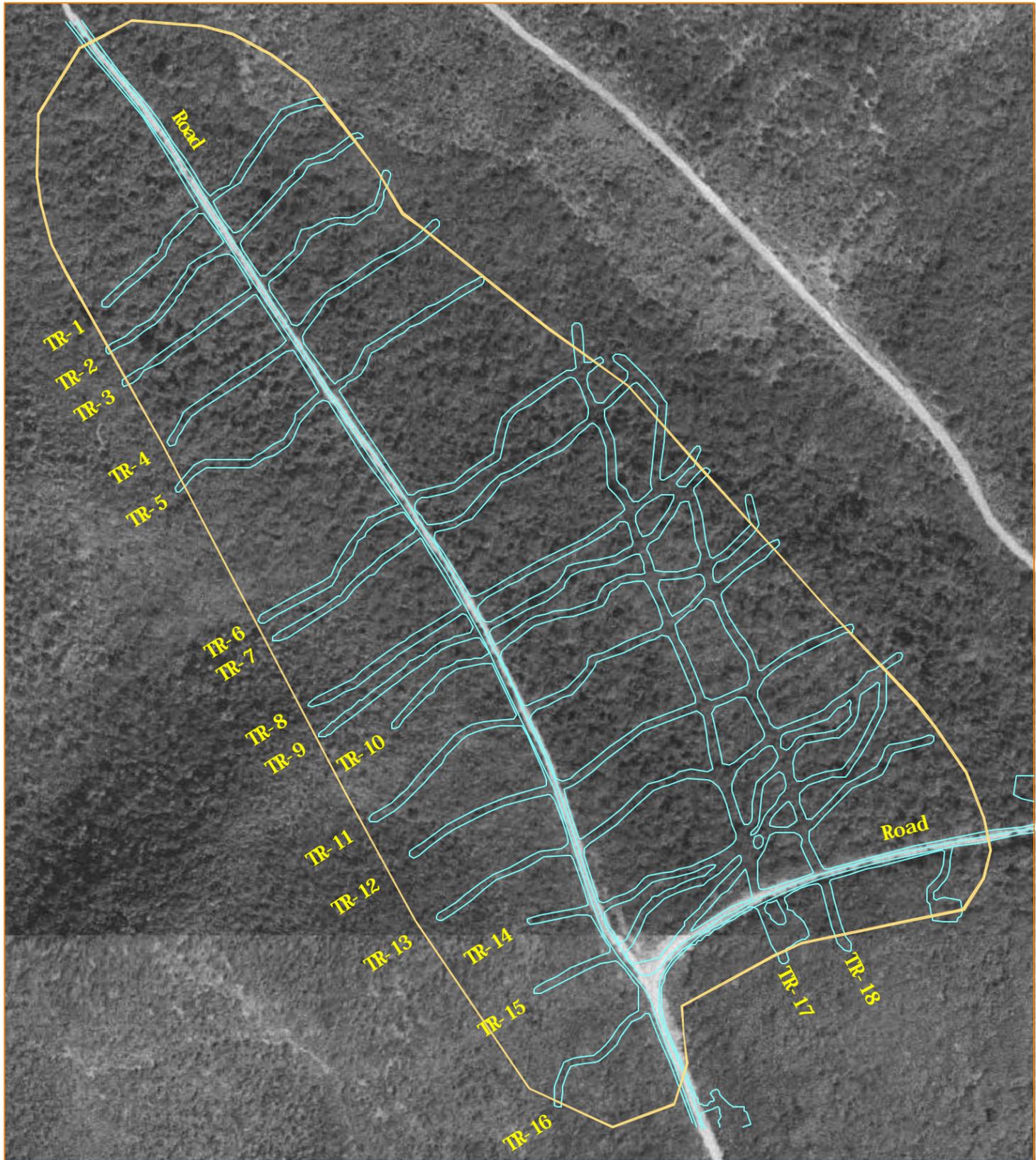
Comparison of the response graphs for the EM in-phase, EM terrain conductivity and magnetometer indicated a direct correlation between the EM in-phase and magnetometer results. Specifically, for the majority of the areas where a sharp change in the EM in-phase response was observed, an associated sharp change in the magnetometer response was also observed. Buried metallic debris was only considered to be present in areas where a sharp change in both the EM in-phase and magnetometer responses occurred. Areas with a gradual change in the EM in-phase or magnetometer response were attributed to the presence of ferromagnetic rocks.

The EM in-phase and magnetometer response graphs for each of the transect lines are presented in Appendix 1. Areas where buried metallic debris is present

(based on the combined interpreted response) are indicated using dashed red circles.

The locations of the areas of buried metallic debris based on the results of the geophysical investigation are provided on Figure 2. A comparison of the results from the geophysical investigation to the lateral boundaries of landfill activity (based on the historical aerial photographs), indicates that metallic debris is present in either all or part of each of the aerial-photograph identified areas. Buried metallic debris was also identified in several areas where there was no indication of landfill activity based on the aerial photographs. Accordingly, the geophysical investigation appears to have identified areas of previously unknown landfill activity at the project site.

FIGURES



EXPLANATION

TR- 1  PATH OF GPR TRANSECT LINES WITH DESIGNATION NUMBER

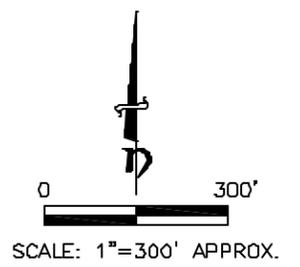


FIGURE 1
SITE MAP SHOWING
AREA OF
GEOPHYSICAL
INVESTIGATION

SWMU 1 SITE
FORMER CAMP GARCIA LANDFILL
EAST VIEQUES ISLAND, PUERTO RICO

CH2M HILL, INC.
TAMPA, FLORIDA

PROJECT:
1660
DATE:
2/26/2004

APPENDIX 1
EM AND MAGNETOMETER DATA

APPENDIX 2

DESCRIPTION OF GEOPHYSICAL METHODS, SURVEY METHODOLOGIES AND LIMITATIONS

A2.1 On Site Measurements

The grid across the project site and associated site maps were created using conventional surveying techniques and a fiberglass measuring tape. The degree of accuracy of such an approach is typically +/- 2.5% for both lengths and angles in degrees. The locations of the transect lines were provided by CH2M HILL, Inc.

A2.2 Electromagnetics

The EM method is a non-destructive geophysical technique that measures the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) a time-varying magnetic field and measuring (with a receiver) the amplitude and phase shift of an induced secondary magnetic field. The EM survey was conducted using a Geonics EM31-MK2 (EM31). The EM unit provides a measurement of ground conductivity to a depth of 15 to 20 feet below land surface.

Variations in subsurface conductivity may be caused by the presence of buried metallic objects or by geological changes such as changes in soil type (clay vs. sand) or variations in pore fluid conductivity. Typical applications for the EM method include:

- Location of buried metallic objects
- Mapping conductive contaminant ground water plumes
- Mapping of non-conductive (hydrocarbon) contaminant ground water plumes
- Delineating abandoned trenches or lagoons with fill material different from native soils
- Determining relative concentrations of near-surface conductive soils (clays)
- Delineating bedrock fracture zones
- Identifying large voids or cavities

There are two components of the induced magnetic field measured by the EM31 equipment. The first is the quadrature-phase (out-of-phase) component that measures the bulk conductivity of soil and groundwater. This is referred to as the terrain conductivity response with units that are expressed in milli-siemens per meter (mS/m). The second component is the in-phase response that is relatively

more sensitive to large metallic objects such as pipes, drums, large items of buried metallic debris and underground storage tanks. This portion of the instrument response is expressed in parts per thousand (ppt). In areas where no metals are present the in-phase response is zero. By using the in-phase and quadrature-phase components, it is possible to determine whether a change in bulk conductivity is due to the presence of buried metallic objects or due to changes in either subsurface soil conditions or pore fluid conductivity.

The EM31 survey is performed by walking the instrumentation across the project site along a system of parallel transect lines. The separation distance between transect sites is dictated by the survey requirements. For surveys designed to identify relatively large areas of buried debris (e.g., landfills), a transect spacing of 50 to 100 feet is typical. For surveys designed to identify discrete areas of buried debris, a transect spacing of 10 to 20 feet is used. The EM-31 data is electronically recorded and then downloaded to a computer for processing. EM data is usually presented as either profiles (for an individual transect) or as contour maps.

A2.3 Magnetics

GeoView uses a Geometrics 858 Cesium Vapor magnetometer for total field magnetic investigations. A magnetometer measures the intensity of the total magnetic field in the area around the sensor. The 858 magnetometer measures the magnitude of the total magnetic field independent of instrument orientation.

In environmental and engineering applications, the primary use of a magnetometer is to evaluate perturbations in the magnetic field of the earth that are caused by subsurface anomalies. Perturbations in the total magnetic field caused by subsurface anomalies are the result of a complex relationship between the object and the magnetic field of the earth. The relationship is complex because the total field registered by the instrument is a vectorial representation of three factors which affect the magnitude of the response; (1) The ambient magnetic field of the earth, (2) The inductive contribution from the object, and (3) Any contributions to the total field by remnant or permanent magnetization. Accordingly, the observed intensity of the total field is dependent upon the position of the measuring device within the source field caused by the anomaly. The magnitude of the magnetic field of the earth is typically measured in gammas.

The localized occurrence of magnetized minerals, iron objects, or cultural features of interest cause spatial variations in the earth's magnetic field. Such variations cause two types of magnetism; induced and remnant (or permanent). Induced magnetization refers to the action of the material in enhancing the earth's

magnetic field as the material itself acts as a magnet. The magnitude of the induced field is directly proportional to the strength of the ambient field and the ability of the material to act as a magnet (magnetic susceptibility). Remnant (with rocks) or permanent (with metals) magnetization is the magnetic field caused by the object or material independent of the ambient earth's magnetic field. The magnetic field variations caused by metal objects are a combination of both induced and permanent magnetization.

Data Quality Evaluation

N.1 Data Quality Assessment

This data quality evaluation assesses the effect of the overall analytical process on the “availability” of the analytical data. “Availability” in this context refers to whether results can be used by the project team based on their analytical soundness. If a result is analytically sound, it is available for use for evaluating the potential releases, nature and extent of contamination, and estimating potentially associated human health and ecological risks. However, a particular result or group of results may not be “usable” for these purposes if other conditions apply. For example, if there was a hypothetical site where a TCE spill had occurred and the TCE data for many or all of the samples were rejected, the data may not be usable for making site-specific determinations even if all the non-TCE data were analytically sound and available for use by the project team. In order to avoid confusion of terms, this data quality evaluation differentiates the “availability” of results from “usability” of results. “Available” results are analytically sound and available for use by the project team to make decisions, even if they are not usable for a particular purpose.

The three major categories of data evaluation are laboratory performance, field collection performance (i.e. blank contamination), and matrix interferences. Evaluation of laboratory performance is a check for compliance with the method requirements; in other words, a check of whether the laboratory analyzed the samples within the limits of the analytical method. Additionally, an independent, third-party validator conducted a review of the laboratory data to assess whether the analytical methods were within required control limits at the time of analysis. Evaluation of potential matrix interferences involves the review of several areas of results, including surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Evaluation of field collection performance, such as blank contamination and field duplicates, involves the review field QC and the determination of their effect on the sample results.

The data evaluation and validation is a multi-tiered approach. The process begins with an internal laboratory review, continues with an independent review by a third-party validator, and ends with an overall review by the Navy contractor project chemistry team. While only the data validator is allowed to apply qualifiers to the data, the process provides a medium for essential communication between the laboratory, validator, and project team, and allows for data quality to be thoroughly evaluated.

N.1.1 Laboratory Internal Quality Control Review

Prior to releasing the analytical data, the laboratory reviewed both the sample and QC data to verify sample identity, instrument calibration, quantitation limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. In addition, the QC data were tabulated and the results reviewed to ascertain whether they were within the contract-required or laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the data package cover letter and case

narrative. The case narrative was then reviewed by the data validator and incorporated into the data validation report. If necessary, qualifiers were applied based on this information.

N.1.2 Data Validation

An independent data validator reviewed all data packages using the validation criteria defined by USEPA Contract Laboratory Program. USEPA Region II checklists were applied to the data to help the validator create a thorough and systematic approach to the validation process. As stated above, the data validation process was independent and separate from the laboratory's internal review. The process was specifically focused on the effects of the laboratory's performance and sample matrix on the analytical results. Areas of review consisted of holding time compliance, surrogate recovery accuracy, matrix spiked sample precision and accuracy, blank contamination, initial and continuing calibration accuracy and precision, laboratory control sample accuracy, internal standard response and retention time accuracy, instrument tune criteria accuracy, and duplicate sample precision (laboratory and field duplicates). Additionally, the analytical spectrum and raw data output were reviewed and laboratory results selected by the validator were recalculated from the raw data to verify final laboratory quantitation.

When multiple analyses were performed, the analytical run with the lowest quantitation limits was selected by the validator if the QC criteria were met for that analysis. If a sample was analyzed more than once as a result of concentrations exceeding the calibration range, the data validator selected results from the appropriate dilution. When multiple analyses were performed and QC criteria were outside of control limits for all analyses, the data validator selected results from the analytical run with the least number of exceptions or best possible QC.

Qualification of data is not an unusual occurrence. To define a laboratory QC exceedance and when a laboratory QC exceedance occurs, the laboratory refers to its in-house SOPs. The SOPs are based on DOD requirements, the requested analytical method, and accumulated laboratory experience. When a laboratory QC exceedance occurs, the situation may be acceptable or it may require further action by the laboratory, such as application of a laboratory qualifier or reanalysis of the sample. The data validator uses a separate set of QC criteria, based on guidance from the EPA region that applies to the samples. A laboratory QC exceedance may not constitute a data validation exceedance and a data validation exceedance may not constitute a laboratory QC exceedance. Data validation criteria exceedances may result in the qualification of or rejection of data, as deemed appropriate by the third-party data validator.

The data validator examines each data point and determines any effects that QC exceedances have had. Most often, these effects dictate that the result or quantitation limit should be considered estimated, but is still available for use. The J-qualification, UJ-qualification, NJ-qualification, and U-qualification of results are common occurrences and have no adverse effect on the availability of that result to the project team for making decisions. J-qualified and NJ-qualified results are available, at the reported result, for use as detects as long as they are considered "estimated" by the project team. Human health risk assessment guidance suggests that these qualifiers "indicate uncertainty in the reported concentration of the chemical, but not in its assigned identity. Therefore, these data can be used just as positive data with no qualifiers or codes." In addition, one should use "J-

qualified concentrations the same way as positive data that do not have this qualifier” (Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual. (Part A) EPA/540/1-89/002. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, D.C. 1989). U-qualified and UJ-qualified results are available, at the reported quantitation limit, for use as non-detects as long as they are considered “non-detect,” “attributable to blank contamination,” or “non-detect, estimated quantitation limit,” as appropriate.

In extreme cases, a result is rejected and deemed to be unusable. “Unusable” in this instance is defined as a result that is not analytically sound and is not generally considered available for use by the project team. In some cases, the project team may still decide to use a rejected result. An example of this occurrence would be if a result is rejected because it is biased extremely high, yet it is still below the project action limits. A conservative decision may be made to consider this result a non-exceedance, even if its concentration was rejected. For that reason, it is important to examine why a result was rejected. For the most part, however, rejected results are not usable, and the R-qualifier is the only qualifier that has an adverse effect on the availability of data.

In large data sets, rejected results are often inconsequential because there is sufficient non-rejected data available to the project team. If there are enough non-rejected data or the project team is able to infer results from adjacent sampling locations or there is other site-specific information that can provide additional lines of evidence, it may not be necessary to know the concentrations of some rejected constituents. It may also not be necessary to prove a constituent’s absence if there are sufficient additional lines of evidence.

N.1.2.1 Primary Data Validation Qualifiers

The following data validation qualifiers were applied to one or more analytical results:

- **U** - Not detected. Sample was analyzed for this parameter, but it was not detected above the reported quantitation limit. The data validator may also apply this qualifier to indicate that a concentration is attributed to blank contamination, but this qualifier does not necessarily indicate a quality control problem.
- **UJ** - Not detected, quantitation limit estimated. Sample was analyzed for this parameter, but it was not detected above the reported quantitation limit. The quantitation limit for this parameter is estimated.
- **J** - Concentration estimated. The parameter was positively identified and the associated numerical value is the approximate concentration of the parameter in the sample.
- **NJ** - Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity
- **R** - Rejected. The result was rejected because quality control limits were exceeded. The presence or absence of the parameter cannot be verified and the result generally is not usable as detected or not detected. R is also used to indicate an analytical result that is redundant because of reanalysis or dilution, in which case, there is no effect on the quality or usability of data.
- **[No qualifier present]** - Detected. Qualification was not warranted.

N.2 Impact of Data Quality on Project Data Quality Objectives and Data Usability

The laboratories analyzed the samples in accordance with CLP, SW-846, and other EPA methods. The data packages were reviewed by an independent data validator using USEPA Region II validation checklists.

The laboratory utilized various qualifiers to represent “below reporting limit,” “non-detect,” and “detected.” The data validator utilized J-qualifiers, NJ-qualifiers, UJ-qualifiers, U-qualifiers, and R-qualifiers to represent “estimated,” “presumptively present at approximate quantity,” “non-detect, estimated quantitation limit,” “non-detect” or “attributable to blank contamination,” and “rejected,” respectively. The only time the data validator changed a result’s detect status was when [no qualifier present] or J-qualifiers were changed to U-qualifiers (detect to non-detect) and when [no qualifier present], J-qualifiers, or U-qualifiers were changed to R-qualifiers (detect or non-detect to rejected).

The J- and UJ-qualifiers indicate that some results are estimated. These qualifiers indicate that data are available for use as detects and non-detects, respectively. These qualifiers do not necessarily indicate a problem that adversely affects the availability of data. For example, J-qualifiers are often applied simply because results are below the quantitation limit.

Region II data validation guidance mandates the use of J- and UJ-qualifiers when QA/QC exceedances dictate their necessity. This is distinctly different from other EPA regions, such as Region I and Region III. In Region I, a data validator may use J⁺ and J-qualifiers to indicate that data are biased high or biased low, respectively. In Region III, a data validator may use K- and L-qualifiers to indicate that data are biased high or biased low, respectively. In Region III, a data validator may use UL-qualifiers to indicate that quantitation limits are biased low and may use B-qualifiers to indicate when results are attributable to blank contamination. In Region II, if the direction of bias is known, it is not implied by the J- or UJ-qualifier. In Region II, if a result is attributable to blank contamination, it is U-qualified and is no longer distinguishable from results that are simply non-detect. This supports the practice that J-qualified results, while estimated, are available for use as detects at their qualified concentration and U- and UJ-qualifiers are available for use as non-detects at their qualified quantitation limit. In general, J-, UJ-, and U-qualified results are available for use as qualified for evaluating potential releases, the nature and extent of contamination, and estimating potentially associated human health and ecological risks.

It is a common occurrence for achieved quantitation limits to be greater than project action limits or for quantitation limits to be elevated above what was expected or requested. In many cases, project action limits are simply unreasonably low or the laboratory was forced, by the analytical method or sample matrices, to raise quantitation limits for various reasons. In the instance where non-detect quantitation limits are greater than project action limits, the results are available for use as non-detects, but their use adds uncertainty to the conclusions drawn. There are a variety of potentially unavoidable reasons why the quantitation limits of non-detect results may exceed project action limits:

- If a criterion (project action limit) is unreasonably low, current instrumentation technology may not be able to achieve an RL lower than the project action limit.
- The quantitation limit may have been established at a time when the criterion (project action limit) was higher (less stringent), but the reporting is being done using new (more stringent) criteria.
- If the laboratory utilizes an analytical method with contract-required quantitation limits (CRQLs) or contract-required detection limits (CRDLs), the analytical method requirements may force the laboratory to report the quantitation limit at a level higher than the project action limit.
- If a target compound or analyte is present at an elevated level, the laboratory will dilute the entire sample in order to report that concentration within the instrument's linear calibration range. It may not be possible to analyze the sample at a lesser dilution if the target compound's high concentration is likely to damage or saturate the instrument. The high concentration of a non-target compound or analyte may also necessitate initial dilution for the same reason.
- If matrix effects mask low concentrations, the laboratory may be forced to elevate their quantitation limits to demonstrate the fact that low concentrations cannot be detected.
- If matrix effects are particularly strong, the laboratory may be forced to analyze the sample at an initial dilution in an attempt to dilute the matrix effects.
- If historical concentrations warrant, the laboratory detects an odor, or the field team designates a sample as "expected high concentration," the laboratory may pre-screen the sample and initially dilute it.
- If the sample appearance indicates possible high concentrations, the laboratory may be forced to analyze the sample at a concentration range different from what is requested. For example, if a sample is designated as "groundwater," but is actually an emulsion or sludge, the laboratory may be forced to analyze the sample using the "medium soil" instead of the "trace water" concentration range.
- If the field team cannot provide the full sample volume, the laboratory may be forced to dilute the sample by adding water until the minimum volume is achieved.
- If a sample is characterized by high percent moisture, the reporting limits will be raised such that the concentrations and quantitation limits are reported on a dry-weight basis.

N.2.1 PARCC Considerations

N.2.1.1 Precision

Precision is defined as the agreement between duplicate results, and was characterized by comparing duplicate matrix spike recoveries, native duplicates, and field duplicate sample results.

N.2.1.2 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. For organic analyses, each sample was spiked with surrogate compounds; and for organic and inorganic analyses, an MS/MSD and LCS were spiked with a known parameter concentration before preparation. Surrogates and MS/MSD provide a measure of the matrix effects on the analytical accuracy. LCS demonstrates accuracy of the method and the laboratory's ability to meet the method criteria.

N.2.1.3 Representativeness

Representativeness is a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition (in this case, nature and extent of contamination). Representativeness is a subjective parameter and is used to evaluate the efficacy of the sample planning design. In terms of data quality, representativeness was assured because the sampling team following approved standard operating procedures for sample collection and handling, and the laboratory followed approved standard operating procedures for sample handling, preparation, and analysis.

N.2.1.4 Completeness

For purposes of this DQE, completeness will be defined as the percentage of measurements that are judged to be valid; validity being defined by the DQOs. Therefore, completeness will be calculated as the number of analytically-sound results that are available for use compared to the total number of measurements made. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*; EPA 540/R-99/008; October, 1999, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*; EPA 540-R-04-004; October, 2004, *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B* (Rev 2, Dec 1996); SOP NO. HW-24, *USEPA Region II SW846 Method 8270C* (Rev. 3, December 1996); SOP HW-22, *USEPA Region II SW846 Method 8080A/8000* (Rev. 0, April, 1885); SOP HW-23, *Chlorinated Herbicides Standard Operating Procedure U.S. EPA Region II* (Revision: 1.3, Nov., 1994), and *Validation of Metals for the Contract Laboratory Program (CLP) based on SOW ILM05.3* (SOP Revision 13); (Revision 13, September, 2006) designate all results except those R-qualified as “rejected” to be available for use as analytically-sound results. The R-qualifier is the only qualifier that negatively affects a data point’s availability. Completeness is provided for each analytical group for each matrix and site. Per the Master Quality Assurance Project Plan (CH2M HILL, 2001) and the Final Master Work Plan (CH2M HILL, 2003), under which data from these sites were collected, this project has an 85 percent completeness goal.

N.2.1.5 Comparability

Comparability is a qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are sample collection and handling techniques, sample matrix, and analytical methods. In this case, because approved standard operating procedures were used for sample collection and handling, common sample matrices were evaluated (surface soil, subsurface soil, and groundwater), and EPA CLP methods, EPA methods, and EPA SW-846 methods were utilized, the data user may express confidence in the fact that this data set is comparable to others of acceptable data quality. In addition, comparability is controlled by the other PARCC parameters because data sets can be compared with confidence only when precision and accuracy are known. Except in the case of rejected data, precision and accuracy were demonstrated to be acceptable, and the data user may be confident that this data set is comparable to others of high data quality.

N.3 SWMU 1

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 1 PA/SI, as well as to provide an assessment of data usability. Section N.3.5.1 discusses the rejected data with respect to data usability. Section N.3.5.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.3.1 SWMU 1 Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on February 5 through February 13, 2004.

N.3.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 295 distinct data points were generated. When rejected results are considered, the volatiles data set is 94.24 percent complete (278 of 295 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 5.76 percent (17 of 295 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.3.1.1.1 below)

N.3.1.1.1 Calibration

A total of 17 volatiles results, consisting of 1,4-dioxane, acetonitrile, and isobutanol in all (5) samples and acrolein and propionitrile in CGW1GW05-R01, were R-qualified as “rejected” because of initial calibration recovery exceedances. These results were deemed “non-detect” by the laboratory. There are no other available 1,4-dioxane, acetonitrile, or isobutanol results for samples in this dataset, but there are other available acrolein and propionitrile results for CGW1GW01-R01, CGW1GW02-R01, CGW1GW03-R01, and CGW1GW04-R01.

N.3.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 555 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.22 percent complete (534 of 555 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.70 percent (15 of 555 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see Section N.3.1.2.1 below)
- 2.52 percent (14 of 555 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see Section N.3.1.2.2, below)
- 0.90 percent (5 of 555 results) were R-qualified as “rejected” because of continuing calibration (see section N.3.1.2.1, below)
- 0.36 percent (2 of 555 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.3.1.2.3, below)
- 0.36 percent (2 of 555 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.3.1.2.3, below)

N.3.1.2.1 Calibration

Five semivolatiles results, consisting of 4-nitroquinoline-1-oxide in all (5) samples, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are no other available 4-nitroquinoline-1-oxide results in this data set.

A total of 15 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.2.2 Laboratory Control Sample

A total of 14 semivolatiles results, consisting of 1,4-naphthoquinone and a,a-dimethylphenethylamine in all (5) samples, isosafrole in CGW1GW02-R01, and pyridine in CGW1GW03-R01, CGW1GW04-R01, and CGW1GW05-R01, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are no other available 1,4-naphthoquinone or a,a-dimethylphenethylamine results in this data set, but there is one other available pyridine and four other available isosafrole results in this dataset.

N.3.1.2.3 Matrix Spike/Matrix Spike Duplicate

Two semivolatiles results, consisting of safrole and pyridine in CGW1GW02-R01, were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. These results were deemed “non-detect” by the laboratory. There is one other available pyridine and four other available safrole results in this dataset.

Two results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 145 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 98.62 percent complete (143 of 145 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 14.48 percent (21 of 145 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.3.1.3.1, below)
- 2.76 percent (4 of 145 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances (see section N.3.1.3.2, below)
- 2.07 percent (3 of 145 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.3.1.3.3, below)
- 1.38 percent (2 of 145 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.3.1.3.3, below)
- 1.38 percent (2 of 145 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.3.1.3.2, below)
- 0.69 percent (1 of 145 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.3.1.3.4, below)

N.3.1.3.1 Surrogates

A total of 21 pesticides/PCBs results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.3.2 Calibration

Four pesticides/PCBs results were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.3.3 Laboratory Control Sample

Two toxaphene results, consisting of toxaphene in CGW1GW01-R01 and CGW1GW02-R01, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are available toxaphene results for every other (3) sample in this dataset.

Three more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.3.4 Matrix Spike/Matrix Spike Duplicate

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.4 Herbicides

Herbicides were analyzed by SW-846 8151. Excluding field quality control samples, 20 distinct data points were generated. The herbicides data set is 100 percent complete (20 of 20 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 15.00 percent (3 of 20 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.3.1.4.1 below)

N.3.1.4.1 Matrix Spike/Matrix Spike Duplicate

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 8330 and EPA 314. Excluding field quality control samples, 65 distinct data points were generated. The explosives data set is 100 percent complete (65 of 65 explosives results are

available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 1.54 percent (1 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.3.1.5.1 below)

N.3.1.4.1 Calibration

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.1.6 Dioxins

Dioxins were analyzed by SW-846 8290. Excluding field quality control samples, 22 distinct data points were generated. The dioxins data set is 100 percent complete (22 of 22 dioxins results are available for use). The validation process resulted in no qualifiers.

N.3.1.7 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by SW-846 methods 6010, 7470, and 9012. Excluding field quality control samples, 87 distinct data points were generated. The metals data set is 100 percent complete (87 of 87 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 52.87 percent (46 of 87 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.3.1.7.1 below)

N.3.1.7.1 Quantitation Limits

A total of 46 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.1.8 Filtered Metals

Filtered metals (metals and mercury) were analyzed by SW-846 methods 6010 and 7470. Excluding field quality control samples, 85 distinct data points were generated. The filtered metals data set is 100 percent complete (85 of 85 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 41.18 percent (35 of 85 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.3.1.8.1, below)

N.3.1.8.1 Quantitation Limits

A total of 35 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.1.9 Wet Chemistry

Wet Chemistry (sulfide) was analyzed by EPA method 376.1. Excluding field quality control samples, two distinct data points were generated. The wet chemistry data set is 100

percent complete (2 of 2 wet chemistry results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 100 percent (2 of 2 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.3.1.9.1, below)

N.3.1.9.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2 SWMU 1 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on February 4 through February 10, 2004.

N.3.2.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 3245 distinct data points were generated. When rejected results are considered, the volatiles data set is 94.92 percent complete (3080 of 3245 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 5.08 percent (165 of 3245 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.3.2.1.1, below)
- 1.14 percent (37 of 3245 results) were U-qualified as “attributable to blank contamination” (see section N.3.2.1.2, below)
- 0.22 percent (7 of 3245 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances (see section N.3.2.1.3, below)
- 0.18 percent (6 of 3245 results) were J-qualified as “estimated” because the results were lower than the quantitation limit (see section N.3.2.1.4, below)
- 0.18 percent (6 of 3245 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.3.2.1.1, below)

N.3.2.1.1 Calibration

A total of 165 results, consisting of 1,4-dioxane, isobutanol, and propionitrile in all (55) samples, were rejected because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. There are no available 1,4-dioxane, isobutanol, or propionitrile results for any other sample in this dataset.

Six results were UJ-qualified as “non-detect, estimated quantitation limit” as a result of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.1.2 Blank Contamination

A total of 37 results were U-qualified as “attributable to blank contamination” because acetone and 2-butanone were detected in associated blank samples. Acetone and 2-butanone are common laboratory contaminants. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.3.2.1.3 Matrix Spike/Matrix Spike Duplicate

Seven results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.1.4 Quantitation Limits

Six results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 6108 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 89.89 percent complete (5488 of 6108 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 9.07 percent (554 of 6108 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.3.2.2.1, below)
- 1.34 percent (82 of 6108 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see Section N.3.2.2.2 below)
- 0.77 percent (47 of 6108 results) were R-qualified as “rejected” because of continuing calibration (see section N.3.2.2.2, below)
- 0.16 percent (10 of 6108 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances (see section N.3.2.2.3, below)
- 0.15 percent (9 of 6108 results) were J-qualified as “estimated” because the results were lower than the quantitation limit (see section N.3.2.2.4, below)
- 0.15 percent (9 of 6108 results) were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances (see section N.3.2.2.3, below)
- 0.11 percent (7 of 6108 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.3.2.2.2 below)
- 0.02 percent (1 of 6108 results) were U-qualified as “attributable to blank contamination” (see Section N.3.2.2.5 below)

N.3.2.2.1 Laboratory Control Sample

A total of 554 semivolatiles results were R-qualified as “rejected” because of laboratory control sample exceedances. One or more semivolatile result was rejected in each sample. All rejected values were deemed “non-detect” by the laboratory.

Isosafrole was rejected in all (55) samples. Isosafrole results are not available for any other samples in this dataset.

Hexachloroethane and 1,3-dichlorobenzene were rejected in 40 samples. Available hexachloroethane and 1,3-dichlorobenzene results are present for 15 other samples in this dataset.

Benzyl alcohol was rejected in 31 samples. Available benzyl alcohol results are present for 24 other samples in this dataset.

Nitrobenzene, 1,4-dichlorobenzene, and 1,2-dichlorobenzene were rejected in 28 samples. Available nitrobenzene, 1,4-dichlorobenzene, and 1,2-dichlorobenzene results are present in 27 other samples in this dataset.

2,2-Oxybis(1-chloropropane), 2-methylnaphthalene, 2-nitrophenol, acenaphthylene, 1,2,4-trichlorobenzene, bis(2-chloroethyl)ether, dibenz(a,h)anthracene, hexachlorobutadiene, naphthalene, n-Nitrosodiethylamine, and n-Nitrosodiphenylamine were rejected in 16 samples. Available results for all of these compounds are present in the remaining (39) samples in this dataset.

Pentachlorophenol, N-nitrosopiperidine, 1,3-dinitrobenzene, 2,3,4,6-tetrachlorophenol, 2-methyl-5-nitroaniline, hexachlorocyclopentadiene, and 4-nitrophenol were rejected in 12 samples. Available results for these compounds are present in all (43) other samples in this dataset.

Aramite, 2-acetylaminofluorene, diallate, and pronamide were rejected in 11 samples. Available results for these compounds are present in all other samples in this dataset except for one (43).

N.3.2.2.2 Calibration

A total of 47 results, consisting of 4-nitroquinoline-1-oxide in every sample except for CGW1SS48-R01, CGW1SS36-R01, CGW1SS37-R01, CGW1SS38-R01, CGW1SS39-R01, CGW1SS40-R01, CGW1FD04P-R01, and CGW1SS42-R012, were R-qualified as “rejected” because of continuing calibration. 4-Nitroquinoline-1-oxide in these eight excepted samples was rejected because of initial calibration exceedances, except for CGW1SS48-R01, where the result was U-qualified as “non-detect” by the laboratory. These results were deemed “non-detect” by the laboratory. There is a 4-nitroquinoline-1-oxide result for CGW1SS48-R01.

A total of 82 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.2.3 Matrix Spike/Matrix Spike Duplicate

Nine results, consisting of 2-acetylaminofluorene, aramite, diallate, a,a-dimethylphenethylamine, n-Nitroso-d-n-butylamine, and pronamide in CGW1SS12-R01, a,a-dimethylphenethylamine and 2-methylaniline in CGW1SS25-R01, and a,a-dimethylphenethylamine in CGW1SS42-R01, were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. These results were deemed “non-detect” by the laboratory. There are 43 available 2-acetylaminofluorene, 54 available 2-methylaniline, 52 available a,a-dimethylphenethylamine, 43 available aramite, 43 available diallate, 54 available n-nitroso-di-n-butylamine, and 53 available pronamide results for other samples in this dataset.

Ten results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.2.4 Quantitation Limits

Nine results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.2.5 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.3.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 8081 and 8082. Excluding field quality control samples, 1595 distinct data points were generated. When rejected results were considered, the pesticides/PCBs data set is 96.05 percent complete (1532 of 1595 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 18.37 percent (293 of 1595 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate exceedances (see section N.3.2.3.1, below)
- 3.64 percent (58 of 1595 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.3.2.3.2, below)
- 3.13 percent (50 of 1595 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.3.2.3.3, below)
- 3.01 percent (48 of 1595 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.3.2.3.4, below)
- 1.50 percent (24 of 1595 results) were J-qualified as “estimated” because of spiked surrogate recovery exceedances (see section N.3.2.3.1, below)
- 1.50 percent (24 of 1595 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.3.2.3.3)
- 1.38 percent (22 of 1595 results) were R-qualified as “rejected” because of spiked surrogate recovery exceedances (see section N.3.2.3.1, below)
- 1.07 percent (17 of 1595 results) were R-qualified as “rejected” because of matrix spike recovery exceedances (see section N.3.2.3.5, below)
- 0.75 percent (12 of 1595 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances (see section N.3.2.3.2, below)
- 0.50 percent (8 of 1595 results) were J-qualified as “estimated because of large differences in quantitation between the primary and secondary analytical columns (see section N.3.2.3.6, below)
- 0.44 percent (7 of 1595 results) were J-qualified as “estimated” because of continuing calibration (see section N.3.2.3.2, below)
- 0.38 percent (6 of 1595 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of large differences in quantitation between the primary and secondary analytical columns (see section N.3.2.3.6, below)

- 0.25 percent (4 of 1595 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.3.2.3.5, below)
- 0.19 percent (3 of 1595 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.3.2.3.6, below)
- 0.19 percent (3 of 1595 results) were U-qualified as “attributable to blank contamination” (see section N.3.2.3.7, below)
- 0.13 percent (2 of 1595 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.3.2.3.5, below)
- 0.06 percent (1 of 1595 results) were NJ-qualified as “presumptively present at approximate quantity” because of large differences in quantitation between the primary and secondary analytical columns (see section N.3.2.3.6, below)

N.3.2.3.1 Surrogates

A total of 22 pesticides results, consisting of all pesticide results for CGW1SS04-R01, were R-qualified as “rejected” because of spiked surrogate recovery exceedances. These results, with the exception of 4,4'-DDE and 4,4'-DDT were deemed “non-detect” by the laboratory.

A total of 293 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate exceedances. A total of 24 results were J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.3.2 Calibration

A total of 58 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration. A total of 12 results were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances. Seven more results were J-qualified as “estimated” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.3.3 Laboratory Control Sample

A total of 24 pesticides results, consisting of toxaphene in 24 samples, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are available toxaphene results for every other sample except for one (30 more toxaphene results are available), where toxaphene was rejected for another reason.

A total of 50 results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.3.4 Quantitation Limits

A total of 48 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.3.5 Matrix Spike/Matrix Spike Duplicate

A total of 17 pesticides results, consisting of aldrin, alpha-BHC, beta-BHC, delta-BHC, gamma-BHC (Lindane), Chlordane, alpha-Chlordane, 4,4'-DDD, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin aldehyde, Heptachlor epoxide, heptachlor, and methoxychlor in CGW1SS12-R01, were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. These results were deemed “non-detect” by the laboratory. Results rejected for this reason were limited to CGW1SS12-R01.

Four results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. Two more results were J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.3.6 Dual-Column Reproducibility

Eight results were J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. Six more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. Three more results were U-qualified as “non-detect” for the same reason. One more result was NJ-qualified as “presumptively present at approximate quantity” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The U-qualification of non-detect results does not affect the availability as results because they are available for use as non-detects at the reported quantitation limit. The NJ-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.3.7 Blank Contamination

Three results were U-qualified as “attributable to blank contamination because 4,4'-DDD was detected in an associated blank. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.3.2.4 Herbicides

Herbicides were analyzed by SW-846 8151. Excluding field quality control samples, 220 distinct data points were generated. The herbicides data set is 100 percent complete (220 of 220 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 15.35 percent (36 of 220 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.3.2.4.1, below)

N.3.2.4.1 Surrogates

A total of 36 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 8330 and EPA 314. Excluding field quality control samples, 715 distinct data points were generated. The explosives data set is 100 percent complete (715 of 715 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.55 percent (54 of 715 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.3.2.5.1, below)
- 0.14 percent (1 of 715 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances (see section N.3.2.5.2, below)

N.3.2.5.1 Laboratory Control Sample

A total of 54 results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.5.2 Matrix Spike/Matrix Spike Duplicate

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.6 Dioxins

Dioxins were analyzed by SW-846 8290. Excluding field quality control samples, 55 distinct data points were generated. The dioxins data set is 100 percent complete (55 of 55 dioxins results are available for use). The validation process resulted in the no qualifiers.

N.3.2.7 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 940 distinct data points were generated. The metals data set is 100 percent complete (940 of 940 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 29.89 percent (281 of 940 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.3.2.7.1, below)

- 23.19 percent (218 of 940 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.3.2.7.2, below)
- 4.36 percent (41 of 940 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.3.2.7.3, below)
- 1.17 percent (11 of 408 results) were J-qualified as “estimated” for reasons of “other” (see section N.3.2.7.4, below)
- 0.43 percent (4 of 408 results) were J-qualified as “estimated” because of holding time exceedances (see section N.3.2.7.5, below)
- 0.11 percent (1 of 408 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.3.2.7.5, below)

N.3.2.7.1 Quantitation Limits

A total of 281 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.7.2 Serial Dilution

A total of 218 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.7.3 Matrix Spike/ Matrix Spike Duplicate

A total of 137 results were J-qualified as “estimated” because of matrix spike exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.7.4 Other

If the data validator is not able to find an appropriate valid-value reason code for the reason a result was qualified, the “other” reason code is used. A total of 11 results were J-qualified as “estimated” for reasons of “other.” The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.2.7.5 Holding Times

Four results were J-qualified as “estimated” because of holding time exceedances. One more result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.3.2.8 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA 376.1. Excluding field quality control samples, 5 distinct data points were generated. The wet chemistry data set is 100 percent

complete (5 of 5 wet chemistry results are available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 40.00 percent (2 of 5 results) were J-qualified as “estimated” because the results were below than the quantitation limit (see section N.3.2.8.1, below)

N.3.2.8.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.3.3 Groundwater PARCC

N.3.3.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.3.3.2 Accuracy

Except for the 16 results rejected due to laboratory control sample exceedances and two results rejected as a result of matrix spike recoveries, matrix effects and the laboratory’s ability did not have any adverse effects on accuracy. Otherwise, because only 21 results were qualified due to spiked surrogate recoveries, only 6 results were qualified due to matrix spike/matrix spike duplicate recoveries, and only 3 results were qualified based on laboratory control sample exceedances, matrix effects and the laboratory’s ability did not have any effect on accuracy in most cases.

N.3.3.3 Representativeness

There were no issues affecting representativeness in this data set.

N.3.3.4 Completeness

There were 40 R-qualified results in this dataset; therefore, the data validation process demonstrated that 96.90 percent of the results are available for use as qualified. Actual completeness exceeded the project goal of 85 percent for this data set.

N.3.3.5 Comparability

There were no issues affecting comparability in this data set.

N.3.4 Surface Soil PARCC

N.3.4.1 Precision

Because no results were qualified due to laboratory duplicate precision, matrix spike/matrix spike duplicate precision, or field duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.3.4.2 Accuracy

There were 578 results rejected due to laboratory control sample recovery exceedances, 26 results rejected due to matrix spike/matrix spike duplicate recovery exceedances, and 22 results rejected due to spiked surrogate recovery exceedances. Matrix effects and the laboratory's ability had an adverse effect on accuracy in these cases

N.3.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.3.4.4 Completeness

Overall, there were 845 R-qualified results in this dataset. The R-qualified results comprised 6.56 percent (845 of 12880 results) of the total number of distinct results; therefore, the data validation process demonstrated that 93.44 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.3.4.5 Comparability

There were no issues affecting comparability in this data set.

N.3.5 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 81.38 percent (11520 of 14156 results) of the data as non-detect and further qualification was not warranted. Another 2.05 percent (290 of 14156 results) were detected and no further qualification was warranted. Another 3.03 percent (429 of 14156 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 86.46 percent (12239 of 14156 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, continuing calibration, holding time exceedances, matrix spike/matrix spike duplicate exceedances, serial dilutions, spiked surrogate recovery exceedances, and reasons of "other." These amounted to 2.22 percent (315 of 14156 results) of the total results. The percentage of non-detect results UJ-qualified as "non-detect, estimated quantitation limit" amounted to 4.75 percent (672 of 14156 results) and resulted from dual-column reproducibility, laboratory control sample exceedances, continuing calibration, holding time exceedances, internal standard exceedances, matrix spike/matrix spike duplicate exceedances, and spiked surrogate recovery exceedances. A total of 0.29 percent (41 of 14156 results) were U-qualified as "non-detect" as a result of blank contamination. A total of 0.02 percent (3 of 14156 results) were U-qualified as "non-detect" as a result of dual-column reproducibility. A total of 0.01 percent (1 of 14156 results) were NJ-qualified as "presumptively present at approximate quantity) as a result of dual-column reproducibility. Based on the above, 7.29 percent (1032 of 14156 results) are available for use as qualified. Combining the 86.46 percent with the 7.29 percent results in 93.75 percent (13261 of 14156 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as "rejected" (885 of 14156 results, 6.25 percent of total results) are available for use as qualified.

N.3.5.1 Discussion of Rejected Data

Table N.3-1 lists all R-qualified data for SWMU 1. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

Soil

The non-detect results for three VOCs (1,4-dioxane, isobutanol, and propionitrile) were rejected in all 50 surface soil samples collected at SWMU 1. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Propionitrile is a chemical used primarily as an intermediate in the production of other chemicals. Based on the above information and the type of waste reportedly disposed of at the landfill, it is unlikely that any of these VOCs would have been present in the waste.

The non-detect results for 33 SVOCs were rejected variously in the 50 surface soil samples collected at the site. However, only two of the SVOCs (4-nitroquinoline-1-oxide and isosafrole) were rejected in all surface soil samples. 4-nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. Isosafrole is an aromatic organic chemical with a smell similar to anise or licorice. It is found in small amounts in various essential oils, perfumes, and root beer. Neither SVOC would likely have been present or present in appreciable quantities in the waste disposed of at SWMU 1.

Eleven of the 33 SVOCs were rejected in 11 of 50 samples (SS-11 through SS-22 excluding SS-17). They comprise:

1,3-Dinitrobenzene
2,3,4,6-Tetrachlorophenol
2-Acetylaminofluorene
2-Methyl-5-nitroaniline
4-Nitrophenol
Aramite
Diallate
Hexachlorocyclopentadiene
N-Nitrosopiperidine
Pentachlorophenol
Pronamide

Another 11 of the 33 SVOCs were rejected in 15 of 50 samples (SS-36 through SS-50). They comprise:

1,2,4-Trichlorobenzene
2,2-Oxybis(1-Chloropropane)
2-Methylnaphthalene

2-Nitrophenol
Bis(2-chloroethyl)ether
Hexachlorobutadiene
Naphthalene
Acenaphthylene
Dibenz(a,h) anthracene
n-Nitrosodiethylamine
n-Nitrosodiphenylamine

Two of the 33 SVOCs were rejected in 26 of 50 samples (SS-23 through SS-50 except SS-33 and SS-35). They comprise 1,2-dichlorobenzene and 1,4-dichlorobenzene.

Another 2 of the 33 SVOCs were rejected in 37 of 50 samples (SS-11 through SS-50 except SS-17, SS-33, and SS-35). They comprise 1,3-dichlorobenzene and hexachloroethane.

One of the 33 SVOCs (nitrobenzene) was rejected in 26 of 50 samples (SS-11 through SS-50 except SS-17 and SS-23 through SS-35).

One of the SVOCs (benzyl alcohol) was rejected in 28 of 50 samples (SS-1 through SS-10, SS-17, SS-33, SS-35 through SS-50).

One of the SVOCs (a,a-dimethylphenethylamine) was rejected in 3 of 50 samples (SS-12, SS-25, and SS-42).

One of the SVOCs (n-Nitroso-di-n-butylamine) was rejected in 1 of 50 samples (SS-12).

One of the SVOCs (2-Methylaniline) was rejected in 1 of 50 samples (SS-25).

Of the 33 SVOCs that were rejected in various surface soil samples, none were detected in the other surface soil samples whose results were not rejected. Further, other than for 4-nitroquinoline-1-oxide and isosafole, all of the SVOCs whose results were rejected in some samples have results in a sufficient number of other samples (all of which are non-detect) to suggest the SVOCs are not present in SWMU 1 surface soil. As stated previously, it is unlikely that 4-nitroquinoline-1-oxide and isosafole would have been present or present in significant quantities in the waste disposed of at SWMU 1.

Groundwater

The non-detect results for five VOCs (1,4-dioxane, acetonitrile, acrolein, isobutanol, and propionitrile) were rejected variously in the groundwater samples collected from the five wells at SWMU 1. 1,4-Dioxane, acetonitrile, and isobutanol were rejected in all groundwater samples collected. 1,4-Dioxane and isobutanol are discussed under Soil above. Acetonitrile is used mainly as a solvent in the purification of butadiene, which is then used to make rubber and plastics. Acrolein and Propionitrile were rejected in one sample MW-5. Acrolein is used in the preparation of polyester resin, polyurethane, propylene glycol, acrylic acid, acrylonitrile, and glycerol. Propionitrile is a chemical used primarily as an intermediate in the production of other chemicals. While it cannot be completely ruled out that these VOCs could be present in the waste disposed of at SWMU 1, it is unlikely because the manufacturing processes where these chemicals are commonly used did not take place in Vieques. Therefore, their presence would likely be as an impurity in products potentially disposed of in the landfill. However, that the non-rejected results for these VOCs were all

non-detect in the remaining groundwater samples helps support the supposition that their presence is unlikely. Additionally, other than 1,4-dioxane, none has human health or ecological risk-based screening values.

The non-detect results for six SVOCs (1,4-naphthoquinone, 4-nitroquinoline-1-oxide, a,a-dimethylphenethylamine, isosafrole, pyridine, and safrole) were rejected variously in the groundwater samples collected from the five wells at SWMU 1. 1,4-Naphthoquinone, 4-Nitroquinoline-1-oxide, and a,a-dimethylphenethylamine were rejected in all five samples. 1,4-Naphthoquinone is a polymerization regulator for rubber and polyester resins and synthesis of dyes and pharmaceuticals. 4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. a,a-Dimethylphenethylamine also known as Phentermine, is an appetite suppressant. Pyridine was rejected in four of the five samples (MW-2 through MW-5). It was not detected in MW-1; the results of which were not rejected. Pyridine is used to make many different products such as medicines, vitamins, food flavorings, paints, dyes, rubber products, adhesives, insecticides, and herbicides. Pyridine can also be formed from the breakdown of many natural materials in the environment. Isosafrole and Safrole were rejected in one sample (MW-2). They were not detected nor rejected in any of the other groundwater samples. Isosafrole is an aromatic organic chemical with a smell similar to anise or licorice. It is found in small amounts in various essential oils, perfumes, and root beer. Safrole was once widely used as a food additive in root beer, sassafras tea, and other common goods. However, the Food and Drug Administration (FDA) barred the use of safrole after it was shown to be mildly carcinogenic. Based on the above information, none of the SVOCs discussed above is likely present in the groundwater at SWMU 1. Additionally, other than pyridine, none of the above SVOCs has human health or ecological risk-based screening values.

Based on the information above, it is unlikely that the rejected data affect the ability to use existing data to evaluate aspects of environmental conditions at SWMU 1. However, it is recognized that sufficient data have not been collected to draw conclusions regarding potential releases with adequate confidence. Therefore, additional data collection will be performed.

N.3.5.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.3-2a (surface soil) and N.3-2b (groundwater) list all quantitation limits above human health screening values for non-detected constituents at SWMU 1. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, nine non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.3-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, some elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.3-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.3-2a, the actual method detection limits for seven of the SVOCs are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. The remaining two SVOCs, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values only 0.04 to 0.05 mg/kg below their associated method detection limits. N-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically used in the production of rocket fuels. It is unlikely that either constituent was present in the waste disposed of at SWMU 1. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 1 surface soil. In addition, the surface soil at SWMU is not likely representative of the material in the landfill; rather, it is representative of the cover material. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 1 surface soil do not affect the usability of the data for drawing conclusions regarding the surficial soil at the site with respect to potential human health effects.

In groundwater, 89 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.3-2b). However, the achieved quantitation limits are equal to those concurred upon and memorialized in the Work Plan. Therefore, while there is some uncertainty associated with drawing conclusions with respect to human health effects, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized. For 25 of the 89 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 25 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Furthermore, except for the inorganics and benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene, and pyridine, none of the 89 constituents was detected in any other media at the site. Therefore, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 1 groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, five non-detected SVOCs and three non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.3-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.3-3, even the target quantitation limits for the five SVOCs and PCE exceed the screening values, so the uncertainty associated

with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.3-3, the actual method detection limits for the five SVOCs and three VOCs are significantly below the ecological screening values. Therefore, had any of these eight constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 1 surface soil do not affect the usability of the data for drawing conclusions regarding the surficial soil at the site with respect to potential ecological effects.

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	PEST/PCB	CGW1GW01-R01	Toxaphene	5.8	U	R	BSX	UG/L
GW	PEST/PCB	CGW1GW02-R01	Toxaphene	5	U	R	BSX	UG/L
GW	SVOA	CGW1GW01-R01	4-Nitroquinoline-1-oxide	10.5	U	R	CC	UG/L
GW	SVOA	CGW1GW01-R01	a,a-Dimethylphenethylamine	10.5	U	R	BSX	UG/L
GW	SVOA	CGW1GW01-R01	1,4-Naphthoquinone	10.5	U	R	BSX	UG/L
GW	SVOA	CGW1GW02-R01	4-Nitroquinoline-1-oxide	10.1	U	R	CC	UG/L
GW	SVOA	CGW1GW02-R01	Isosafrole	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW02-R01	a,a-Dimethylphenethylamine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW02-R01	1,4-Naphthoquinone	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW02-R01	Pyridine	10.1	U	R	MSX	UG/L
GW	SVOA	CGW1GW02-R01	Safrole	10.1	U	R	MSX	UG/L
GW	SVOA	CGW1GW03-R01	4-Nitroquinoline-1-oxide	10.1	U	R	CC	UG/L
GW	SVOA	CGW1GW03-R01	a,a-Dimethylphenethylamine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW03-R01	1,4-Naphthoquinone	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW03-R01	Pyridine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW04-R01	4-Nitroquinoline-1-oxide	10.1	U	R	CC	UG/L
GW	SVOA	CGW1GW04-R01	a,a-Dimethylphenethylamine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW04-R01	1,4-Naphthoquinone	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW04-R01	Pyridine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW1GW05-R01	4-Nitroquinoline-1-oxide	10	U	R	CC	UG/L
GW	SVOA	CGW1GW05-R01	a,a-Dimethylphenethylamine	10	U	R	BSX	UG/L
GW	SVOA	CGW1GW05-R01	1,4-Naphthoquinone	10	U	R	BSX	UG/L
GW	SVOA	CGW1GW05-R01	Pyridine	10	U	R	BSX	UG/L
GW	VOA	CGW1GW01-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW1GW01-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW1GW01-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW1GW02-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW1GW02-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW1GW02-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW1GW03-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW1GW03-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW1GW03-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW1GW04-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW1GW04-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW1GW04-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW1GW05-R01	Acetonitrile	10	U	R	ICX	UG/L

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	VOA	CGW1GW05-R01	Acrolein	4	U	R	ICX	UG/L
GW	VOA	CGW1GW05-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW1GW05-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW1GW05-R01	Propionitrile	10	U	R	ICX	UG/L
SS	PEST/PCB	CGW1FD02P-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1FD03P-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Aldrin	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	alpha-BHC	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	beta-BHC	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	delta-BHC	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	gamma-BHC (Lindane)	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Chlordane	4.5	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	alpha-Chlordane	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	gamma-Chlordane	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	4,4-DDD	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	4,4-DDE	0.83	J	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	4,4-DDT	0.24	J	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Dieldrin	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Endosulfan I	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Endosulfan II	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Endosulfan sulfate	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Endrin	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Endrin aldehyde	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Endrin ketone	3.6	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Heptachlor epoxide	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Heptachlor	1.8	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Methoxychlor	18	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS04-R01	Toxaphene	180	U	R	SSX	UG/KG
SS	PEST/PCB	CGW1SS11-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Aldrin	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	alpha-BHC	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	beta-BHC	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	delta-BHC	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	gamma-BHC (Lindane)	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Chlordane	5	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	alpha-Chlordane	2	U	R	MSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	PEST/PCB	CGW1SS12-R01	4,4-DDD	3.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Dieldrin	3.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Endosulfan I	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Endosulfan II	3.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Endosulfan sulfate	3.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Endrin	3.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Endrin aldehyde	3.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Heptachlor epoxide	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Heptachlor	2	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Methoxychlor	20	U	R	MSX	UG/KG
SS	PEST/PCB	CGW1SS12-R01	Toxaphene	200	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS13-R01	Toxaphene	1800	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS14-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS15-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS16-R01	Toxaphene	200	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS18-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS19-R01	Toxaphene	200	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS20-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS21-R01	Toxaphene	200	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS22-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS23-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS24-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS25-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS26-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS27-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS28-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS29-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS30-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS31-R01	Toxaphene	190	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS32-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	PEST/PCB	CGW1SS34-R01	Toxaphene	180	U	R	BSX	UG/KG
SS	SVOA	CGW1FD01P-R01	4-Nitroquinoline-1-oxide	377	U	R	CC	UG/KG
SS	SVOA	CGW1FD01P-R01	Benzyl alcohol	377	U	R	BSX	UG/KG
SS	SVOA	CGW1FD01P-R01	Isosafrole	377	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	4-Nitroquinoline-1-oxide	347	U	R	CC	UG/KG
SS	SVOA	CGW1FD02P-R01	2-Acetylaminofluorene	347	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1FD02P-R01	Aramite	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	1,3-Dichlorobenzene	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Diallate	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	1,3-Dinitrobenzene	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Hexachlorocyclopentadiene	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Hexachloroethane	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Isosafrole	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	N-Nitrosopiperidine	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Nitrobenzene	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	4-Nitrophenol	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Pentachlorophenol	1040	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	Pronamide	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	2,3,4,6-Tetrachlorophenol	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD02P-R01	2-Methyl-5-nitroaniline	347	U	R	BSX	UG/KG
SS	SVOA	CGW1FD03P-R01	4-Nitroquinoline-1-oxide	353	U	R	CC	UG/KG
SS	SVOA	CGW1FD03P-R01	1,2-Dichlorobenzene	353	U	R	BSX	UG/KG
SS	SVOA	CGW1FD03P-R01	1,3-Dichlorobenzene	353	U	R	BSX	UG/KG
SS	SVOA	CGW1FD03P-R01	1,4-Dichlorobenzene	353	U	R	BSX	UG/KG
SS	SVOA	CGW1FD03P-R01	Hexachloroethane	353	U	R	BSX	UG/KG
SS	SVOA	CGW1FD03P-R01	Isosafrole	353	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	4-Nitroquinoline-1-oxide	373	U	R	ICX	UG/KG
SS	SVOA	CGW1FD04P-R01	Acenaphthylene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	bis(2-Chloroethyl)ether	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	2,2-Oxybis(1-Chloropropane)	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	Benzyl alcohol	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	Dibenz(a,h)anthracene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	1,2-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	1,3-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	1,4-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	Hexachlorobutadiene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	Hexachloroethane	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	Isosafrole	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	2-Methylnaphthalene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	Naphthalene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	n-Nitrosodiethylamine	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	n-Nitrosodiphenylamine	373	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1FD04P-R01	Nitrobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	2-Nitrophenol	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD04P-R01	1,2,4-Trichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	4-Nitroquinoline-1-oxide	362	U	R	CC	UG/KG
SS	SVOA	CGW1FD05P-R01	Acenaphthylene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	bis(2-Chloroethyl)ether	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	2,2-Oxybis(1-Chloropropane)	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Benzyl alcohol	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Dibenz(a,h)anthracene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	1,2-Dichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	1,3-Dichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	1,4-Dichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Hexachlorobutadiene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Hexachloroethane	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Isosafrole	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	2-Methylnaphthalene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Naphthalene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	n-Nitrosodiethylamine	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	n-Nitrosodiphenylamine	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	Nitrobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	2-Nitrophenol	362	U	R	BSX	UG/KG
SS	SVOA	CGW1FD05P-R01	1,2,4-Trichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS01-R01	4-Nitroquinoline-1-oxide	395	U	R	CC	UG/KG
SS	SVOA	CGW1SS01-R01	Benzyl alcohol	395	U	R	BSX	UG/KG
SS	SVOA	CGW1SS01-R01	Isosafrole	395	U	R	BSX	UG/KG
SS	SVOA	CGW1SS02-R01	4-Nitroquinoline-1-oxide	360	U	R	CC	UG/KG
SS	SVOA	CGW1SS02-R01	Benzyl alcohol	360	U	R	BSX	UG/KG
SS	SVOA	CGW1SS02-R01	Isosafrole	360	U	R	BSX	UG/KG
SS	SVOA	CGW1SS03-R01	4-Nitroquinoline-1-oxide	364	U	R	CC	UG/KG
SS	SVOA	CGW1SS03-R01	Benzyl alcohol	364	U	R	BSX	UG/KG
SS	SVOA	CGW1SS03-R01	Isosafrole	364	U	R	BSX	UG/KG
SS	SVOA	CGW1SS04-R01	4-Nitroquinoline-1-oxide	355	U	R	CC	UG/KG
SS	SVOA	CGW1SS04-R01	Benzyl alcohol	355	U	R	BSX	UG/KG
SS	SVOA	CGW1SS04-R01	Isosafrole	355	U	R	BSX	UG/KG
SS	SVOA	CGW1SS05-R01	4-Nitroquinoline-1-oxide	374	U	R	CC	UG/KG
SS	SVOA	CGW1SS05-R01	Benzyl alcohol	374	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS05-R01	Isosafrole	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS06-R01	4-Nitroquinoline-1-oxide	392	U	R	CC	UG/KG
SS	SVOA	CGW1SS06-R01	Benzyl alcohol	392	U	R	BSX	UG/KG
SS	SVOA	CGW1SS06-R01	Isosafrole	392	U	R	BSX	UG/KG
SS	SVOA	CGW1SS07-R01	4-Nitroquinoline-1-oxide	367	U	R	CC	UG/KG
SS	SVOA	CGW1SS07-R01	Benzyl alcohol	367	U	R	BSX	UG/KG
SS	SVOA	CGW1SS07-R01	Isosafrole	367	U	R	BSX	UG/KG
SS	SVOA	CGW1SS08-R01	4-Nitroquinoline-1-oxide	359	U	R	CC	UG/KG
SS	SVOA	CGW1SS08-R01	Benzyl alcohol	359	U	R	BSX	UG/KG
SS	SVOA	CGW1SS08-R01	Isosafrole	359	U	R	BSX	UG/KG
SS	SVOA	CGW1SS09-R01	4-Nitroquinoline-1-oxide	362	U	R	CC	UG/KG
SS	SVOA	CGW1SS09-R01	Benzyl alcohol	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS09-R01	Isosafrole	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS10-R01	4-Nitroquinoline-1-oxide	378	U	R	CC	UG/KG
SS	SVOA	CGW1SS10-R01	Benzyl alcohol	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS10-R01	Isosafrole	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	4-Nitroquinoline-1-oxide	350	U	R	CC	UG/KG
SS	SVOA	CGW1SS11-R01	2-Acetylaminofluorene	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Aramite	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	1,3-Dichlorobenzene	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Diallate	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	1,3-Dinitrobenzene	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Hexachlorocyclopentadiene	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Hexachloroethane	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Isosafrole	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	N-Nitrosopiperidine	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Nitrobenzene	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	4-Nitrophenol	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Pentachlorophenol	1050	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	Pronamide	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	2,3,4,6-Tetrachlorophenol	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS11-R01	2-Methyl-5-nitroaniline	350	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	4-Nitroquinoline-1-oxide	391	U	R	CC	UG/KG
SS	SVOA	CGW1SS12-R01	2-Acetylaminofluorene	391	U	R	MSX	UG/KG
SS	SVOA	CGW1SS12-R01	Aramite	391	U	R	MSX	UG/KG
SS	SVOA	CGW1SS12-R01	1,3-Dichlorobenzene	391	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS12-R01	Diallate	391	U	R	MSX	UG/KG
SS	SVOA	CGW1SS12-R01	1,3-Dinitrobenzene	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	Hexachlorocyclopentadiene	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	Hexachloroethane	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	Isosafrole	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	a,a-Dimethylphenethylamine	391	U	R	MSX	UG/KG
SS	SVOA	CGW1SS12-R01	n-Nitroso-di-n-butylamine	391	U	R	MSX	UG/KG
SS	SVOA	CGW1SS12-R01	N-Nitrosopiperidine	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	Nitrobenzene	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	4-Nitrophenol	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	Pentachlorophenol	1170	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	Pronamide	391	U	R	MSX	UG/KG
SS	SVOA	CGW1SS12-R01	2,3,4,6-Tetrachlorophenol	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS12-R01	2-Methyl-5-nitroaniline	391	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	4-Nitroquinoline-1-oxide	358	U	R	CC	UG/KG
SS	SVOA	CGW1SS13-R01	2-Acetylaminofluorene	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Aramite	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	1,3-Dichlorobenzene	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Diallate	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	1,3-Dinitrobenzene	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Hexachlorocyclopentadiene	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Hexachloroethane	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Isosafrole	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	N-Nitrosopiperidine	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Nitrobenzene	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	4-Nitrophenol	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Pentachlorophenol	1070	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	Pronamide	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	2,3,4,6-Tetrachlorophenol	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS13-R01	2-Methyl-5-nitroaniline	358	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	4-Nitroquinoline-1-oxide	363	U	R	CC	UG/KG
SS	SVOA	CGW1SS14-R01	2-Acetylaminofluorene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Aramite	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	1,3-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Diallate	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	1,3-Dinitrobenzene	363	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS14-R01	Hexachlorocyclopentadiene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Hexachloroethane	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Isosafrole	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	N-Nitrosopiperidine	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Nitrobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	4-Nitrophenol	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Pentachlorophenol	1090	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	Pronamide	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	2,3,4,6-Tetrachlorophenol	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS14-R01	2-Methyl-5-nitroaniline	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	4-Nitroquinoline-1-oxide	371	U	R	CC	UG/KG
SS	SVOA	CGW1SS15-R01	2-Acetylaminofluorene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Aramite	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	1,3-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Diallate	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	1,3-Dinitrobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Hexachlorocyclopentadiene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Hexachloroethane	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Isosafrole	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	N-Nitrosopiperidine	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Nitrobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	4-Nitrophenol	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Pentachlorophenol	1110	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	Pronamide	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	2,3,4,6-Tetrachlorophenol	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS15-R01	2-Methyl-5-nitroaniline	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	4-Nitroquinoline-1-oxide	380	U	R	CC	UG/KG
SS	SVOA	CGW1SS16-R01	2-Acetylaminofluorene	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Aramite	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	1,3-Dichlorobenzene	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Diallate	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	1,3-Dinitrobenzene	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Hexachlorocyclopentadiene	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Hexachloroethane	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Isosafrole	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	N-Nitrosopiperidine	380	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS16-R01	Nitrobenzene	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	4-Nitrophenol	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Pentachlorophenol	1140	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	Pronamide	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	2,3,4,6-Tetrachlorophenol	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS16-R01	2-Methyl-5-nitroaniline	380	U	R	BSX	UG/KG
SS	SVOA	CGW1SS17-R01	4-Nitroquinoline-1-oxide	352	U	R	CC	UG/KG
SS	SVOA	CGW1SS17-R01	Benzyl alcohol	352	U	R	BSX	UG/KG
SS	SVOA	CGW1SS17-R01	Isosafrole	352	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	4-Nitroquinoline-1-oxide	373	U	R	CC	UG/KG
SS	SVOA	CGW1SS18-R01	2-Acetylaminofluorene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Aramite	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	1,3-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Diallate	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	1,3-Dinitrobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Hexachlorocyclopentadiene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Hexachloroethane	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Isosafrole	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	N-Nitrosopiperidine	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Nitrobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	4-Nitrophenol	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Pentachlorophenol	1120	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	Pronamide	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	2,3,4,6-Tetrachlorophenol	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS18-R01	2-Methyl-5-nitroaniline	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	4-Nitroquinoline-1-oxide	382	U	R	CC	UG/KG
SS	SVOA	CGW1SS19-R01	2-Acetylaminofluorene	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Aramite	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	1,3-Dichlorobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Diallate	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	1,3-Dinitrobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Hexachlorocyclopentadiene	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Hexachloroethane	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Isosafrole	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	N-Nitrosopiperidine	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Nitrobenzene	382	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS19-R01	4-Nitrophenol	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Pentachlorophenol	1150	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	Pronamide	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	2,3,4,6-Tetrachlorophenol	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS19-R01	2-Methyl-5-nitroaniline	382	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	4-Nitroquinoline-1-oxide	349	U	R	CC	UG/KG
SS	SVOA	CGW1SS20-R01	2-Acetylaminofluorene	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Aramite	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	1,3-Dichlorobenzene	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Diallate	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	1,3-Dinitrobenzene	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Hexachlorocyclopentadiene	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Hexachloroethane	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Isosafrole	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	N-Nitrosopiperidine	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Nitrobenzene	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	4-Nitrophenol	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Pentachlorophenol	1050	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	Pronamide	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	2,3,4,6-Tetrachlorophenol	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS20-R01	2-Methyl-5-nitroaniline	349	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	4-Nitroquinoline-1-oxide	388	U	R	CC	UG/KG
SS	SVOA	CGW1SS21-R01	2-Acetylaminofluorene	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Aramite	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	1,3-Dichlorobenzene	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Diallate	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	1,3-Dinitrobenzene	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Hexachlorocyclopentadiene	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Hexachloroethane	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Isosafrole	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	N-Nitrosopiperidine	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Nitrobenzene	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	4-Nitrophenol	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Pentachlorophenol	1160	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	Pronamide	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS21-R01	2,3,4,6-Tetrachlorophenol	388	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS21-R01	2-Methyl-5-nitroaniline	388	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	4-Nitroquinoline-1-oxide	363	U	R	CC	UG/KG
SS	SVOA	CGW1SS22-R01	2-Acetylaminofluorene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Aramite	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	1,3-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Diallate	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	1,3-Dinitrobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Hexachlorocyclopentadiene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Hexachloroethane	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Isosafrole	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	N-Nitrosopiperidine	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Nitrobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	4-Nitrophenol	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Pentachlorophenol	1090	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	Pronamide	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	2,3,4,6-Tetrachlorophenol	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS22-R01	2-Methyl-5-nitroaniline	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS23-R01	4-Nitroquinoline-1-oxide	377	U	R	CC	UG/KG
SS	SVOA	CGW1SS23-R01	1,2-Dichlorobenzene	377	U	R	BSX	UG/KG
SS	SVOA	CGW1SS23-R01	1,3-Dichlorobenzene	377	U	R	BSX	UG/KG
SS	SVOA	CGW1SS23-R01	1,4-Dichlorobenzene	377	U	R	BSX	UG/KG
SS	SVOA	CGW1SS23-R01	Hexachloroethane	377	U	R	BSX	UG/KG
SS	SVOA	CGW1SS23-R01	Isosafrole	377	U	R	BSX	UG/KG
SS	SVOA	CGW1SS24-R01	4-Nitroquinoline-1-oxide	378	U	R	CC	UG/KG
SS	SVOA	CGW1SS24-R01	1,2-Dichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS24-R01	1,3-Dichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS24-R01	1,4-Dichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS24-R01	Hexachloroethane	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS24-R01	Isosafrole	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS25-R01	4-Nitroquinoline-1-oxide	368	U	R	CC	UG/KG
SS	SVOA	CGW1SS25-R01	1,2-Dichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS25-R01	1,3-Dichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS25-R01	1,4-Dichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS25-R01	Hexachloroethane	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS25-R01	Isosafrole	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS25-R01	a,a-Dimethylphenethylamine	368	U	R	MSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS25-R01	2-Methylaniline	368	U	R	MSX	UG/KG
SS	SVOA	CGW1SS26-R01	4-Nitroquinoline-1-oxide	365	U	R	CC	UG/KG
SS	SVOA	CGW1SS26-R01	1,2-Dichlorobenzene	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS26-R01	1,3-Dichlorobenzene	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS26-R01	1,4-Dichlorobenzene	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS26-R01	Hexachloroethane	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS26-R01	Isosafrole	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS27-R01	4-Nitroquinoline-1-oxide	365	U	R	CC	UG/KG
SS	SVOA	CGW1SS27-R01	1,2-Dichlorobenzene	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS27-R01	1,3-Dichlorobenzene	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS27-R01	1,4-Dichlorobenzene	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS27-R01	Hexachloroethane	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS27-R01	Isosafrole	365	U	R	BSX	UG/KG
SS	SVOA	CGW1SS28-R01	4-Nitroquinoline-1-oxide	354	U	R	CC	UG/KG
SS	SVOA	CGW1SS28-R01	1,2-Dichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS28-R01	1,3-Dichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS28-R01	1,4-Dichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS28-R01	Hexachloroethane	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS28-R01	Isosafrole	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS29-R01	4-Nitroquinoline-1-oxide	374	U	R	CC	UG/KG
SS	SVOA	CGW1SS29-R01	1,2-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS29-R01	1,3-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS29-R01	1,4-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS29-R01	Hexachloroethane	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS29-R01	Isosafrole	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS30-R01	4-Nitroquinoline-1-oxide	342	U	R	CC	UG/KG
SS	SVOA	CGW1SS30-R01	1,2-Dichlorobenzene	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS30-R01	1,3-Dichlorobenzene	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS30-R01	1,4-Dichlorobenzene	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS30-R01	Hexachloroethane	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS30-R01	Isosafrole	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS31-R01	4-Nitroquinoline-1-oxide	373	U	R	CC	UG/KG
SS	SVOA	CGW1SS31-R01	1,2-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS31-R01	1,3-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS31-R01	1,4-Dichlorobenzene	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS31-R01	Hexachloroethane	373	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS31-R01	Isosafrole	373	U	R	BSX	UG/KG
SS	SVOA	CGW1SS32-R01	4-Nitroquinoline-1-oxide	342	U	R	CC	UG/KG
SS	SVOA	CGW1SS32-R01	1,2-Dichlorobenzene	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS32-R01	1,3-Dichlorobenzene	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS32-R01	1,4-Dichlorobenzene	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS32-R01	Hexachloroethane	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS32-R01	Isosafrole	342	U	R	BSX	UG/KG
SS	SVOA	CGW1SS33-R01	4-Nitroquinoline-1-oxide	369	U	R	CC	UG/KG
SS	SVOA	CGW1SS33-R01	Benzyl alcohol	369	U	R	BSX	UG/KG
SS	SVOA	CGW1SS33-R01	Isosafrole	369	U	R	BSX	UG/KG
SS	SVOA	CGW1SS34-R01	4-Nitroquinoline-1-oxide	356	U	R	CC	UG/KG
SS	SVOA	CGW1SS34-R01	1,2-Dichlorobenzene	356	U	R	BSX	UG/KG
SS	SVOA	CGW1SS34-R01	1,3-Dichlorobenzene	356	U	R	BSX	UG/KG
SS	SVOA	CGW1SS34-R01	1,4-Dichlorobenzene	356	U	R	BSX	UG/KG
SS	SVOA	CGW1SS34-R01	Hexachloroethane	356	U	R	BSX	UG/KG
SS	SVOA	CGW1SS34-R01	Isosafrole	356	U	R	BSX	UG/KG
SS	SVOA	CGW1SS35-R01	4-Nitroquinoline-1-oxide	367	U	R	CC	UG/KG
SS	SVOA	CGW1SS35-R01	Benzyl alcohol	367	U	R	BSX	UG/KG
SS	SVOA	CGW1SS35-R01	Isosafrole	367	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	4-Nitroquinoline-1-oxide	371	U	R	ICX	UG/KG
SS	SVOA	CGW1SS36-R01	Acenaphthylene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	bis(2-Chloroethyl)ether	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	2,2-Oxybis(1-Chloropropane)	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Benzyl alcohol	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Dibenz(a,h)anthracene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	1,2-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	1,3-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	1,4-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Hexachlorobutadiene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Hexachloroethane	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Isosafrole	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	2-Methylnaphthalene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Naphthalene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	n-Nitrosodiethylamine	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	n-Nitrosodiphenylamine	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	Nitrobenzene	371	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS36-R01	2-Nitrophenol	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS36-R01	1,2,4-Trichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	4-Nitroquinoline-1-oxide	368	U	R	ICX	UG/KG
SS	SVOA	CGW1SS37-R01	Acenaphthylene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	bis(2-Chloroethyl)ether	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	2,2-Oxybis(1-Chloropropane)	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Benzyl alcohol	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Dibenz(a,h)anthracene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	1,2-Dichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	1,3-Dichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	1,4-Dichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Hexachlorobutadiene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Hexachloroethane	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Isosafrole	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	2-Methylnaphthalene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Naphthalene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	n-Nitrosodiethylamine	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	n-Nitrosodiphenylamine	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	Nitrobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	2-Nitrophenol	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS37-R01	1,2,4-Trichlorobenzene	368	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	4-Nitroquinoline-1-oxide	362	U	R	ICX	UG/KG
SS	SVOA	CGW1SS38-R01	Acenaphthylene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	bis(2-Chloroethyl)ether	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	2,2-Oxybis(1-Chloropropane)	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Benzyl alcohol	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Dibenz(a,h)anthracene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	1,2-Dichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	1,3-Dichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	1,4-Dichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Hexachlorobutadiene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Hexachloroethane	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Isosafrole	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	2-Methylnaphthalene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Naphthalene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	n-Nitrosodiethylamine	362	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS38-R01	n-Nitrosodiphenylamine	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	Nitrobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	2-Nitrophenol	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS38-R01	1,2,4-Trichlorobenzene	362	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	4-Nitroquinoline-1-oxide	371	U	R	ICX	UG/KG
SS	SVOA	CGW1SS39-R01	Acenaphthylene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	bis(2-Chloroethyl)ether	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	2,2-Oxybis(1-Chloropropane)	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Benzyl alcohol	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Dibenz(a,h)anthracene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	1,2-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	1,3-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	1,4-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Hexachlorobutadiene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Hexachloroethane	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Isosafrole	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	2-Methylnaphthalene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Naphthalene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	n-Nitrosodiethylamine	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	n-Nitrosodiphenylamine	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	Nitrobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	2-Nitrophenol	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS39-R01	1,2,4-Trichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	4-Nitroquinoline-1-oxide	374	U	R	ICX	UG/KG
SS	SVOA	CGW1SS40-R01	Acenaphthylene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	bis(2-Chloroethyl)ether	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	2,2-Oxybis(1-Chloropropane)	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	Benzyl alcohol	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	Dibenz(a,h)anthracene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	1,2-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	1,3-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	1,4-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	Hexachlorobutadiene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	Hexachloroethane	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	Isosafrole	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	2-Methylnaphthalene	374	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS40-R01	Naphthalene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	n-Nitrosodiethylamine	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	n-Nitrosodiphenylamine	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	Nitrobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	2-Nitrophenol	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS40-R01	1,2,4-Trichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	4-Nitroquinoline-1-oxide	354	U	R	CC	UG/KG
SS	SVOA	CGW1SS41-R01	Acenaphthylene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	bis(2-Chloroethyl)ether	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	2,2-Oxybis(1-Chloropropane)	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Benzyl alcohol	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Dibenz(a,h)anthracene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	1,2-Dichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	1,3-Dichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	1,4-Dichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Hexachlorobutadiene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Hexachloroethane	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Isosafrole	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	2-Methylnaphthalene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Naphthalene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	n-Nitrosodiethylamine	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	n-Nitrosodiphenylamine	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	Nitrobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	2-Nitrophenol	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS41-R01	1,2,4-Trichlorobenzene	354	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	4-Nitroquinoline-1-oxide	340	U	R	ICX	UG/KG
SS	SVOA	CGW1SS42-R01	Acenaphthylene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	bis(2-Chloroethyl)ether	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	2,2-Oxybis(1-Chloropropane)	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	Benzyl alcohol	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	Dibenz(a,h)anthracene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	1,2-Dichlorobenzene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	1,3-Dichlorobenzene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	1,4-Dichlorobenzene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	Hexachlorobutadiene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	Hexachloroethane	340	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS42-R01	Isosafrole	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	a,a-Dimethylphenethylamine	340	U	R	MSX	UG/KG
SS	SVOA	CGW1SS42-R01	2-Methylnaphthalene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	Naphthalene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	n-Nitrosodiethylamine	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	n-Nitrosodiphenylamine	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	Nitrobenzene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	2-Nitrophenol	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS42-R01	1,2,4-Trichlorobenzene	340	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	4-Nitroquinoline-1-oxide	366	U	R	CC	UG/KG
SS	SVOA	CGW1SS43-R01	Acenaphthylene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	bis(2-Chloroethyl)ether	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	2,2-Oxybis(1-Chloropropane)	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Benzyl alcohol	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Dibenz(a,h)anthracene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	1,2-Dichlorobenzene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	1,3-Dichlorobenzene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	1,4-Dichlorobenzene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Hexachlorobutadiene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Hexachloroethane	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Isosafrole	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	2-Methylnaphthalene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Naphthalene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	n-Nitrosodiethylamine	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	n-Nitrosodiphenylamine	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	Nitrobenzene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	2-Nitrophenol	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS43-R01	1,2,4-Trichlorobenzene	366	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	4-Nitroquinoline-1-oxide	386	U	R	CC	UG/KG
SS	SVOA	CGW1SS44-R01	Acenaphthylene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	bis(2-Chloroethyl)ether	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	2,2-Oxybis(1-Chloropropane)	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Benzyl alcohol	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Dibenz(a,h)anthracene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	1,2-Dichlorobenzene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	1,3-Dichlorobenzene	386	U	R	BSX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS44-R01	1,4-Dichlorobenzene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Hexachlorobutadiene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Hexachloroethane	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Isosafrole	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	2-Methylnaphthalene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Naphthalene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	n-Nitrosodiethylamine	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	n-Nitrosodiphenylamine	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	Nitrobenzene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	2-Nitrophenol	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS44-R01	1,2,4-Trichlorobenzene	386	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	4-Nitroquinoline-1-oxide	372	U	R	CC	UG/KG
SS	SVOA	CGW1SS45-R01	Acenaphthylene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	bis(2-Chloroethyl)ether	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	2,2-Oxybis(1-Chloropropane)	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Benzyl alcohol	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Dibenz(a,h)anthracene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	1,2-Dichlorobenzene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	1,3-Dichlorobenzene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	1,4-Dichlorobenzene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Hexachlorobutadiene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Hexachloroethane	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Isosafrole	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	2-Methylnaphthalene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Naphthalene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	n-Nitrosodiethylamine	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	n-Nitrosodiphenylamine	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	Nitrobenzene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	2-Nitrophenol	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS45-R01	1,2,4-Trichlorobenzene	372	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	4-Nitroquinoline-1-oxide	363	U	R	CC	UG/KG
SS	SVOA	CGW1SS46-R01	Acenaphthylene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	bis(2-Chloroethyl)ether	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	2,2-Oxybis(1-Chloropropane)	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Benzyl alcohol	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Dibenz(a,h)anthracene	363	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS46-R01	1,2-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	1,3-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	1,4-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Hexachlorobutadiene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Hexachloroethane	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Isosafrole	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	2-Methylnaphthalene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Naphthalene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	n-Nitrosodiethylamine	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	n-Nitrosodiphenylamine	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	Nitrobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	2-Nitrophenol	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS46-R01	1,2,4-Trichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	4-Nitroquinoline-1-oxide	374	U	R	CC	UG/KG
SS	SVOA	CGW1SS47-R01	Acenaphthylene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	bis(2-Chloroethyl)ether	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	2,2-Oxybis(1-Chloropropane)	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Benzyl alcohol	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Dibenz(a,h)anthracene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	1,2-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	1,3-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	1,4-Dichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Hexachlorobutadiene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Hexachloroethane	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Isosafrole	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	2-Methylnaphthalene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Naphthalene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	n-Nitrosodiethylamine	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	n-Nitrosodiphenylamine	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	Nitrobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	2-Nitrophenol	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS47-R01	1,2,4-Trichlorobenzene	374	U	R	BSX	UG/KG
SS	SVOA	CGW1SS48-R01	Benzyl alcohol	360	U	R	BSX	UG/KG
SS	SVOA	CGW1SS48-R01	Isosafrole	360	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	4-Nitroquinoline-1-oxide	378	U	R	CC	UG/KG
SS	SVOA	CGW1SS49-R01	Acenaphthylene	378	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW1SS49-R01	bis(2-Chloroethyl)ether	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	2,2-Oxybis(1-Chloropropane)	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Benzyl alcohol	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Dibenz(a,h)anthracene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	1,2-Dichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	1,3-Dichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	1,4-Dichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Hexachlorobutadiene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Hexachloroethane	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Isosafrole	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	2-Methylnaphthalene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Naphthalene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	n-Nitrosodiethylamine	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	n-Nitrosodiphenylamine	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	Nitrobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	2-Nitrophenol	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS49-R01	1,2,4-Trichlorobenzene	378	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	4-Nitroquinoline-1-oxide	361	U	R	CC	UG/KG
SS	SVOA	CGW1SS50-R01	Acenaphthylene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	bis(2-Chloroethyl)ether	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	2,2-Oxybis(1-Chloropropane)	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Benzyl alcohol	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Dibenz(a,h)anthracene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	1,2-Dichlorobenzene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	1,3-Dichlorobenzene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	1,4-Dichlorobenzene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Hexachlorobutadiene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Hexachloroethane	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Isosafrole	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	2-Methylnaphthalene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Naphthalene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	n-Nitrosodiethylamine	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	n-Nitrosodiphenylamine	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	Nitrobenzene	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	2-Nitrophenol	361	U	R	BSX	UG/KG
SS	SVOA	CGW1SS50-R01	1,2,4-Trichlorobenzene	361	U	R	BSX	UG/KG

Table N.3-1
Summary of Rejected Data
SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW1FD01P-R01	1,4-Dioxane	45	U	R	ICX	UG/KG
SS	VOA	CGW1FD01P-R01	Isobutanol	32.8	U	R	ICX	UG/KG
SS	VOA	CGW1FD01P-R01	Propionitrile	10.2	U	R	ICX	UG/KG
SS	VOA	CGW1FD02P-R01	1,4-Dioxane	53.9	U	R	ICX	UG/KG
SS	VOA	CGW1FD02P-R01	Isobutanol	39.2	U	R	ICX	UG/KG
SS	VOA	CGW1FD02P-R01	Propionitrile	12.2	U	R	ICX	UG/KG
SS	VOA	CGW1FD03P-R01	1,4-Dioxane	45.9	U	R	ICX	UG/KG
SS	VOA	CGW1FD03P-R01	Isobutanol	33.4	U	R	ICX	UG/KG
SS	VOA	CGW1FD03P-R01	Propionitrile	10.4	U	R	ICX	UG/KG
SS	VOA	CGW1FD04P-R01	1,4-Dioxane	46.7	U	R	ICX	UG/KG
SS	VOA	CGW1FD04P-R01	Isobutanol	34	U	R	ICX	UG/KG
SS	VOA	CGW1FD04P-R01	Propionitrile	10.6	U	R	ICX	UG/KG
SS	VOA	CGW1FD05P-R01	1,4-Dioxane	48.7	U	R	ICX	UG/KG
SS	VOA	CGW1FD05P-R01	Isobutanol	35.4	U	R	ICX	UG/KG
SS	VOA	CGW1FD05P-R01	Propionitrile	11.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS01-R01	1,4-Dioxane	46.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS01-R01	Isobutanol	33.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS01-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS02-R01	1,4-Dioxane	46	U	R	ICX	UG/KG
SS	VOA	CGW1SS02-R01	Isobutanol	33.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS02-R01	Propionitrile	10.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS03-R01	1,4-Dioxane	48	U	R	ICX	UG/KG
SS	VOA	CGW1SS03-R01	Isobutanol	34.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS03-R01	Propionitrile	10.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS04-R01	1,4-Dioxane	47.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS04-R01	Isobutanol	34.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS04-R01	Propionitrile	10.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS05-R01	1,4-Dioxane	48.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS05-R01	Isobutanol	35	U	R	ICX	UG/KG
SS	VOA	CGW1SS05-R01	Propionitrile	10.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS06-R01	1,4-Dioxane	46.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS06-R01	Isobutanol	33.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS06-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS07-R01	1,4-Dioxane	50.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS07-R01	Isobutanol	36.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS07-R01	Propionitrile	11.4	U	R	ICX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW1SS08-R01	1,4-Dioxane	48.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS08-R01	Isobutanol	35.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS08-R01	Propionitrile	11.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS09-R01	1,4-Dioxane	52.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS09-R01	Isobutanol	38.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS09-R01	Propionitrile	12	U	R	ICX	UG/KG
SS	VOA	CGW1SS10-R01	1,4-Dioxane	46.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS10-R01	Isobutanol	33.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS10-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS11-R01	1,4-Dioxane	45.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS11-R01	Isobutanol	33.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS11-R01	Propionitrile	10.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS12-R01	1,4-Dioxane	44.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS12-R01	Isobutanol	32.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS12-R01	Propionitrile	10.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS13-R01	1,4-Dioxane	47.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS13-R01	Isobutanol	34.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS13-R01	Propionitrile	10.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS14-R01	1,4-Dioxane	53.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS14-R01	Isobutanol	39.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS14-R01	Propionitrile	12.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS15-R01	1,4-Dioxane	49.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS15-R01	Isobutanol	36	U	R	ICX	UG/KG
SS	VOA	CGW1SS15-R01	Propionitrile	11.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS16-R01	1,4-Dioxane	43.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS16-R01	Isobutanol	31.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS16-R01	Propionitrile	9.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS17-R01	1,4-Dioxane	48.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS17-R01	Isobutanol	35.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS17-R01	Propionitrile	11.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS18-R01	1,4-Dioxane	55.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS18-R01	Isobutanol	40.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS18-R01	Propionitrile	12.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS19-R01	1,4-Dioxane	46.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS19-R01	Isobutanol	33.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS19-R01	Propionitrile	10.5	U	R	ICX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW1SS20-R01	1,4-Dioxane	50.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS20-R01	Isobutanol	36.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS20-R01	Propionitrile	11.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS21-R01	1,4-Dioxane	57.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS21-R01	Isobutanol	42	U	R	ICX	UG/KG
SS	VOA	CGW1SS21-R01	Propionitrile	13.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS22-R01	1,4-Dioxane	50.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS22-R01	Isobutanol	36.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS22-R01	Propionitrile	11.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS23-R01	1,4-Dioxane	43.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS23-R01	Isobutanol	31.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS23-R01	Propionitrile	9.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS24-R01	1,4-Dioxane	44.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS24-R01	Isobutanol	32.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS24-R01	Propionitrile	10	U	R	ICX	UG/KG
SS	VOA	CGW1SS25-R01	1,4-Dioxane	46.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS25-R01	Isobutanol	33.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS25-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS26-R01	1,4-Dioxane	49.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS26-R01	Isobutanol	36	U	R	ICX	UG/KG
SS	VOA	CGW1SS26-R01	Propionitrile	11.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS27-R01	1,4-Dioxane	43.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS27-R01	Isobutanol	32	U	R	ICX	UG/KG
SS	VOA	CGW1SS27-R01	Propionitrile	10	U	R	ICX	UG/KG
SS	VOA	CGW1SS28-R01	1,4-Dioxane	44.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS28-R01	Isobutanol	32.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS28-R01	Propionitrile	10.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS29-R01	1,4-Dioxane	47.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS29-R01	Isobutanol	34.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS29-R01	Propionitrile	10.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS30-R01	1,4-Dioxane	46.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS30-R01	Isobutanol	34	U	R	ICX	UG/KG
SS	VOA	CGW1SS30-R01	Propionitrile	10.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS31-R01	1,4-Dioxane	52.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS31-R01	Isobutanol	38	U	R	ICX	UG/KG
SS	VOA	CGW1SS31-R01	Propionitrile	11.9	U	R	ICX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW1SS32-R01	1,4-Dioxane	46	U	R	ICX	UG/KG
SS	VOA	CGW1SS32-R01	Isobutanol	33.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS32-R01	Propionitrile	10.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS33-R01	1,4-Dioxane	51.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS33-R01	Isobutanol	37.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS33-R01	Propionitrile	11.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS34-R01	1,4-Dioxane	49.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS34-R01	Isobutanol	36.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS34-R01	Propionitrile	11.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS35-R01	1,4-Dioxane	53	U	R	ICX	UG/KG
SS	VOA	CGW1SS35-R01	Isobutanol	38.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS35-R01	Propionitrile	12	U	R	ICX	UG/KG
SS	VOA	CGW1SS36-R01	1,4-Dioxane	53.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS36-R01	Isobutanol	38.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS36-R01	Propionitrile	12.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS37-R01	1,4-Dioxane	50.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS37-R01	Isobutanol	36.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS37-R01	Propionitrile	11.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS38-R01	1,4-Dioxane	46	U	R	ICX	UG/KG
SS	VOA	CGW1SS38-R01	Isobutanol	33.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS38-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS39-R01	1,4-Dioxane	53	U	R	ICX	UG/KG
SS	VOA	CGW1SS39-R01	Isobutanol	38.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS39-R01	Propionitrile	12	U	R	ICX	UG/KG
SS	VOA	CGW1SS40-R01	1,4-Dioxane	44.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS40-R01	Isobutanol	32.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS40-R01	Propionitrile	10.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS41-R01	1,4-Dioxane	45	U	R	ICX	UG/KG
SS	VOA	CGW1SS41-R01	Isobutanol	32.8	U	R	ICX	UG/KG
SS	VOA	CGW1SS41-R01	Propionitrile	10.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS42-R01	1,4-Dioxane	45.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS42-R01	Isobutanol	33	U	R	ICX	UG/KG
SS	VOA	CGW1SS42-R01	Propionitrile	10.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS43-R01	1,4-Dioxane	47.2	U	R	ICX	UG/KG
SS	VOA	CGW1SS43-R01	Isobutanol	34.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS43-R01	Propionitrile	10.7	U	R	ICX	UG/KG

Table N.3-1
 Summary of Rejected Data
 SWMU 1

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW1SS44-R01	1,4-Dioxane	46.3	U	R	ICX	UG/KG
SS	VOA	CGW1SS44-R01	Isobutanol	33.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS44-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS45-R01	1,4-Dioxane	51	U	R	ICX	UG/KG
SS	VOA	CGW1SS45-R01	Isobutanol	37.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS45-R01	Propionitrile	11.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS46-R01	1,4-Dioxane	47.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS46-R01	Isobutanol	34.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS46-R01	Propionitrile	10.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS47-R01	1,4-Dioxane	48.1	U	R	ICX	UG/KG
SS	VOA	CGW1SS47-R01	Isobutanol	35	U	R	ICX	UG/KG
SS	VOA	CGW1SS47-R01	Propionitrile	10.9	U	R	ICX	UG/KG
SS	VOA	CGW1SS48-R01	1,4-Dioxane	46.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS48-R01	Isobutanol	33.7	U	R	ICX	UG/KG
SS	VOA	CGW1SS48-R01	Propionitrile	10.5	U	R	ICX	UG/KG
SS	VOA	CGW1SS49-R01	1,4-Dioxane	60	U	R	ICX	UG/KG
SS	VOA	CGW1SS49-R01	Isobutanol	43.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS49-R01	Propionitrile	13.6	U	R	ICX	UG/KG
SS	VOA	CGW1SS50-R01	1,4-Dioxane	46	U	R	ICX	UG/KG
SS	VOA	CGW1SS50-R01	Isobutanol	33.4	U	R	ICX	UG/KG
SS	VOA	CGW1SS50-R01	Propionitrile	10.4	U	R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

CC: Continuing Calibration

ICX: Initial Calibration Exceedance

MSX: Matrix Spike Recovery Exceedances

SSX: Spiked Surrogate Recovery Exceedances

Table N.3-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 1

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
3,3'-Dimethylbenzidine	mg/kg	1.6	0.34 - 0.395	0.0638 to 0.0742	0.21
Dibenz(a,h)anthracene	mg/kg	0.33	0.342 - 0.395	0.0401 to 0.0466	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.395	0.0545 to 0.0634	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.342 - 0.395	0.0381 to 0.0442	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.34 - 0.395	0.0442 to 0.0514	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.395	0.0391 to 0.0454	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.34 - 0.395	0.0556 to 0.0646	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.342 - 0.395	0.0473 to 0.055	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.34 - 0.395	0.073 to 0.0849	0.034

Table N.3-2b
 Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Groundwater - SWMU 1

Chemical	Units	Work Plan	Quantitation	Method	Screening
		Specified	Limit	Detection	Toxicity Value
		Quantitation Limit	Range	Limit	
1,1,1,2-Tetrachloroethane	ug/L	1	1 - 1	0.25 to 0.25	0.43
1,1,2,2-Tetrachloroethane	ug/L	1	1 - 1	0.24 to 0.24	0.055
1,1,2-Trichloroethane	ug/L	1	1 - 1	0.4 to 0.4	0.2
1,2,3-Trichloropropane	ug/L	1	1 - 1	0.41 to 0.41	0.0056
1,2-Dibromo-3-chloropropane	ug/L	2	1 - 1	0.78 to 0.78	0.035
1,2-Dibromoethane	ug/L	1	1 - 1	0.25 to 0.25	0.0056
1,2-Dichloroethane	ug/L	1	1 - 1	0.25 to 0.25	0.12
1,2-Dichloropropane	ug/L	1	1 - 1	0.24 to 0.24	0.16
1,4-Dichlorobenzene	ug/L	10	1 - 1	0.1 to 2.8	0.5
Acrolein	ug/L	20	4 - 4	1.8 to 1.8	0.0042
Acrylonitrile	ug/L	20	2 - 2	0.81 to 0.81	0.039
Benzene	ug/L	1	1 - 1	0.18 to 0.18	0.35
Benzyl chloride	ug/L	-	1 - 1	0.15 to 0.15	0.066
Bromodichloromethane	ug/L	1	1 - 1	0.19 to 0.19	0.18
Bromomethane	ug/L	10	1 - 1	0.41 to 0.41	0.87
Carbon tetrachloride	ug/L	1	1 - 1	0.25 to 0.25	0.17
Chloroform	ug/L	1	1 - 1	0.15 to 0.15	0.17
Dibromochloromethane	ug/L	1	1 - 1	0.16 to 0.16	0.13
Dibromomethane	ug/L	1	1 - 1	0.24 to 0.24	0.13
Methacrylonitrile	ug/L	2	10 - 10	2 to 2	0.1
Tetrachloroethene	ug/L	1	1 - 1	0.38 to 0.38	0.1
Trichloroethene	ug/L	1	1 - 1	0.2 to 0.2	0.028
Vinyl chloride	ug/L	2	1 - 1	0.33 to 0.33	0.02
cis-1,3-Dichloropropene	ug/L	1	1 - 1	0.2 to 0.2	0.4
trans-1,3-Dichloropropene	ug/L	1	1 - 1	0.24 to 0.24	0.4
trans-1,4-Dichloro-2-butene	ug/L	1	2 - 2	1.8 to 1.8	0.0012
1,2,4,5-Tetrachlorobenzene	ug/L	10	10 - 10.5	2.2 to 2.3	1.1
1,2,4-Trichlorobenzene	ug/L	10	10 - 10.5	2.6 to 2.7	0.72
1,3-Dinitrobenzene	ug/L	5	10 - 10.5	0.11 to 2.6	0.36
1,4-Dichlorobenzene	ug/L	10	10 - 10.5	0.1 to 2.8	0.5
2,2-Oxybis(1-chloropropane)	ug/L	10	10 - 10.5	3.3 to 3.5	0.27
2,4,6-Trichlorophenol	ug/L	10	10 - 10.5	3.6 to 3.8	0.36
2,4-Dinitrophenol	ug/L	50	50 - 52.6	5.6 to 5.9	7.3
2,4-Dinitrotoluene	ug/L	10	10 - 10.5	0.13 to 2.9	7.3
2,6-Dinitrotoluene	ug/L	10	10 - 10.5	0.13 to 2.9	3.6
2-Chlorophenol	ug/L	10	10 - 10.5	2.9 to 3	3
2-Methyl-5-nitroaniline	ug/L	-	10 - 10.5	2.6 to 2.7	2
2-Methylaniline	ug/L	-	10 - 10.5	2.7 to 2.8	0.28
2-Methylnaphthalene	ug/L	10	10 - 10.5	2.8 to 2.9	2.4
2-Nitroaniline	ug/L	50	50 - 52.6	3 to 3.2	11
2-Nitrophenol	ug/L	10	10 - 10.5	3.4 to 3.6	3
3,3'-Dichlorobenzidine	ug/L	20	10 - 10.5	2.7 to 2.8	0.15
3,3'-Dimethylbenzidine	ug/L	50	10 - 10.5	5.9 to 6.2	0.029
3-Nitroaniline	ug/L	50	50 - 52.6	2.8 to 2.9	1.1
4,6-Dinitro-2-methylphenol	ug/L	50	50 - 52.6	3.3 to 3.5	0.36
4-Bromophenyl-phenylether	ug/L	10	10 - 10.5	2.3 to 2.4	0.27
4-Chloro-3-methylphenol	ug/L	10	10 - 10.5	2.7 to 2.8	3
4-Chlorophenyl-phenylether	ug/L	10	10 - 10.5	2.5 to 2.6	0.27
4-Nitroaniline	ug/L	50	50 - 52.6	2.8 to 2.9	3.2
4-Nitrophenol	ug/L	50	50 - 52.6	2.9 to 3	0.34
Aramite	ug/L	20	10 - 10.5	2.5 to 2.6	2.7
Benzo(a)anthracene	ug/L	10	10 - 10.5	2.6 to 2.7	0.092
Benzo(a)pyrene	ug/L	10	10 - 10.5	2.8 to 2.9	0.0092
Benzo(b)fluoranthene	ug/L	10	10 - 10.5	2.6 to 2.7	0.092
Benzo(k)fluoranthene	ug/L	10	10 - 10.5	2.9 to 3	0.92
Carbazole	ug/L	10	10 - 10.5	3.1 to 3.3	3.4
Chlorobenzilate	ug/L	10	10 - 10.5	2.5 to 2.6	0.25
Chrysene	ug/L	10	10 - 10.5	2.9 to 3	9.2
Diallate	ug/L	20	10 - 10.5	2.6 to 2.7	1.1
Dibenz(a,h)anthracene	ug/L	10	10 - 10.5	2.7 to 2.8	0.0092
Dibenzofuran	ug/L	10	10 - 10.5	2.7 to 2.8	1.2
Hexachlorobenzene	ug/L	10	10 - 10.5	2.6 to 2.7	0.042
Hexachlorobutadiene	ug/L	10	10 - 10.5	2.5 to 2.6	0.86
Hexachloroethane	ug/L	10	10 - 10.5	2.6 to 2.7	3.6
Indeno(1,2,3-cd)pyrene	ug/L	10	10 - 10.5	2.6 to 2.7	0.092
Naphthalene	ug/L	10	10 - 10.5	2.8 to 2.9	0.62
Nitrobenzene	ug/L	10	10 - 10.5	0.12 to 2.9	0.34
Pentachlorobenzene	ug/L	10	10 - 10.5	2.2 to 2.3	2.9

Table N.3-2b Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Groundwater - SWMU 1					
Chemical	Units	Work Plan	Quantitation	Method	Screening
		Specified	Limit	Detection	Toxicity Value
		Quantitation Limit	Range	Limit	
Pentachloronitrobenzene	ug/L	50	10 - 10.5	2.4 to 2.5	0.26
Pentachlorophenol	ug/L	50	50 - 52.6	2.6 to 2.7	0.56
Pyridine	ug/L	20	10.5 - 10.5	2.1 to 2.2	3.6
bis(2-Chloroethoxy)methane	ug/L	10	10 - 10.5	3.5 to 3.7	0.27
bis(2-Chloroethyl)ether	ug/L	10	10 - 10.5	3 to 3.2	0.01
bis(2-Ethylhexyl)phthalate	ug/L	10	10 - 10.5	4.4 to 4.6	4.8
n-Nitroso-di-n-butylamine	ug/L	10	10 - 10.5	2.7 to 2.8	0.002
n-Nitroso-di-n-propylamine	ug/L	10	10 - 10.5	3 to 3.2	0.0096
n-Nitroso-n-methylethylamine	ug/L	10	10 - 10.5	2.7 to 2.8	0.0031
n-Nitrosodiethylamine	ug/L	10	10 - 10.5	3.1 to 3.3	0.0005
n-Nitrosodimethylamine	ug/L	10	10 - 10.5	2.2 to 2.3	0.0013
n-Nitrosopyrrolidine	ug/L	10	10 - 10.5	2.7 to 2.8	0.032
1,3-Dinitrobenzene	ug/L	5	2.5 - 2.5	0.11 to 0.26	0.36
2,4,6-Trinitrotoluene	ug/L	5	2.5 - 2.5	0.12 to 0.12	1.8
2-Nitrotoluene	ug/L	5	2.5 - 2.5	0.1 to 0.1	0.049
4-Nitrotoluene	ug/L	5	2.5 - 2.5	0.11 to 0.11	0.66
Nitrobenzene	ug/L	5	2.5 - 2.5	0.12 to 2.9	0.34
RDX	ug/L	5	2.5 - 2.5	0.26 to 0.26	0.61
Arsenic	ug/L	10	10 - 10	2.04 to 2.04	0.045
Arsenic-dissolved	ug/L	10	10 - 10	2.04 to 2.04	0.045
Cadmium-dissolved	ug/L	5	5 - 5	0.356 to 0.356	1.8

- None specified in work plan

Table N.3-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 1

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	395	100	45.3 to 52.6	330
Fluoranthene	340	395	100	28.8 to 33.5	330
Naphthalene	342	395	100	42.2 to 49	330
Phenanthrene	340	395	100	42.2 to 49	330
Pyrene	340	395	100	31.9 to 37.1	330
Volatile Organic Compounds (UG/KG)					
Benzene	9.80	13.6	10.0	0.39 to 0.55	10
Tetrachloroethene	9.80	13.6	2.00	0.70 to 0.98	10
Vinyl chloride	9.80	13.6	10.0	0.63 to 0.87	10

N.4 SWMU 2

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 2 PA/SI, as well as to provide an assessment of data usability. Section N.4.5.1 discusses the rejected data with respect to data usability. Section N.4.5.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.4.1 SWMU 2 Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on January 21 and January 22, 2004.

N.4.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 118 distinct data points were generated. When rejected results are considered, the volatiles data set is 96.61 percent complete (114 of 118 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.39 percent (4 of 118 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.4.1.1.1 below)
- 0.85 percent (1 of 118 results) were U-qualified as “attributed to blank contamination” (see Section N.4.1.1.2 below)

N.4.1.1.1 Calibration

Four 1,4-dioxane and isobutanol results, consisting of 1,4-dioxane and isobutanol in both samples, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.4.1.1.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.4.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 222 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.40 percent complete (214 of 222 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.25 percent (5 of 222 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.4.1.2.1, below)
- 1.35 percent (3 of 222 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.4.1.2.2, below)
- 0.90 percent (2 of 222 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.4.1.2.1, below)

- 0.45 percent (1 of 222 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.4.1.2.3, below)
- 0.45 percent (1 of 222 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.4.1.2.3, below)

N.4.1.2.1 Laboratory Control Sample

Five semivolatiles results, consisting of 3,3-dimethylbenzidine and isosafrole in CGW2SB01-R01-10 and 1,3-dichlorobenzene, 3,3-dimethylbenzidine, and hexachloroethane in CGW2SB02-R01-5, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are no other results available in any other samples in this dataset except for 1,3-dichlorobenzene, which is available in CGW2SB01-R-1-10.

N.4.1.2.2 Calibration

Two 4-nitroquinoline-1-oxide results, consisting of 4-nitroquinoline-1-oxide in both samples, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. There are no other 4-nitroquinoline-1-oxide results in this dataset.

Three results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.1.2.3 Matrix Spike/Matrix Spike Duplicate

One result, consisting of a,a-Dimethylphenethylamine in CGW2SB01-R01-10, was R-qualified as “rejected” because of matrix spike exceedances. This result was deemed “non-detect” by the laboratory. However, a result for this compound is available for CGW2SB02-R01-5.

One result was UJ-qualified “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.1.3 Dioxins

Dioxins were analyzed by SW-846 8290. Excluding field quality control samples, 11 distinct data points were generated. The dioxins data set is 100 percent complete (11 of 11 dioxins results are available for use). The validation process resulted in no qualification.

N.4.1.4 Metals

Metals (cyanide only) were analyzed by SW-846 9012. Excluding field quality control samples, one data point was generated. The metals data set is 100 percent complete (1 of 1 metals result is available for use). The validation process resulted in no qualification.

N.4.1.5 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA 376.1. Excluding field quality control samples, one distinct data point was generated. The wet chemistry data set is 100 percent complete (1 of 1 wet chemistry result is available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 100.00 percent (1 of 1 result) was U-qualified as “attributable to blank contamination (see section N.4.1.5.1, below)

N.4.1.5.1 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because sulfide was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.4.2 SWMU 2 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on January 21, 2004.

N.4.2.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 767 distinct data points were generated. When rejected results are considered, the volatiles data set is 96.61 percent complete (741 of 767 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.39 percent (26 of 767 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.4.2.1.1, below)
- 0.39 percent (3 of 767 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recoveries (see section N.4.2.1.2, below)

N.4.2.1.1 Calibration

A total of 26 1,4-dioxane and isobutanol results, consisting of 1,4-dioxane and isobutanol in every (13) sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. Other, available results for these two compounds do not exist in this dataset.

N.4.2.1.2 Matrix Spike

Three results were UJ-qualified “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 1443 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.03 percent complete (1429 of 1443 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 3.26 percent (47 of 1443 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.4.2.2.1, below)
- 0.97 percent (14 of 1443 results) were J-qualified as “estimated” because the results were below the quantitation limits (see section N.4.2.2.2, below)
- 0.90 percent (13 of 1443 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.4.2.2.3, below)

- 0.90 percent (13 of 1443 results) were U-qualified as “attributable to blank contamination” (see section N.4.2.2.4, below)
- 0.07 percent (1 of 1443 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.4.2.2.5, below)

N.4.2.2.1 Calibration

A total of 47 results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.2.2 Quantitation Limits

A total of 14 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.4.2.2.3 Laboratory Control Sample

A total of 13 semivolatiles results, consisting of 3,3-dimethylbenzidine in every (13) sample, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are no other, available 3,3-dimethylbenzidine results in this dataset.

N.4.2.2.4 Blank Contamination

A total of 13 results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.4.2.2.5 Matrix Spike

One result, consisting of a,a-dimethylphenethylamine in CGW2SS01-R01, was R-qualified as “rejected” because of laboratory control sample exceedances. This result was deemed “non-detect” by the laboratory. There are available a,a-dimethylphenethylamine results for all other (12) samples in this dataset.

N.4.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 377 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 99.47 percent complete (375 of 377 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 10.08 percent (38 of 377 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.4.2.3.1, below)
- 2.65 percent (10 of 377 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.4.2.3.2, below)
- 1.59 percent (6 of 377 results) were J-qualified as “estimated” because the result was below the quantitation limit (see section N.4.2.3.3, below)
- 0.80 percent (3 of 377 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.4.2.3.4, below)

- 0.53 percent (2 of 377 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.4.2.3.5, below)
- 0.53 percent (2 of 377 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.4.2.3.4, below)
- 0.53 percent (2 of 377 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.4.2.3.5, below)

N.4.2.3.1 Laboratory Control Sample

A total of 38 results were UJ-qualified “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.3.2 Calibration

A total of 10 results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.3.3 Quantitation Limits

Six results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.4.2.3.4 Matrix Spike

Two pesticides result, consisting of aldrin and heptachlor epoxide in CGW2SS01-R01, were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. These results were deemed “non-detect” by the laboratory. There are available aldrin and heptachlor epoxide results for every other (12) sample in this dataset.

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.3.5 Dual-Column Reproducibility

Two results were J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. Two more results were U-qualified as “non-detect” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The J-qualification of detect results does not affect the availability of results because they are available for use as detects at the reported concentration. The U-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 52 distinct data points were generated. The herbicides data set is 100 percent complete (52

of 52 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 38.46 percent (20 of 52 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.4.2.4.1, below)

N.4.2.4.1 Spiked Surrogates

A total of 20 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 method 8330 and EPA method 314. Excluding field quality control samples, 169 distinct data points were generated. The explosives data set is 100 percent complete (169 of 169 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.69 percent (13 of 169 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.4.2.5.1, below)

N.4.2.5.1 Laboratory Control Sample

A total of 13 results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.6 Dioxins

Dioxins were analyzed by SW-846 method 8290. Excluding field quality control samples, 44 distinct data points were generated. The dioxins data set is 100 percent complete (44 of 44 dioxins results are available for use). The validation process resulted in no qualification.

N.4.2.7 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by SW-846 methods 6010, 7471, and 9012. Excluding field quality control samples, 225 distinct data points were generated. The metals data set is 100 percent complete (225 of 225 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 40.44 percent (91 of 225 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.4.2.7.1, below)
- 33.33 percent (75 of 225 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.4.2.7.2, below)
- 10.67 percent (24 of 225 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.4.2.7.3, below)
- 0.89 percent (2 of 225 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.4.2.7.3, below)

N.4.2.7.1 Serial Dilution

A total of 91 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.4.2.7.2 Quantitation Limits

A total of 75 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.4.2.7.3 Matrix Spike/Matrix Spike Duplicate

A total of 24 results were J-qualified as “estimated” because of matrix spike exceedances. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.4.2.8 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA 376.1. Excluding field quality control samples, four distinct data points were generated. The wet chemistry data set is 100 percent complete (4 of 4 wet chemistry results are available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 50.00 percent (2 of 4 results) were U-qualified as “attributable to blank contamination (see section N.4.2.8.1, below)

N.4.2.8.1 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because sulfide was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.4.3 SWMU 2 Subsurface Soil PARCC

N.4.3.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.4.3.2 Accuracy

Except for the five results R-qualified as “rejected” because of laboratory control sample exceedances and one result R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances, matrix effects and the laboratory’s ability did not have any adverse effects on the accuracy of the data set. Otherwise, one result was also qualified based on matrix spike/matrix spike duplicate exceedances. No results were qualified based on spiked surrogate exceedances.

N.4.3.3 Representativeness

There were no issues affecting representativeness in this data set.

N.4.3.4 Completeness

Overall, there were 12 R-qualified results in this dataset. The R-qualified results comprised 3.40 percent (12 of 353 results) of the total number of distinct results; therefore, the data validation process demonstrated that 96.60 percent of the results are available for use as qualified. Actual completeness exceeded the project goal of 85 percent for this data set.

N.4.3.5 Comparability

There were no issues affecting comparability in this data set.

N.4.4 SWMU 2 Surface Soil PARCC

N.4.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.4.4.2 Accuracy

Thirteen results were R-qualified as "rejected" and 51 results were otherwise qualified because of laboratory control sample exceedances. Three results were R-qualified as "rejected" and 32 results were otherwise qualified because of matrix spike/matrix spike duplicate recovery exceedances. A total of 20 results were qualified because of spiked surrogate recovery exceedances. Results R-qualified as "rejected" because of laboratory control sample exceedances and matrix spike/matrix spike recovery exceedances had an adverse effect on accuracy in this dataset.

N.4.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.4.4.4 Completeness

Overall, there were 42 R-qualified results in this dataset. The R-qualified results comprised 1.36 percent (42 of 3081 results) of the total number of distinct results; therefore, the data validation process demonstrated that 98.64 percent of the results are available for use as qualified. Actual completeness exceeded the project goal of 85 percent for this data set.

N.4.4.5 Comparability

There were no issues affecting comparability in this data set.

N.4.5 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 86.92 percent (2985 of 3434 results) of the data as non-detect and further qualification was not warranted. Another 0.70 percent (24 of 3434 results) were detected and no further qualification was warranted. Another 2.77 percent (95 of 3434 results) were J-qualified as "estimated" and no further

qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 90.39 percent (3104 of 3434 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, matrix spike exceedances, and serial dilution exceedances. These amounted to 3.41 percent (117 of 3434 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 4.08 percent (140 of 3434 results) and resulted from laboratory control sample exceedances, continuing calibration, matrix spike exceedances, and spiked surrogate recovery exceedances. A total of 0.50 percent (17 of 3434 results) were U-qualified as “non-detect” as a result of blank contamination. Another 0.06 percent (2 of 3434 results) were U-qualified as “non-detect” as a result of dual-column reproducibility. Based on the above, 8.04 percent (276 of 3434 results) are available for use as qualified. Combining the 90.39 percent with the 8.04 percent results in 98.43 percent (3380 of 3434 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (54 of 3434 results, 1.57 percent of total results) are available for use as qualified.

N.4.5.1 Discussion of Rejected Data

Table N.4-1 lists all R-qualified data for SWMU 2. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential effects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The non-detect results for two VOCs (1,4-dioxane and isobutanol) were rejected in all 12 surface soil samples and both subsurface soil samples. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector and is not an expected constituent of fuel stored at the site. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Like 1,4-dioxane, isobutanol is not an expected constituent of the fuel stored at the site.

In the surface soil, the non-detect results for two SVOCs (a,a-dimethylphenethylamine and 3,3-dimethylbenzidine) were rejected in various samples. a,a-Dimethylphenethylamine was rejected in only one sample (SS-01), which is in the same vicinity of seven other surface soil samples whose non-detect results were not rejected. a,a-Dimethylphenethylamine, also known as Phentermine, is an appetite suppressant. 3,3-Dimethylbenzidine was rejected in all 12 of the surface soil samples. This SVOC is used as an intermediate in the production of dyes and pigments, which would not have been associated with the fuel stored at SWMU 2.

In the subsurface soil samples, the non-detect results for six SVOCs (4-nitroquinoline-1-oxide, 3,3-dimethylbenzidine, isosafrole, a,a-dimethylphenethylamine, 1,3-dichlorobenzene, and hexachloroethane) were rejected. 4-Nitroquinoline-1-oxide and 3,3-dimethylbenzidine were rejected in both subsurface soil samples. 3,3-Dimethylbenzidine is discussed above and 4-nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the

efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. The non-detect results for the other four SVOCs were rejected in only one of the two subsurface samples. Of these, a,a-dimethylphenethylamine is discussed above. Isosafrole is an aromatic organic chemical with a smell similar to anise or licorice. It is found in small amounts in various essential oils, perfumes, and root beer. 1,3-Dichlorobenzene is a colorless liquid used to make herbicides, insecticides, medicine, and dyes. Hexachloroethane is primarily used in smoke-producing devices. It is also used to remove air bubbles in melted aluminum. Based on this information, none of the above SVOCs is likely to have been associated with fuel stored at SWMU 2.

Based on the information above, the rejected data do not affect the ability to use existing data to evaluate aspects of environmental conditions at SWMU 2, including potential releases. However, it is recognized that sufficient data have not been collected to draw conclusions regarding potential releases with adequate confidence. Therefore, additional data collection will be performed.

N.4.5.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.4-2a (surface soil) and N.4-2b (subsurface soil) list all quantitation limits above human health screening values for non-detected constituents at SWMU 2. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, nine non-detected analytes (eight SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.4-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.4-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.4-2a, the actual method detection limits for six of the eight SVOCs and thallium are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values only about 0.05 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically was used in the production of rocket fuels. It is unlikely that either constituent was present in the fuel stored at SWMU 2. This information, together

with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 2 surface soil. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 2 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same eight non-detected SVOCs (plus benzo(a)pyrene) as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.4-2b). The method detection limit for benzo(a)pyrene is also well below its human health screening value. Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in SWMU 2 subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, five non-detected SVOCs and three non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.4-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.4-3, even the target quantitation limits for the five SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.4-3, the actual method detection limits for the five SVOCs and three VOCs are significantly below the ecological screening values. Therefore, had any of these eight constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 2 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.4-1
Summary of Rejected Data
SWMU 2

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	SVOA	CGW2SB01-R01-10	4-Nitroquinoline-1-oxide	362	U	R	ICX	UG/KG
SB	SVOA	CGW2SB01-R01-10	3,3-Dimethylbenzidine	362	U	R	BSX	UG/KG
SB	SVOA	CGW2SB01-R01-10	Isosafrole	362	U	R	BSX	UG/KG
SB	SVOA	CGW2SB01-R01-10	a,a-Dimethylphenethylamine	362	U	R	MSX	UG/KG
SB	SVOA	CGW2SB02-R01-5	4-Nitroquinoline-1-oxide	382	U	R	ICX	UG/KG
SB	SVOA	CGW2SB02-R01-5	1,3-Dichlorobenzene	382	U	R	BSX	UG/KG
SB	SVOA	CGW2SB02-R01-5	3,3-Dimethylbenzidine	382	U	R	BSX	UG/KG
SB	SVOA	CGW2SB02-R01-5	Hexachloroethane	382	U	R	BSX	UG/KG
SB	VOA	CGW2SB01-R01-10	1,4-Dioxane	41.1	U	R	ICX	UG/KG
SB	VOA	CGW2SB01-R01-10	Isobutanol	29.9	U	R	ICX	UG/KG
SB	VOA	CGW2SB02-R01-5	1,4-Dioxane	40.4	U	R	ICX	UG/KG
SB	VOA	CGW2SB02-R01-5	Isobutanol	29.4	U	R	ICX	UG/KG
SS	PEST/PCB	CGW2SS01-R01	Aldrin	1.9	U	R	MSX	UG/KG
SS	PEST/PCB	CGW2SS01-R01	Heptachlor epoxide	1.9	U	R	MSX	UG/KG
SS	SVOA	CGW2FD01P-R01	3,3-Dimethylbenzidine	389	U	R	BSX	UG/KG
SS	SVOA	CGW2SS01-R01	3,3-Dimethylbenzidine	372	U	R	BSX	UG/KG
SS	SVOA	CGW2SS01-R01	a,a-Dimethylphenethylamine	372	U	R	MSX	UG/KG
SS	SVOA	CGW2SS02-R01	3,3-Dimethylbenzidine	389	U	R	BSX	UG/KG
SS	SVOA	CGW2SS03-R01	3,3-Dimethylbenzidine	388	U	R	BSX	UG/KG
SS	SVOA	CGW2SS04-R01	3,3-Dimethylbenzidine	372	U	R	BSX	UG/KG
SS	SVOA	CGW2SS05-R01	3,3-Dimethylbenzidine	373	U	R	BSX	UG/KG
SS	SVOA	CGW2SS06-R01	3,3-Dimethylbenzidine	379	U	R	BSX	UG/KG
SS	SVOA	CGW2SS07-R01	3,3-Dimethylbenzidine	391	U	R	BSX	UG/KG
SS	SVOA	CGW2SS08-R01	3,3-Dimethylbenzidine	386	U	R	BSX	UG/KG
SS	SVOA	CGW2SS09-R01	3,3-Dimethylbenzidine	343	U	R	BSX	UG/KG
SS	SVOA	CGW2SS10-R01	3,3-Dimethylbenzidine	343	U	R	BSX	UG/KG
SS	SVOA	CGW2SS11-R01	3,3-Dimethylbenzidine	353	U	R	BSX	UG/KG
SS	SVOA	CGW2SS12-R01	3,3-Dimethylbenzidine	342	U	R	BSX	UG/KG
SS	VOA	CGW2FD01P-R01	1,4-Dioxane	50.1	U	R	ICX	UG/KG
SS	VOA	CGW2FD01P-R01	Isobutanol	36.4	U	R	ICX	UG/KG
SS	VOA	CGW2SS01-R01	1,4-Dioxane	47.4	U	R	ICX	UG/KG
SS	VOA	CGW2SS01-R01	Isobutanol	34.4	U	R	ICX	UG/KG
SS	VOA	CGW2SS02-R01	1,4-Dioxane	56.1	U	R	ICX	UG/KG
SS	VOA	CGW2SS02-R01	Isobutanol	40.8	U	R	ICX	UG/KG
SS	VOA	CGW2SS03-R01	1,4-Dioxane	49.2	U	R	ICX	UG/KG
SS	VOA	CGW2SS03-R01	Isobutanol	35.8	U	R	ICX	UG/KG

Table N.4-1
 Summary of Rejected Data
 SWMU 2

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW2SS04-R01	1,4-Dioxane	44.6	U	R	ICX	UG/KG
SS	VOA	CGW2SS04-R01	Isobutanol	32.4	U	R	ICX	UG/KG
SS	VOA	CGW2SS05-R01	1,4-Dioxane	49.2	U	R	ICX	UG/KG
SS	VOA	CGW2SS05-R01	Isobutanol	35.8	U	R	ICX	UG/KG
SS	VOA	CGW2SS06-R01	1,4-Dioxane	45.7	U	R	ICX	UG/KG
SS	VOA	CGW2SS06-R01	Isobutanol	33.3	U	R	ICX	UG/KG
SS	VOA	CGW2SS07-R01	1,4-Dioxane	52.7	U	R	ICX	UG/KG
SS	VOA	CGW2SS07-R01	Isobutanol	38.3	U	R	ICX	UG/KG
SS	VOA	CGW2SS08-R01	1,4-Dioxane	51.6	U	R	ICX	UG/KG
SS	VOA	CGW2SS08-R01	Isobutanol	37.5	U	R	ICX	UG/KG
SS	VOA	CGW2SS09-R01	1,4-Dioxane	48.5	U	R	ICX	UG/KG
SS	VOA	CGW2SS09-R01	Isobutanol	35.3	U	R	ICX	UG/KG
SS	VOA	CGW2SS10-R01	1,4-Dioxane	46.2	U	R	ICX	UG/KG
SS	VOA	CGW2SS10-R01	Isobutanol	33.6	U	R	ICX	UG/KG
SS	VOA	CGW2SS11-R01	1,4-Dioxane	48.4	U	R	ICX	UG/KG
SS	VOA	CGW2SS11-R01	Isobutanol	35.2	U	R	ICX	UG/KG
SS	VOA	CGW2SS12-R01	1,4-Dioxane	45.4	U	R	ICX	UG/KG
SS	VOA	CGW2SS12-R01	Isobutanol	33	U	R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

ICX: Initial Calibration Exceedance

MSX: Matrix Spike Exceedance

Table N.4-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 2

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Dibenz(a,h)anthracene	mg/kg	0.33	0.342 - 0.391	0.0405 to 0.0462	0.062
Hexachlorobenzene	mg/kg	0.33	0.342 - 0.391	0.055 to 0.0629	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.342 - 0.391	0.0384 to 0.0439	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.342 - 0.391	0.0446 to 0.051	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.342 - 0.391	0.0394 to 0.0451	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.342 - 0.391	0.056 to 0.064	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.342 - 0.391	0.054 to 0.0617	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.342 - 0.391	0.0737 to 0.0842	0.034
Thallium	mg/kg	1	1.38 - 1.68	0.0979 to 0.119	0.52

Table N.4-2b Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - SWMU 2					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	mg/kg	0.33	0.362 - 0.382	0.0329 to 0.0348	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.362 - 0.382	0.0428 to 0.0452	0.062
Hexachlorobenzene	mg/kg	0.33	0.362 - 0.382	0.0581 to 0.0614	0.300
bis(2-Chloroethyl)ether	mg/kg	0.33	0.362 - 0.382	0.0406 to 0.0429	0.220
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.362 - 0.382	0.0471 to 0.0498	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.362 - 0.382	0.0417 to 0.044	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.362 - 0.382	0.0592 to 0.0626	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.362 - 0.382	0.0504 to 0.0603	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.362 - 0.382	0.0778 to 0.0823	0.034

**Table N.4-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 2**

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	342	391	100	45.6 to 52.2	330
Fluoranthene	342	391	100	29 to 33.2	330
Naphthalene	342	391	100	42.5 to 48.6	330
Phenanthrene	342	391	100	42.5 to 48.6	330
Pyrene	342	391	100	32.2 to 36.8	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.1	12.8	10.0	0.4 to 0.51	10
Tetrachloroethene	10.1	12.8	2.00	0.73 to 0.92	10
Vinyl chloride	10.1	12.8	10.0	0.65 to 0.82	10

N.5 SWMU 4

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 4 PA/SI, as well as to provide an assessment of data usability. Section N.5.5.1 discusses the rejected data with respect to data usability. Section N.5.5.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.5.1 SWMU 4 Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on January 21, 2004.

N.5.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 118 distinct data points were generated. When rejected results are considered, the volatiles data set is 96.61 percent complete (114 of 118 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.39 percent (4 of 118 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.5.1.1.1 below)

N.5.1.1.1 Calibration

Four 1,4-dioxane and isobutanol results, consisting of 1,4-dioxane and isobutanol in both samples, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.5.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 222 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.10 percent complete (220 of 222 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.70 percent (6 of 222 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.5.1.2.1, below)
- 1.80 percent (4 of 222 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.5.1.2.2, below)
- 0.90 percent (2 of 222 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.5.1.2.3, below)

N.5.1.2.1 Calibration

Six results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.5.1.2.2 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.1.2.3 Laboratory Control Sample

Two 3,3-Dimethylbenzidine results, consisting of 3,3-Dimethylbenzidine in both samples, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory.

N.5.2 SWMU 4 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on June 13, 2000.

N.5.2.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260. Excluding field quality control samples, 728 distinct data points were generated. When rejected results are considered, the volatiles data set is 96.70 percent complete (724 of 728 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 59.34 percent (432 of 728 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries (see section N.5.2.1.1, below)
- 3.57 percent (26 of 278 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard recoveries (see section N.5.2.1.2, below)
- 3.30 percent (24 of 278 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.5.2.1.3, below)
- 2.88 percent (21 of 278 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances (see section N.5.2.1.3, below)
- 0.96 percent (7 of 728 results) were J-qualified as “estimated” because of spiked surrogate recoveries (see section N.5.2.1.1, below)
- 0.55 percent (4 of 728 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.5.2.1.4, below)
- 0.41 percent (3 of 728 results) were U-qualified as “attributable to blank contamination” (see Section N.5.2.1.5 below)

N.5.2.1.1 Spiked Surrogates

A total of 432 results were UJ-qualified “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. Seven more results were J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.1.2 Internal Standards

A total of 26 results were UJ-qualified “non-detect, estimated quantitation limit” because of internal standard recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.5.2.1.3 Calibration

A total of 24 2-butanone and acrolein results, consisting of 2-butanone in every sample and acrolein in every sample except NDD030 and NDD033FD1, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. Available acrolein results exist for NDD030 and NDD033FD1.

N.5.2.1.4 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.1.5 Blank Contamination

Three results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.5.2.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270. Excluding field quality control samples, 1469 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 98.77 percent complete (1451 of 1469 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 98.23 percent (1443 of 1469 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.5.2.2.1, below)
- 0.88 percent (13 of 1469 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.5.2.2.2, below)
- 0.54 percent (8 of 1469 results) were J-qualified as “estimated” because of holding time exceedances (see section N.5.2.2.1, below)
- 0.34 percent (5 of 1469 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.5.2.2.3, below)

N.5.2.2.1 Holding Times

A total of 1443 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. Eight more results were J-qualified as “estimated” for the same reason. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.2.2 Calibration

A total of 13 4-nitroquinoline-1-oxide results, consisting of 4-nitroquinoline-1-oxide in every sample, were R-qualified as “rejected” because of initial calibration exceedances. These

results were deemed “non-detect” by the laboratory. 4-Nitroquinoline-1-oxide results are not available for any other samples.

N.5.2.2.3 Matrix Spike/Matrix Spike Duplicate

Five results, consisting of 4-chloroaniline, 2,4-dimethylphenol, 2,4-dichlorophenol, 3,3-dichlorobenzidine, and aniline in NDD032 were R-qualified as “rejected” because of matrix spike exceedances. These results were deemed “non-detect” by the laboratory. However, results for these compounds are available for all other samples in this dataset.

N.5.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 338 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (338 of 338 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 95.86 percent (324 of 338 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.5.2.3.1, below)
- 3.25 percent (11 of 338 results) were J-qualified as “estimated” because of holding time exceedances (see section N.5.2.3.1, below)
- 0.89 percent (3 of 338 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.5.2.3.2, below)

N.5.2.3.1 Holding Times

A total of 324 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. Eleven more results were J-qualified as “estimated” for the same reason. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.3.2 Dual-Column Reproducibility

Three results were J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The J-qualification of detect results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 39 distinct data points were generated. The herbicides data set is 100 percent complete (39

of 39 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 97.44 percent (38 of 39 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.5.2.4.1, below)
- 2.56 percent (1 of 39 results) were J-qualified as “estimated” because of holding time exceedances (see section N.5.2.4.1, below)

N.5.2.4.1 Holding Times

A total of 38 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. One more result was J-qualified as “estimated” for the same reason. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.5 Total Metals

Total metals were analyzed by SW-846 methods 6010 and 7471. Excluding field quality control samples, 221 distinct data points were generated. The metals data set is 100 percent complete (221 of 221 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 19.91 percent (44 of 221 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.5.2.5.1, below)
- 7.69 percent (17 of 221 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.5.2.5.2, below)
- 4.07 percent (9 of 221 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.5.2.5.2, below)

N.5.2.5.1 Quantitation Limits

A total of 44 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.5.2.5.2 Matrix Spike/Matrix Spike Duplicate

A total of 17 results were J-qualified as “estimated” because of matrix spike exceedances. Another nine results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.5.3 SWMU 4 Subsurface Soil PARCC

N.5.3.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.5.3.2 Accuracy

Except for the two results R-qualified as “rejected” because of laboratory control sample exceedances, matrix effects and the laboratory’s ability did not have any adverse effects on the accuracy of the data set. No results were qualified based on matrix spike exceedances or spiked surrogate exceedances.

N.5.3.3 Representativeness

There were no issues affecting representativeness in this data set.

N.5.3.4 Completeness

Overall, there were six R-qualified results in this dataset. The R-qualified results comprised 1.76 percent (6 of 340 results) of the total number of distinct results; therefore the data validation process demonstrated that 98.24 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.5.3.5 Comparability

There were no issues affecting comparability in this data set.

N.5.4 SWMU 4 Surface Soil PARCC

N.5.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.5.4.2 Accuracy

Except for the five results R-qualified as “rejected” because of matrix spike exceedances, matrix effects and the laboratory’s ability did not have any adverse effects on the accuracy of the data set. Because only 26 results were qualified based on matrix spike exceedances and 439 results were qualified based on spiked surrogate exceedances, matrix effects and the laboratory’s ability did not have any effect on accuracy in most cases. No results were qualified based on laboratory control sample exceedances.

N.5.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.5.4.4 Completeness

Overall, there were 42 R-qualified results in this dataset. The R-qualified results comprised 1.50 percent (42 of 2795 results) of the total number of distinct results; therefore the data

validation process demonstrated that 98.50 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.5.4.5 Comparability

There were no issues affecting comparability in this data set.

N.5.5 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 18.69 percent (586 of 3135 results) of the data as non-detect and further qualification was not warranted. Another 3.19 percent (100 of 3135 results) were detected and no further qualification was warranted. Another 1.66 percent (52 of 3135 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 23.54 percent (738 of 3135 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, holding time exceedances, matrix spike exceedances, and spiked surrogate recovery exceedances. These amounted to 1.50 percent (47 of 3135 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 73.33 percent (2299 of 3135 results) and resulted from continuing calibration, holding time exceedances, initial calibration exceedances, internal standard recovery exceedances, matrix spike exceedances, and spiked surrogate recovery exceedances. A total of 0.10 percent (3 of 3135 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 74.93 percent (2349 of 3135 results) are available for use as qualified. Combining the 74.93 percent with the 23.54 percent results in 98.47 percent (3087 of 3135 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (48 of 3135 results, 1.53 percent of total results) are available for use as qualified.

N.5.5.1 Discussion of Rejected Data

Table N.5-1 lists all R-qualified data for SWMU 4. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The non-detect results for two VOCs (2-butanone and acrolein) were rejected in all 12 surface soil samples except for one non-rejected non-detect result of Acrolein at location SS-10. 2-Butanone is most commonly used in paints, glues, and other coatings. Acrolein is used in the preparation of polyester resin, polyurethane, propylene glycol, acrylic acid, acrylonitrile, and glycerol. It is unlikely that either of these two compounds would have been associated with the historical activities at SWMU 4, but because the activities associated with SWMU 4 included cleaning/degreasing, their potential presence cannot be

completely disregarded. However, although the results were rejected, neither constituent was detected in any sample, and none of the results for all other VOCs were rejected.

The non-detect results for six SVOCs (4-nitroquinoline-1-oxide, 4-chloroaniline, 2,4-dimethylphenol, 2,4-dichlorophenol, 3,3-dichlorobenzidine, and aniline) were rejected in various surface soil samples. 4-Nitroquinoline-1-oxide was rejected in all 12 surface soil samples. 4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals and, therefore, is not expected to be present at SWMU 4. The non-detect results of the remaining five SVOCs were rejected in only 1 of the 12 surface soil samples (SS-12). None of the results for the remaining 11 samples were rejected.

The non-detect results for two VOCs (1,4-dioxane and isobutanol) were rejected in the subsurface soil sample collected at SWMU 4. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Because cleaning/ degreasing occurred at SWMU 4, it is possible that these VOCs were included in the chemicals used at the site. However, neither was detected in any of the surface soil samples collected at the site and, although the results were rejected, neither was detected in the subsurface soil sample.

The non-detect results for one SVOC (3,3-dimethylbenzidine) was rejected in the subsurface soil sample. This SVOC is used as an intermediate in the production of dyes and pigments and is therefore not likely to have been associated with historical activities at SWMU 4, especially considering there were no other SVOCs detected other than bis(2-ethylhexyl)phthalate and di-n-butylphthalate. Further, 3,3-dimethylbenzidine was not detected in any of the surface soil samples.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at SWMU 4.

N.5.5.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.5-2a (surface soil) and N.5-2b (subsurface soil) list all quantitation limits above human health screening values for non-detected constituents at SWMU 4. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, 20 non-detected analytes (19 SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.5-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan (other than for thallium), elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.5-2a, even the target quantitation limits exceed the screening values for 11 SVOCs and thallium; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample

analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.5-2a, the actual method detection limits for 17 of the 19 SVOCs are at or below the human health screening values. Therefore, had any of these 17 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two SVOCs, n-nitroso-n-methylethylamine and n-nitrosodiethylamine have screening values only about 0.06 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitroso-n-methylethylamine is also associated with research chemicals. It is unlikely that either constituent is associated with SWMU 4. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 4 surface soil. Additionally, thallium is not likely present at the site. Thallium is used primarily in the electronics industry, with minor uses in the pharmaceutical and glass manufacturing industries. Prior to 1975, thallium was also used in rat and ant poison. The thallium analytical method in use when the SWMU 4 samples were collected has since been replaced with a method not prone to the errors inherent to the earlier method. Since that time, samples from additional sites have been analyzed for thallium, the results of which have shown thallium not to be present or to be present at levels below screening values, even in the presence of pesticides. Therefore, thallium is not likely present in SWMU 4 soil. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 4 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

Table N.5-1
 Summary of Rejected Data
 SWMU 4

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	SVOA	CGW4FD01P-R01-5	3,3-Dimethylbenzidine	357	U	R	BSX	UG/KG
SB	SVOA	CGW4SB01-R01-5	3,3-Dimethylbenzidine	359	U	R	BSX	UG/KG
SB	VOA	CGW4FD01P-R01-5	1,4-Dioxane	41.2	U	R	ICX	UG/KG
SB	VOA	CGW4FD01P-R01-5	Isobutanol	29.9	U	R	ICX	UG/KG
SB	VOA	CGW4SB01-R01-5	1,4-Dioxane	42.5	U	R	ICX	UG/KG
SB	VOA	CGW4SB01-R01-5	Isobutanol	30.9	U	R	ICX	UG/KG
SS	SVOA	NDD021	4-Nitroquinoline-1-oxide	412	U	R	ICX	UG/KG
SS	SVOA	NDD022	4-Nitroquinoline-1-oxide	644	U	R	ICX	UG/KG
SS	SVOA	NDD023	4-Nitroquinoline-1-oxide	528	U	R	ICX	UG/KG
SS	SVOA	NDD024	4-Nitroquinoline-1-oxide	473	U	R	ICX	UG/KG
SS	SVOA	NDD025	4-Nitroquinoline-1-oxide	402	U	R	ICX	UG/KG
SS	SVOA	NDD026	4-Nitroquinoline-1-oxide	461	U	R	ICX	UG/KG
SS	SVOA	NDD027	4-Nitroquinoline-1-oxide	456	U	R	ICX	UG/KG
SS	SVOA	NDD028	4-Nitroquinoline-1-oxide	433	U	R	ICX	UG/KG
SS	SVOA	NDD029	4-Nitroquinoline-1-oxide	423	U	R	ICX	UG/KG
SS	SVOA	NDD030	4-Nitroquinoline-1-oxide	549	U	R	ICX	UG/KG
SS	SVOA	NDD031	4-Nitroquinoline-1-oxide	391	U	R	ICX	UG/KG
SS	SVOA	NDD032	4-Chloroaniline	1090	U	R	MSX	UG/KG
SS	SVOA	NDD032	2,4-Dimethylphenol	543	U	R	MSX	UG/KG
SS	SVOA	NDD032	2,4-Dichlorophenol	543	U	R	MSX	UG/KG
SS	SVOA	NDD032	3,3-Dichlorobenzidine	1090	U	R	MSX	UG/KG
SS	SVOA	NDD032	Aniline	543	U	R	MSX	UG/KG
SS	SVOA	NDD032	4-Nitroquinoline-1-oxide	543	U	R	ICX	UG/KG
SS	SVOA	NDD033FD1	4-Nitroquinoline-1-oxide	504	U	R	ICX	UG/KG
SS	VOA	NDD021	2-Butanone	124	U	R	ICX	UG/KG
SS	VOA	NDD021	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD022	2-Butanone	104	U	R	ICX	UG/KG
SS	VOA	NDD022	Acrolein	5	U	R	ICX	UG/KG
SS	VOA	NDD023	Acrolein	5	U	R	ICX	UG/KG
SS	VOA	NDD023	2-Butanone	100	U	R	ICX	UG/KG
SS	VOA	NDD024	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD024	2-Butanone	118	U	R	ICX	UG/KG
SS	VOA	NDD025	2-Butanone	110	U	R	ICX	UG/KG
SS	VOA	NDD025	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD026	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD026	2-Butanone	121	U	R	ICX	UG/KG

Table N.5-1
 Summary of Rejected Data
 SWMU 4

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	NDD027	2-Butanone	122	U	R	ICX	UG/KG
SS	VOA	NDD027	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD028	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD028	2-Butanone	116	U	R	ICX	UG/KG
SS	VOA	NDD029	2-Butanone	128	U	R	ICX	UG/KG
SS	VOA	NDD029	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD030	2-Butanone	100	U	R	ICX	UG/KG
SS	VOA	NDD031	2-Butanone	144	U	R	ICX	UG/KG
SS	VOA	NDD031	Acrolein	7	U	R	ICX	UG/KG
SS	VOA	NDD032	Acrolein	5	U	R	ICX	UG/KG
SS	VOA	NDD032	2-Butanone	108	U	R	ICX	UG/KG
SS	VOA	NDD033FD1	2-Butanone	102	U	R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

ICX: Initial Calibration Exceedance

MSX: Matrix Spike Exceedance

Table N.5-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 4

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
1,3-Dinitrobenzene	mg/kg	0.25	0.391 - 0.644	0.024 to 0.039	0.61
2,4,6-Trichlorophenol	mg/kg	0.33	0.391 - 0.644	0.023 to 0.037	0.61
3,3'-Dichlorobenzidine	mg/kg	0.67	0.782 - 1.29	0.018 to 0.03	1.1
3,3'-Dimethylbenzidine	mg/kg	1.6	0.391 - 0.644	0.041 to 0.067	0.21
3-Nitroaniline	mg/kg	0.99	1.96 - 3.22	0.018 to 0.03	1.8
4,6-Dinitro-2-methylphenol	mg/kg	0.99	1.96 - 3.22	0.022 to 0.035	0.61
Benzo(a)anthracene	mg/kg	0.33	0.391 - 0.644	0.02 to 0.033	0.62
Benzo(a)pyrene	mg/kg	0.33	0.391 - 0.644	0.026 to 0.043	0.06
Benzo(b)fluoranthene	mg/kg	0.33	0.391 - 0.644	0.023 to 0.038	0.62
Dibenz(a,h)anthracene	mg/kg	0.33	0.391 - 0.644	0.026 to 0.042	0.062
Hexachlorobenzene	mg/kg	0.33	0.391 - 0.644	0.025 to 0.042	0.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.33	0.391 - 0.644	0.02 to 0.033	0.62
Pentachlorophenol	mg/kg	0.99	1.96 - 3.22	0.022 to 0.035	3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.391 - 0.644	0.027 to 0.044	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.391 - 0.644	0.036 to 0.059	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.391 - 0.644	0.028 to 0.046	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.391 - 0.644	0.09 to 0.148	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.391 - 0.644	0.047 to 0.077	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.391 - 0.644	0.021 to 0.034	0.034
Thallium	mg/kg	1	42.4 - 52.3	0.64 to 0.78	0.52

Table N.5-2b
 Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - SWMU 4

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	mg/kg	0.33	0.359 - 0.359	0.0325 to 0.0326	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.359 - 0.359	0.0422 to 0.0424	0.062
Hexachlorobenzene	mg/kg	0.33	0.359 - 0.359	0.0574 to 0.0577	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.359 - 0.359	0.040 to 0.042	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.359 - 0.359	0.0466 to 0.0468	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.359 - 0.359	0.0411 to 0.0413	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.359 - 0.359	0.0585 to 0.0588	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.359 - 0.359	0.0563 to 0.0566	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.359 - 0.359	0.0769 to 0.0772	0.034

**Table N.5-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 4**

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Benzo(a)pyrene	391	644	100	26 to 43	330
Naphthalene	391	644	100	29 to 48	330
Volatile Organic Compounds (UG/KG)					
Tetrachloroethene	5.00	7.00	2.00	0.4 to 0.8	10
Vinyl chloride	10.0	14.0	10.0	0.4 to 0.7	10

N.6 SWMU 5

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 5 PA/SI, as well as to provide an assessment of data usability. Section N.6.3.1 discusses the rejected data with respect to data usability. Section N.6.3.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.6.1 SWMU 5 Surface Soil Data

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the usability of the surface soil data for the SWMU 5 PA/SI. This evaluation assesses the analytical results of the samples collected on January 19, 2004.

N.6.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 236 distinct data points were generated. When rejected results are considered, the volatiles data set is 94.92 percent complete (224 of 236 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 5.08 percent (12 of 236 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.6.1.1.1 below)
- 0.85 percent (2 of 236 results) were U-qualified as “attributed to blank contamination” (see Section N.6.1.1.2 below)

N.6.1.1.1 Calibration

A total of 12 acetonitrile, 1,4-dioxane, and isobutanol results, consisting of acetonitrile, 1,4-dioxane, and isobutanol in every (four) sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.6.1.1.2 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.6.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 444 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 95.27 percent complete (423 of 444 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 3.60 percent (16 of 444 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.6.1.2.1, below)
- 1.35 percent (6 of 444 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.6.1.2.2, below)

- 0.90 percent (4 of 444 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.6.1.2.2, below)
- 0.90 percent (4 of 444 results) were U-qualified as “attributable to blank contamination” N.6.1.2.3, below)
- 0.68 percent (3 of 444 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.6.1.2.4, below)
- 0.23 percent (1 of 444 results) were J-qualified as “estimated” because of laboratory control sample exceedances (see section N.6.1.2.1, below)
- 0.23 percent (1 of 444 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.6.1.2.5, below)
- 0.23 percent (1 of 444 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.6.1.2.5, below)
- 0.23 percent (1 of 444 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.6.1.2.5, below)

N.6.1.2.1 Laboratory Control Sample

A total of 16 1,3-dichlorobenzene, 3,3-dimethylbenzidine, 4-nitrophenol, and hexachlorocyclopentadiene, consisting of these four compounds in every (four) sample, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. Available results do not exist for these compounds in other samples in this dataset.

One result was J-qualified as “estimated” because of laboratory control sample exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.6.1.2.2 Calibration

Four 4-Nitroquinoline-1-oxide results, consisting of 4-Nitroquinoline-1-oxide in every (four) sample, were R-qualified as “rejected” because of initial calibration recovery exceedances. These results were deemed “non-detect” by the laboratory. 4-Nitroquinoline-1-oxide results are not available for any other samples.

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.6.1.2.3 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.6.1.2.4 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.6.1.2.5 Matrix Spike/Matrix Spike Duplicate

One a,a-dimethylphenethylamine result, comprising a,a-dimethylphenethylamine in CGW5SS04-R01, was R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. This result was deemed “non-detect” by the laboratory. a,a-Dimethylphenethylamine results are available for the other samples (3) in this dataset.

One result was J-qualified as “estimated” because of matrix spike/matrix spike duplicate exceedances. One more result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.6.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 116 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (116 of 116 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 6.90 percent (8 of 116 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.6.1.3.1, below)
- 2.59 percent (3 of 116 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.6.1.3.2, below)

N.6.1.3.1 Calibration

Eight results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.6.1.3.2 Dual-Column Reproducibility

Three results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.6.1.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 16 distinct data points were generated. The herbicides data set is 100 percent complete (16 of 16 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 25.00 percent (4 of 16 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.6.1.4.1, below)

N.6.1.4.1 Spiked Surrogates

Four results were UJ-qualified “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.6.1.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 method 8330 and EPA method 314. Excluding field quality control samples, 52 distinct data points were generated. The explosives data set is 100 percent complete (52 of 52 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.69 percent (4 of 52 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample recovery exceedances (see section N.6.1.5.1, below)

N.6.1.5.1 Laboratory Control Sample

Four results were UJ-qualified “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.6.1.6 Dioxins

Dioxins were analyzed by SW-846 method 8290. Excluding field quality control samples, 11 distinct data points were generated. The dioxins data set is 100 percent complete (11 of 11 herbicides results are available for use). The validation process resulted in no qualifiers.

N.6.1.7 Total Metals

Total metals and cyanide were analyzed by SW-846 methods 6010, 7471, and 9012. Excluding field quality control samples, 69 distinct data points were generated. The metals data set is 100 percent complete (69 of 69 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 33.33 percent (23 of 69 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.6.1.7.1, below)
- 23.19 percent (16 of 69 results) were J-qualified as “estimated” because of matrix spike/matrix spike duplicate exceedances (see section N.6.1.7.2, below)
- 17.39 percent (12 of 69 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.6.1.7.3, below)

N.6.1.7.1 Quantitation Limits

A total of 23 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.6.1.7.2 Matrix Spike/Matrix Spike Duplicate

A total of 16 results were J-qualified as “estimated” because of matrix spike/matrix spike duplicate exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.6.1.7.3 Serial Dilution

A total of 12 metals results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.6.1.8 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA method 376.1. Excluding field quality control samples, one distinct data point was generated. The wet chemistry data set is 100 percent complete (1 of 1 wet chemistry result is available for use). The validation process resulted in no qualifiers.

N.6.2 SWMU 5 Surface Soil PARCC

N.6.2.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.6.2.2 Accuracy

Except for the 16 results R-qualified as “rejected” because of laboratory control sample exceedances and one result R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances, matrix effects and the laboratory’s ability did not have any adverse effects on the accuracy of the data set. Otherwise, only five more results were qualified based on laboratory control sample exceedances, 18 results were qualified based on matrix spike/matrix spike duplicate exceedances, and four results were qualified based on spiked surrogate recovery exceedances; therefore, matrix effects and the laboratory’s ability did not have any effect on accuracy in most cases.

N.6.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.6.2.4 Completeness

Overall, there were 33 R-qualified results in this dataset. The R-qualified results comprised 3.49 percent (33 of 945 results) of the total number of distinct results; therefore, the data validation process demonstrated that 96.51 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.6.2.5 Comparability

There were no issues affecting comparability in this data set.

N.6.3 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 85.19 percent (805 of 945 results) of the data as non-detect and further qualification was not warranted. Another 2.01 percent (19 of 945 results) were detected and no further qualification was warranted. Another 2.75 percent (26 of 945 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the

concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 89.95 percent (850 of 945 results) of the data are available for use as reported.

Other J-qualifiers resulted from laboratory control sample exceedances, matrix spike/matrix spike duplicate exceedances, and serial dilution exceedances. These amounted to 3.17 percent (30 of 945 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 2.43 percent (23 of 945 results) and resulted from laboratory control sample exceedances, continuing calibration exceedances, and matrix spike/matrix spike duplicate exceedances, and spiked surrogate recovery exceedances. A total of 0.32 percent (3 of 945 results) were U-qualified as “non-detect” because of dual-column reproducibility. A total of 0.63 percent (6 of 945 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 6.56 percent (62 of 945 results) are available for use as qualified. Combining the 89.95 percent with the 6.56 percent results in 96.51 percent (912 of 945 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (33 of 945 results, 3.49 percent of total results) are available for use as qualified.

N.6.3.1 Discussion of Rejected Data

Table N.6-1 lists all R-qualified data for SWMU 5. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The non-detect results for three VOCs (acetonitrile, 1,4-dioxane, and isobutanol) were rejected in the four surface soil samples collected at SWMU 5. Acetonitrile is used mainly as a solvent in the purification of butadiene, which is then used to make rubber and plastics. 1,4-dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. None of these VOCs is likely to have been associated with a battery storage area, and there were no other VOCs detected at the site.

The non-detect results for six SVOCs (4-nitroquinoline-1-oxide, 1,3-dichlorobenzene, 3,3-dimethylbenzidine, hexachlorocyclopentadiene, 4-nitrophenol, and a,a-dimethylphenethylamine) were rejected in various surface soil samples. Five of the SVOCs (4-nitroquinoline-1-oxide, 1,3-dichlorobenzene, 3,3-dimethylbenzidine, hexachlorocyclopentadiene, and 4-nitrophenol) were rejected in all four samples. 4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. 1,3-dichlorobenzene is a colorless liquid used to make herbicides, insecticides, medicine, and dyes. 3,3-Dimethylbenzidine is used as an intermediate in the production of dyes and pigments. Hexachlorocyclopentadiene is the key intermediate in the manufacture of some

pesticides, and used in the manufacture of flame retardants and some resins and dyes. 4-Nitrophenol is used in the preparation of drugs, fungicides, and dyes. The non-detect result for a,a-Dimethylphenethylamine was only rejected in one of the four samples and was not detected in the other three samples. Based on the above information, none of the SVOCs is likely to have been associated with battery storage at SWMU 5.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at SWMU 5.

N.6.3.2 Discussion of Non-detect Reporting Limits Above Screening Values

Table N.6-2a (surface soil) list all quantitation limits above human health screening values for non-detected constituents at SWMU 5. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, nine non-detected SVOCs and two non-detected inorganics had laboratory quantitation limits that exceed human health screening values (Table N.6-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.6-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.6-2a, the actual method detection limits for seven of the SVOCs and the two inorganics are significantly below the human health screening values. Therefore, had any of these nine constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two SVOCs, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values approximately 0.04 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically was used in the production of rocket fuels. It is unlikely that either constituent is associated with the spent battery accumulation at SWMU 5. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 5 surface soil. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 5 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs and one non-detected VOC had laboratory quantitation limits that exceed ecological screening values (Table N.6-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.6-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.6-3, the actual method detection limits for the six SVOCs and PCE are significantly below the ecological screening values. Therefore, had any of these seven constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 5 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.6-1
 Summary of Rejected Data
 SWMU 5

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW5SS01-R01	4-Nitroquinoline-1-oxide	350	U	R	ICX	UG/KG
SS	SVOA	CGW5SS01-R01	1,3-Dichlorobenzene	350	U	R	BSX	UG/KG
SS	SVOA	CGW5SS01-R01	3,3-Dimethylbenzidine	350	U	R	BSX	UG/KG
SS	SVOA	CGW5SS01-R01	Hexachlorocyclopentadiene	350	U	R	BSX	UG/KG
SS	SVOA	CGW5SS01-R01	4-Nitrophenol	350	U	R	BSX	UG/KG
SS	SVOA	CGW5SS02-R01	4-Nitroquinoline-1-oxide	363	U	R	ICX	UG/KG
SS	SVOA	CGW5SS02-R01	1,3-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW5SS02-R01	3,3-Dimethylbenzidine	363	U	R	BSX	UG/KG
SS	SVOA	CGW5SS02-R01	Hexachlorocyclopentadiene	363	U	R	BSX	UG/KG
SS	SVOA	CGW5SS02-R01	4-Nitrophenol	363	U	R	BSX	UG/KG
SS	SVOA	CGW5SS03-R01	4-Nitroquinoline-1-oxide	357	U	R	ICX	UG/KG
SS	SVOA	CGW5SS03-R01	1,3-Dichlorobenzene	357	U	R	BSX	UG/KG
SS	SVOA	CGW5SS03-R01	3,3-Dimethylbenzidine	357	U	R	BSX	UG/KG
SS	SVOA	CGW5SS03-R01	Hexachlorocyclopentadiene	357	U	R	BSX	UG/KG
SS	SVOA	CGW5SS03-R01	4-Nitrophenol	357	U	R	BSX	UG/KG
SS	SVOA	CGW5SS04-R01	4-Nitroquinoline-1-oxide	352	U	R	ICX	UG/KG
SS	SVOA	CGW5SS04-R01	1,3-Dichlorobenzene	352	U	R	BSX	UG/KG
SS	SVOA	CGW5SS04-R01	3,3-Dimethylbenzidine	352	U	R	BSX	UG/KG
SS	SVOA	CGW5SS04-R01	Hexachlorocyclopentadiene	352	U	R	BSX	UG/KG
SS	SVOA	CGW5SS04-R01	a,a-Dimethylphenethylamine	352	U	R	MSX	UG/KG
SS	SVOA	CGW5SS04-R01	4-Nitrophenol	352	U	R	BSX	UG/KG
SS	VOA	CGW5SS01-R01	Acetonitrile	9	U	R	ICX	UG/KG
SS	VOA	CGW5SS01-R01	1,4-Dioxane	39.6	U	R	ICX	UG/KG
SS	VOA	CGW5SS01-R01	Isobutanol	28.8	U	R	ICX	UG/KG
SS	VOA	CGW5SS02-R01	Acetonitrile	9.8	U	R	ICX	UG/KG
SS	VOA	CGW5SS02-R01	1,4-Dioxane	43.2	U	R	ICX	UG/KG
SS	VOA	CGW5SS02-R01	Isobutanol	31.4	U	R	ICX	UG/KG
SS	VOA	CGW5SS03-R01	Acetonitrile	9.7	U	R	ICX	UG/KG
SS	VOA	CGW5SS03-R01	1,4-Dioxane	42.8	U	R	ICX	UG/KG
SS	VOA	CGW5SS03-R01	Isobutanol	31.1	U	R	ICX	UG/KG
SS	VOA	CGW5SS04-R01	Acetonitrile	9.5	U	R	ICX	UG/KG
SS	VOA	CGW5SS04-R01	1,4-Dioxane	41.9	U	R	ICX	UG/KG
SS	VOA	CGW5SS04-R01	Isobutanol	30.5	U	R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

ICX: Initial Calibration Exceedance

MSX: Matrix Spike/Matrix Spike Duplicate Exceedance

Table N.6-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 5

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	mg/kg	0.33	0.35 - 0.363	0.0318 to 0.033	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.35 - 0.363	0.041.4 to 0.0429	0.062
Hexachlorobenzene	mg/kg	0.33	0.35 - 0.363	0.0562 to 0.0583	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.35 - 0.363	0.0392 to 0.0407	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.35 - 0.363	0.0456 to 0.0473	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.35 - 0.363	0.0403 to 0.0418	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.35 - 0.363	0.0573 to 0.0594	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.35 - 0.363	0.0552 to 0.0572	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.35 - 0.363	0.0753 to 0.0781	0.034
Arsenic	mg/kg	1	1.36 - 1.5	0.111 to 0.122	0.39
Thallium	mg/kg	1	1.36 - 1.5	0.097 to 0.106	0.52

Table N.6-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 5

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	350	363	100	46.7 to 48.4	330
Benzo(a)pyrene	350	363	100	31.8 to 33	330
Fluoranthene	350	363	100	29.7 to 30.8	330
Naphthalene	350	363	100	43.5 to 45.1	330
Phenanthrene	350	363	100	43.5 to 45.1	330
Pyrene	350	363	100	32.9 to 34.1	330
Volatile Organic Compounds (UG/KG)					
Tetrachloroethene	9.00	9.80	2.00	0.65 to 0.71	10

N.7 SWMUs 6 and 7

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMUs 6 and 7 PA/SI, as well as to provide an assessment of data usability. Section N.7.3.1 discusses the rejected data with respect to data usability. Section N.7.3.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.7.1 SWMUs 6 and 7 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on June 13, 2000.

N.7.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 616 distinct data points were generated. When rejected results are considered, the volatiles data set is 93.02 percent complete (573 of 616 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 30.52 percent (188 of 616 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.7.1.1.1, below)
- 6.98 percent (43 of 616 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.7.1.1.2, below)
- 3.73 percent (23 of 616 results) were J-qualified as “estimated” because the results were lower than the quantitation limit (see section N.7.1.1.3, below)
- 1.79 percent (11 of 616 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard exceedances (see section N.7.1.1.4, below)
- 1.46 percent (9 of 616 results) were J-qualified as “estimated” because of spiked surrogate recovery (see section N.7.1.1.1, below)

N.7.1.1.1 Surrogates

A total of 188 results were UJ-qualified as “non-detect, estimated quantitation limit” as a result of spiked surrogate recovery exceedances. Nine more results were J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.7.1.1.2 Calibration

A total of 43 results, consisting of 2-butanone, acetone, and acrolein in every (11) sample and propionitrile in every sample (10) except for NDD034, were R-qualified as “rejected” because of initial calibration exceedances. Except for acetone in NDD034 and NDD039, these results were deemed “non-detect” by the laboratory. One additional propionitrile result is available in the dataset.

N.7.1.1.3 Quantitation Limits

A total of 23 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.7.1.1.4 Internal Standards

A total of 11 results were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.7.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 1243 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.46 percent complete (1199 of 1243 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 96.14 percent (1195 of 1243 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.7.1.2.1, below)
- 2.65 percent (33 of 1243 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.7.1.2.2, below)
- 0.72 percent (9 of 1243 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.7.1.2.3 below)
- 0.16 percent (2 of 1243 results) were J-qualified as “estimated” because of holding time exceedances (see section N.7.1.2.1, below)
- 0.16 percent (2 of 1243 results) were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances (see section N.7.1.2.4, below)
- 0.08 percent (1 of 1243 results) were U-qualified as “non-detect” because of holding time exceedances (see section N.7.1.2.1., below)
- 0.08 percent (1 of 1243 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances (see Section N.7.1.2.3 below)

N.7.1.2.1 Holding Times

A total of 1195 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. Two more results were J-qualified as “estimated” for the same reason. One more result was U-qualified as “non-detect” for the same reason. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The U- or UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.7.1.2.2 Laboratory Control Sample

A total of 33 results, consisting of 2-acetylaminofluorene in all (11) samples, aramite in all (10) samples except for NDD039, benzyl alcohol in NDD039, and kepone in all (11) samples were R-qualified as “rejected” because of laboratory control sample exceedances. These rejected results were all deemed “non-detect” by the laboratory. Available aramite results exist for one sample and available benzyl alcohol results exist for 10 samples.

N.7.1.2.3 Calibration

Nine results, consisting of 4-nitroquinoline-1-oxide in all (9) samples except for NDD036 and NDD039, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. Available 4-nitroquinoline-1-oxide results exist for NDD036 and NDD039.

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.7.1.2.4 Matrix Spike/Matrix Spike Duplicate

Two results, consisting of 3,3-dimethylbenzidine and 1-naphthylamine in NDD039 were R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. These results were deemed “non-detect” by the laboratory. There are available results for these two compounds in all (9) other samples.

N.7.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 8081 and 8082. Excluding field quality control samples, 286 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (286 of 286 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 2.10 percent (6 of 286 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of large differences in quantitation between the primary and secondary analytical columns (see section N.7.1.3.1, below)
- 1.75 percent (5 of 286 results) were J-qualified as “estimated” because of field duplicate reproducibility exceedances (see section N.7.1.3.2, below)
- 1.40 percent (4 of 286 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.7.1.3.3, below)
- 0.70 percent (2 of 286 results) were J-qualified as “estimated because of large differences in quantitation between the primary and secondary analytical columns (see section N.7.1.3.1, below)
- 0.70 percent (2 of 286 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.7.1.3.4, below)
- 0.35 percent (1 of 286 results) were J-qualified as “estimated” because of continuing calibration (see section N.7.1.3.3, below)
- 0.35 percent (1 of 286 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of field duplicate precision exceedances (see section N.7.1.3.2, below)

N.7.1.3.1 Dual-Column Reproducibility

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of a large percent difference between the primary and secondary analytical columns. Two more results were J-qualified as “estimated” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.7.1.3.2 Field Duplicate

Five results were J-qualified as “estimated” because of field duplicate reproducibility exceeding data validation control limits. One more result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.7.1.3.3 Calibration

Four results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration. One more result was J-qualified as “estimated” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.7.1.3.4 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.7.1.4 Herbicides

Herbicides were analyzed by SW-846 8151. Excluding field quality control samples, 33 distinct data points were generated. When rejected results are considered, the herbicides data set is 3.03 percent complete (32 of 33 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 3.03 percent (1 of 33 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.7.1.4.1, below)

N.7.1.4.1 Matrix Spike/Matrix Spike Duplicate

One result, consisting of 2,4,5-TP (Silvex) in NDD039, was R-qualified as “rejected” because of matrix spike/matrix spike duplicate exceedances. This result was deemed “non-detect” by the laboratory. Available 2,4,5-TP (Silvex) results exist for all (10) other samples in this dataset.

N.7.1.5 Total Metals

Total metals (metals and mercury) were analyzed by SW-846 methods 6010 and 7471. Excluding field quality control samples, 187 distinct data points were generated. The metals data set is 100 percent complete (187 of 187 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 22.46 percent (42 of 187 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.7.1.5.1, below)
- 13.90 percent (26 of 187 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.7.1.5.2, below)
- 3.74 percent (7 of 187 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.7.1.5.2, below)

N.7.1.5.1 Quantitation Limits

A total of 42 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.7.1.5.2 Matrix Spike/ Matrix Spike Duplicate

A total of 26 results were J-qualified as “estimated” because of matrix spike exceedances. Seven more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.7.2 Surface Soil PARCC

N.7.2.1 Precision

Because only six results were qualified due to field duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases. No results were qualified due to matrix spike/matrix spike duplicate precision or laboratory duplicate precision.

N.7.2.2 Accuracy

There were 33 results rejected due to laboratory control sample exceedances and 3 results rejected due to matrix spike exceedances. In these cases, matrix effects and the laboratory’s ability had an adverse effect on accuracy. There were 33 results qualified due to matrix spike exceedances and 197 results qualified due to spiked surrogate recovery exceedances. Matrix effects and the laboratory’s ability did not have any effect on accuracy in most cases.

N.7.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.7.2.4 Completeness

Overall, there were 88 R-qualified results in this dataset. The R-qualified results comprised 3.72 percent (88 of 2365 results) of the total number of distinct results; therefore, the data

validation process demonstrated that 96.28 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.7.2.5 Comparability

There were no issues affecting comparability in this data set.

N.7.3 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 27.53 percent (651 of 2365 results) of the data as non-detect and further qualification was not warranted. Another 4.23 percent (100 of 2365 results) were detected and no further qualification was warranted. Another 2.83 percent (67 of 2365 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 34.59 percent (818 of 2365 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, continuing calibration, field duplicate reproducibility, holding time exceedances, matrix spike/matrix spike duplicate exceedances, and spiked surrogate recovery exceedances. These amounted to 1.90 percent (45 of 2365 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 59.75 percent (1413 of 2365 results) and resulted from dual-column reproducibility, continuing calibration, field duplicate reproducibility, holding time exceedances, initial calibration exceedances, internal standard exceedances, matrix spike/matrix spike duplicate exceedances, and spiked surrogate recovery exceedances. A total of 0.04 percent (1 of 2365 results) were U-qualified as “non-detect” as a result of holding time exceedances. Based on the above, 61.69 percent (1459 of 2365 results) are available for use as qualified. Combining the 61.69 percent with the 34.59 percent results in 96.28 percent (2277 of 2365 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (88 of 2365 results, 3.72 percent of total results) are available for use as qualified.

N.7.3.1 Discussion of Rejected Data

Table N.7-1 lists all R-qualified data for SWMU 6/7. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The results for four VOCs (propionitrile, 2-butanone, acrolein, and acetone) were rejected in the various surface soil samples collected at SWMU 6/7. With the exception of acetone, none of the VOCs were detected in any of the samples. Propionitrile is a chemical used primarily as an intermediate in the production of other chemicals. 2-Butanone is most commonly used in paints, glues, and other coatings. Acrolein is used in the preparation of

polyester resin, polyurethane, propylene glycol, acrylic acid, acrylonitrile, and glycerol. Acetone is used to make plastic, fibers, drugs, and other chemicals. It is also used as a solvent. Although it is not likely all four of the above VOCs would have been present at SWMU 6/7, their potential presence cannot be completely disregarded due to the historical waste paint storage at the site. However, it is important to note that other than acetone, none of the VOCs were detected and acetone is a common contaminant introduced in the analytical laboratory.

The non-detect results for seven SVOCs (4-nitroquinoline-1-oxide, 2-acetylaminofluorene, aramite, kepone, 3,3-dimethylbenzidine, benzyl alcohol, and 1-naphthylamine) were rejected in various surface soil samples. The non-detect results for two of the SVOCs (2-acetylaminofluorene and kepone) were rejected in all surface soil samples. 2-Acetylaminofluorene is used for basic research in carcinogenesis and mutagenesis, and DNA repair. Kepone is an insecticide, used between 1966 and 1975 in the United States in ant and roach baits. Two of the compounds (4-nitroquinoline-1-oxide and aramite) were rejected in all samples except one (SS-36 for 4-nitroquinoline-1-oxide and SS-39 for aramite, both of which were non-detect). 4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. Aramite was historically used to kill mites on plants. Based on the above information, acetylaminofluorene, kepone, 4-nitroquinoline-1-oxide, and aramite would not be associated with waste oil or paints stored at SWMU 6/7. The non-detect results of the three other SVOCs, 1-naphthylamine, 3,3-dimethylbenzidine, and benzyl alcohol, were rejected in only 1 of the 10 surface soil samples (SS-39). These three compounds were not detected in the duplicate sample of sample SS-39, nor were those results rejected.

Based on the information above, the rejected data do not affect the ability to use existing data to evaluate aspects of environmental conditions at SWMU 6/7, including potential releases. However, it is recognized that sufficient data have not been collected to draw conclusions regarding potential releases with adequate confidence. Therefore, additional data collection will be performed.

N.7.3.2 Discussion of Non-detect Reporting Limits Above Screening Values

Table N.7-2a (surface soil) lists all quantitation limits above human health screening values for non-detected constituents at SWMU 6/7. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, 29 non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.7-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, some elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.7-2a, 11 of the target quantitation limits exceed their associated screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample

analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.7-2a, the actual method detection limits for 21 of the 29 SVOCs are significantly below the human health screening values. Therefore, had any of these 21 SVOCs been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. For 7 of the remaining 8 non-detected SVOCs (all except n-nitrosodiethylamine), the method detection limits in 8 of 11 soil samples are below the screening values. Therefore, it is unlikely that these seven SVOCs are present in SWMU 6/7 soil. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive. However, due to the absence of other similar SVOCs, it is unlikely this SVOC is present at the site. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 6/7 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, seven non-detected SVOCs and two non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.7-3). However, the achieved quantitation limits in 8 of 11 samples are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. Three of the 11 samples had laboratory required dilutions. As shown in Table N.7-3, even the target quantitation limits for six of the seven SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.7-3, the actual method detection limits for the one of the SVOCs and both VOCs are significantly below the ecological screening values. Therefore, had any of these three constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. For the remaining 7 non-detected SVOCs, the method detection limits in 8 of 11 soil samples are below the screening values. Therefore, it is unlikely that these seven SVOCs are present in SWMU 6/7 soil. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 6/7 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.7-1
Summary of Rejected Data
SWMUs 6 and 7

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	HERB	NDD039	2,4,5-TP (Silvex)	835	U	R	MSX	UG/KG
SS	SVOA	NDD034	4-Nitroquinoline-1-oxide	481	U	R	ICX	UG/KG
SS	SVOA	NDD034	2-Acetylaminofluorene	481	U	R	BSX	UG/KG
SS	SVOA	NDD034	Aramite	481	U	R	BSX	UG/KG
SS	SVOA	NDD034	Kepone	481	U	R	BSX	UG/KG
SS	SVOA	NDD035	4-Nitroquinoline-1-oxide	496	U	R	ICX	UG/KG
SS	SVOA	NDD035	Kepone	496	U	R	BSX	UG/KG
SS	SVOA	NDD035	2-Acetylaminofluorene	496	U	R	BSX	UG/KG
SS	SVOA	NDD035	Aramite	496	U	R	BSX	UG/KG
SS	SVOA	NDD036	2-Acetylaminofluorene	538	U	R	BSX	UG/KG
SS	SVOA	NDD036	Aramite	538	U	R	BSX	UG/KG
SS	SVOA	NDD036	Kepone	538	U	R	BSX	UG/KG
SS	SVOA	NDD037	Kepone	781	U	R	BSX	UG/KG
SS	SVOA	NDD037	Aramite	781	U	R	BSX	UG/KG
SS	SVOA	NDD037	4-Nitroquinoline-1-oxide	781	U	R	ICX	UG/KG
SS	SVOA	NDD037	2-Acetylaminofluorene	781	U	R	BSX	UG/KG
SS	SVOA	NDD038	2-Acetylaminofluorene	526	U	R	BSX	UG/KG
SS	SVOA	NDD038	4-Nitroquinoline-1-oxide	526	U	R	ICX	UG/KG
SS	SVOA	NDD038	Aramite	526	U	R	BSX	UG/KG
SS	SVOA	NDD038	Kepone	526	U	R	BSX	UG/KG
SS	SVOA	NDD039	Kepone	570	U	R	BSX	UG/KG
SS	SVOA	NDD039	3,3-Dimethylbenzidine	570	U	R	MSX	UG/KG
SS	SVOA	NDD039	Benzyl alcohol	1140	U	R	BSX	UG/KG
SS	SVOA	NDD039	1-Naphthylamine	570	U	R	MSX	UG/KG
SS	SVOA	NDD039	2-Acetylaminofluorene	570	U	R	BSX	UG/KG
SS	SVOA	NDD040	Kepone	580	U	R	BSX	UG/KG
SS	SVOA	NDD040	Aramite	580	U	R	BSX	UG/KG
SS	SVOA	NDD040	2-Acetylaminofluorene	580	U	R	BSX	UG/KG
SS	SVOA	NDD040	4-Nitroquinoline-1-oxide	580	U	R	ICX	UG/KG
SS	SVOA	NDD041	4-Nitroquinoline-1-oxide	333	U	R	ICX	UG/KG
SS	SVOA	NDD041	2-Acetylaminofluorene	333	U	R	BSX	UG/KG
SS	SVOA	NDD041	Aramite	333	U	R	BSX	UG/KG
SS	SVOA	NDD041	Kepone	333	U	R	BSX	UG/KG
SS	SVOA	NDD042	Aramite	2340	U	R	BSX	UG/KG
SS	SVOA	NDD042	2-Acetylaminofluorene	2340	U	R	BSX	UG/KG
SS	SVOA	NDD042	4-Nitroquinoline-1-oxide	2340	U	R	ICX	UG/KG

Table N.7-1
 Summary of Rejected Data
 SWMUs 6 and 7

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	NDD042	Kepone	2340	U	R	BSX	UG/KG
SS	SVOA	NDD043FD1	Aramite	3140	U	R	BSX	UG/KG
SS	SVOA	NDD043FD1	2-Acetylaminofluorene	3140	U	R	BSX	UG/KG
SS	SVOA	NDD043FD1	4-Nitroquinoline-1-oxide	3140	U	R	ICX	UG/KG
SS	SVOA	NDD043FD1	Kepone	3140	U	R	BSX	UG/KG
SS	SVOA	NDD058	Kepone	2500	U	R	BSX	UG/KG
SS	SVOA	NDD058	2-Acetylaminofluorene	2500	U	R	BSX	UG/KG
SS	SVOA	NDD058	4-Nitroquinoline-1-oxide	2500	U	R	ICX	UG/KG
SS	SVOA	NDD058	Aramite	2500	U	R	BSX	UG/KG
SS	VOA	NDD034	2-Butanone	108	U	R	ICX	UG/KG
SS	VOA	NDD034	Acrolein	5	U	R	ICX	UG/KG
SS	VOA	NDD034	Acetone	7340	J	R	ICX	UG/KG
SS	VOA	NDD035	2-Butanone	100	U	R	ICX	UG/KG
SS	VOA	NDD035	Propionitrile	5	U	R	ICX	UG/KG
SS	VOA	NDD035	Acetone	100	U	R	ICX	UG/KG
SS	VOA	NDD035	Acrolein	5	U	R	ICX	UG/KG
SS	VOA	NDD036	2-Butanone	158	U	R	ICX	UG/KG
SS	VOA	NDD036	Propionitrile	8	U	R	ICX	UG/KG
SS	VOA	NDD036	Acrolein	8	U	R	ICX	UG/KG
SS	VOA	NDD036	Acetone	158	U	R	ICX	UG/KG
SS	VOA	NDD037	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD037	2-Butanone	127	U	R	ICX	UG/KG
SS	VOA	NDD037	Acetone	127	U	R	ICX	UG/KG
SS	VOA	NDD037	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD038	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD038	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD038	Acetone	122	U	R	ICX	UG/KG
SS	VOA	NDD038	2-Butanone	122	U	R	ICX	UG/KG
SS	VOA	NDD039	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD039	2-Butanone	113	U	R	ICX	UG/KG
SS	VOA	NDD039	Acetone	124		R	ICX	UG/KG
SS	VOA	NDD039	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD040	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD040	2-Butanone	127	U	R	ICX	UG/KG
SS	VOA	NDD040	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD040	Acetone	83000	J	R	ICX	UG/KG

Table N.7-1
 Summary of Rejected Data
 SWMUs 6 and 7

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	NDD041	2-Butanone	110	U	R	ICX	UG/KG
SS	VOA	NDD041	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD041	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD041	Acetone	5990	J	R	ICX	UG/KG
SS	VOA	NDD042	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD042	2-Butanone	111	U	R	ICX	UG/KG
SS	VOA	NDD042	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD042	Acetone	111	U	R	ICX	UG/KG
SS	VOA	NDD043FD1	Acrolein	5	U	R	ICX	UG/KG
SS	VOA	NDD043FD1	Acetone	109	U	R	ICX	UG/KG
SS	VOA	NDD043FD1	2-Butanone	109	U	R	ICX	UG/KG
SS	VOA	NDD043FD1	Propionitrile	5	U	R	ICX	UG/KG
SS	VOA	NDD058	Propionitrile	6	U	R	ICX	UG/KG
SS	VOA	NDD058	2-Butanone	113	U	R	ICX	UG/KG
SS	VOA	NDD058	Acrolein	6	U	R	ICX	UG/KG
SS	VOA	NDD058	Acetone	136		R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

ICX: Initial Calibration Exceedance

MSX: Matrix Spike Recovery Exceedance

Table N.7-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU6/7

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value [2]
1,2,4,5-Tetrachlorobenzene	mg/kg	0.33	0.333-3.14	0.047 to 0.439	1.8
1,3-Dinitrobenzene	mg/kg	0.25	0.333-3.14	0.02 to 0.191	0.61
2,2'-Oxybis(1-chloropropane)	mg/kg	0.33	0.333-3.14	0.024 to 0.229	2.9
2,4,6-Trichlorophenol	mg/kg	0.33	0.333-3.14	0.019 to 0.182	0.61
2,4-Dinitrophenol	mg/kg	1.6	1.670-15.7	0.023 to 0.213	12
3,3'-Dichlorobenzidine	mg/kg	0.67	0.667-6.27	0.016 to 0.147	1.1
3,3'-Dimethylbenzidine	mg/kg	1.6	0.333-3.14	0.035 to 0.326	0.21
3-Nitroaniline	mg/kg	1.6	1.670-15.7	0.016 to 0.147	1.8
4,6-Dinitro-2-methylphenol	mg/kg	0.99	0.333-3.14	0.018 to 0.172	0.61
4-Bromophenyl-phenylether	mg/kg	0.33	0.333-3.14	0.02 to 0.188	2.9
4-Chlorophenyl-phenylether	mg/kg	0.33	0.333-3.14	0.02 to 0.185	2.9
4-Nitrophenol	mg/kg	0.99	0.333-3.14	0.017 to 0.157	2
Benzo(a)anthracene	mg/kg	0.33	0.333-3.14	0.017 to 0.163	0.62
Benzo(a)pyrene	mg/kg	0.33	0.333-3.14	0.022 to 0.21	0.062
Benzo(b)fluoranthene	mg/kg	0.33	0.333-3.14	0.02 to 0.185	0.62
Dibenz(a,h)anthracene	mg/kg	0.33	0.333-3.14	0.022 to 0.207	0.062
Hexachlorobenzene	mg/kg	0.33	0.333-3.14	0.022 to 0.204	0.3
Hexachlorobutadiene	mg/kg	0.33	0.333-3.14	0.028 to 0.26	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.33	0.333-3.14	0.017 to 0.163	0.62
Nitrobenzene	mg/kg	0.33	0.333-3.14	0.026 to 0.241	2
Pentachlorophenol	mg/kg	0.99	1.670-15.7	0.018 to 0.172	3
bis(2-Chloroethoxy)methane	mg/kg	0.33	0.333-3.14	0.025 to 0.232	2.9
bis(2-Chloroethyl)ether	mg/kg	0.33	0.333-3.14	0.023 to 0.216	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.333-3.14	0.03 to 0.285	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.333-3.14	0.024 to 0.223	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.333-3.14	0.077 to 0.721	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.333-3.14	0.04 to 0.376	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.333-3.14	0.018 to 0.166	0.034
n-Nitrosopyrrolidine	mg/kg	0.33	0.333-3.14	0.033 to 0.314	0.82

**Table N.7-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMUs 6 and 7**

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	333	3,140	100	19 to 176	330
Benzo(a)pyrene	333	3,140	100	22 to 210	330
Fluoranthene	333	3,140	100	21 to 194	330
Naphthalene	333	3,140	100	25 to 232	330
Pentachlorophenol	1,670	15,700	5,000	18 to 172	990
Phenanthrene	333	3,140	100	19 to 182	330
Pyrene	333	3,140	100	19 to 176	330
Volatile Organic Compounds (UG/KG)					
Tetrachloroethene	5.00	8.00	2.00	0.5 to 0.8	10
Vinyl chloride	10.0	16.0	10.0	0.5 to 0.8	10

N.8 SWMU 8

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 8 PA/SI, as well as to provide an assessment of data usability. Section N.8.3.1 discusses the rejected data with respect to data usability. Section N.8.3.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.8.1 SWMU 8 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on January 19, 2004.

N.8.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 354 distinct data points were generated. When rejected results are considered, the volatiles data set is 94.92 percent complete (336 of 354 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 5.08 percent (18 of 354 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.8.1.1.1 below)
- 0.28 percent (1 of 354 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.8.1.1.2, below)

N.8.1.1.1 Calibration

A total of 18 acetonitrile, 1,4-dioxane, and isobutanol results, consisting of acetonitrile, 1,4-dioxane, and isobutanol in every (six) sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.8.1.1.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 666 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 95.50 percent complete (636 of 666 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 3.60 percent (24 of 666 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.8.1.2.1, below)
- 1.50 percent (10 of 666 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.8.1.2.2, below)
- 1.05 percent (7 of 666 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.8.1.2.3, below)
- 0.90 percent (6 of 666 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.8.1.2.2, below)

- 0.90 percent (6 of 666 results) were U-qualified as “attributable to blank contamination” N.8.1.2.4, below)
- 0.30 percent (2 of 666 results) were J-qualified as “estimated” because of laboratory control sample exceedances (see section N.8.1.2.1, below)

N.8.1.2.1 Laboratory Control Sample

A total of 24 1,3-dichlorobenzene, 3,3-dimethylbenzidine, 4-nitrophenol, and hexachlorocyclopentadiene, consisting of these four compounds in every (six) sample, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory.

Two results were J-qualified as “estimated” because of laboratory control sample exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.2.2 Calibration

Six 4-nitroquinoline-1-oxide results, consisting of 4-nitroquinoline-1-oxide in every (six) sample, were R-qualified as “rejected” because of initial calibration recovery exceedances. These results were deemed “non-detect” by the laboratory.

Ten more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.8.1.2.3 Quantitation Limits

Seven results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.2.4 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.8.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 174 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (174 of 174 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 6.90 percent (12 of 174 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.8.1.3.1, below)
- 1.15 percent (2 of 174 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.8.1.3.2, below)

- 1.15 percent (2 of 174 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.8.1.3.3, below)

N.8.1.3.1 Calibration

A total of 12 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.8.1.3.2 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.3.3 Dual-Column Reproducibility

Two results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.8.1.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 24 distinct data points were generated. The herbicides data set is 100 percent complete (24 of 24 herbicides results are available for use). The validation process resulted in no qualification.

N.8.1.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 method 8330 and EPA method 314. Excluding field quality control samples, 78 distinct data points were generated. The explosives data set is 100 percent complete (78 of 78 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.69 percent (6 of 78 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample recovery exceedances (see section N.8.1.5.1, below)
- 1.28 percent (1 of 78 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.8.1.5.2, below)

N.8.1.5.1 Laboratory Control Sample

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.8.1.5.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.6 Dioxins

Dioxins were analyzed by SW-846 method 8290. Excluding field quality control samples, 11 distinct data points were generated. The dioxins data set is 100 percent complete (11 of 11 dioxin results are available for use). The validation process resulted in no qualifiers.

N.8.1.7 Total Metals

Total metals and cyanide were analyzed by SW-846 methods 6010, 7471, and 9012. Excluding field quality control samples, 103 distinct data points were generated. The metals data set is 100 percent complete (103 of 103 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 39.81 percent (41 of 103 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.8.1.7.1, below)
- 23.30 percent (24 of 103 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.8.1.7.2, below)

N.8.1.7.1 Quantitation Limits

A total of 41 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.7.2 Serial Dilution

A total of 24 metals results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.1.8 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA method 376.1. Excluding field quality control samples, one distinct data point was generated. The wet chemistry data set is 100 percent complete (1 of 1 wet chemistry result is available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 100.00 percent (1 of 1 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.8.1.8.1, below)

N.8.1.8.1 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.8.2 SWMU 8 Surface Soil PARCC

N.8.2.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.8.2.2 Accuracy

Except for the 24 results R-qualified as “rejected” because of laboratory control sample exceedances, matrix effects and the laboratory’s ability did not have any adverse effects on the accuracy of the data set. Otherwise, because only eight results were qualified due to laboratory control sample exceedances, matrix effects and the laboratory’s ability did not have any effect on accuracy in most cases. No results were qualified based on matrix spike exceedances or spiked surrogate recovery exceedances.

N.8.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.8.2.4 Completeness

Overall, there were 48 R-qualified results in this dataset. The R-qualified results comprised 3.40 percent (48 of 1411 results) of the total number of distinct results; therefore the data validation process demonstrated that 96.60 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.8.2.5 Comparability

There were no issues affecting comparability in this data set.

N.8.3 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 85.40 percent (1205 of 1411 results) of the data as non-detect and further qualification was not warranted. Another 3.05 percent (43 of 1411 results) were detected and no further qualification was warranted. Another 3.76 percent (53 of 1411 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 92.20 percent (1301 of 1411 results) of the data are available for use as reported.

Other J-qualifiers resulted from laboratory control sample and serial dilution exceedances. These amounted to 1.84 percent (26 of 1411 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 1.98 percent (28 of 1411 results) and resulted from laboratory control sample exceedances and continuing calibration exceedances. Two results were U-qualified as “non-detect” because of dual-column reproducibility. A total of 0.43 percent (6 of 1411 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 4.39 percent (62 of 1411 results) are available for use as qualified. Combining the 92.20 percent

with the 4.39 percent results in 96.60 percent (1363 of 1411 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (48 of 1411 results, 3.40 percent of total results) are available for use as qualified.

N.8.3.1 Discussion of Rejected Data

Table N.8-1 lists all R-qualified data for SWMU 8. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The non-detect results for three VOCs (acetonitrile, 1,4-dioxane, and isobutanol) were rejected in the five surface soil samples collected at SWMU 8. Acetonitrile is used mainly as a solvent in the purification of butadiene, which is then used to make rubber and plastics. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Based on this information, none of the above chemicals is likely to have been associated with waste oil stored at SWMU 8.

The non-detect results for five SVOCs (4-nitroquinoline-1-oxide, 1,3-dichlorobenzene, 3,3-dimethylbenzidine, hexachlorocyclopentadiene, and 4-nitrophenol) were rejected in the five surface soil samples collected at SWMU 8. 4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. 1,3-Dichlorobenzene is a colorless liquid used to make herbicides, insecticides, medicine, and dyes. 3,3-Dimethylbenzidine is used as an intermediate in the production of dyes and pigments. Hexachlorocyclopentadiene is the key intermediate in the manufacture of some pesticides, and used in the manufacture of flame retardants and some resins and dyes. 4-Nitrophenol is used in the preparation of drugs, fungicides, and dyes. Based on this information, none of the above chemicals is likely to have been associated with waste oil stored at SWMU 8.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at SWMU 8.

N.8.3.2 Discussion of Non-detect Reporting Limits Above Screening Values

Table N.8-2a (surface soil) list all quantitation limits above human health screening values for non-detected constituents at SWMU 8. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, nine non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.8-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work

Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.8-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.8-2a, the actual method detection limits for seven of the SVOCs are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two SVOCs, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values approximately 0.05 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically was used in the production of rocket fuels. While n-nitrosodiethylamine could have been a constituent of the waste oils stored at SWMU 8, none of the main BTEX constituents of oils were detected in any of the samples. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 8 surface soil. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 8 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs and three non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.8-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.8-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.8-3, the actual method detection limits for the six SVOCs and three VOCs are significantly below the ecological screening values. Therefore, had any of these nine constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 8 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.8-1
Summary of Rejected Data
SWMU 8

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW8SS01-R01	Acetonitrile	9.4	U	R	ICX	UG/KG
SS	VOA	CGW8SS01-R01	1,4-Dioxane	41.2	U	R	ICX	UG/KG
SS	VOA	CGW8SS01-R01	Isobutanol	30	U	R	ICX	UG/KG
SS	SVOA	CGW8SS01-R01	4-Nitroquinoline-1-oxide	363	U	R	ICX	UG/KG
SS	SVOA	CGW8SS01-R01	1,3-Dichlorobenzene	363	U	R	BSX	UG/KG
SS	SVOA	CGW8SS01-R01	3,3-Dimethylbenzidine	363	U	R	BSX	UG/KG
SS	SVOA	CGW8SS01-R01	Hexachlorocyclopentadiene	363	U	R	BSX	UG/KG
SS	SVOA	CGW8SS01-R01	4-Nitrophenol	363	U	R	BSX	UG/KG
SS	VOA	CGW8FD01P-R01	Acetonitrile	9.9	U	R	ICX	UG/KG
SS	VOA	CGW8FD01P-R01	1,4-Dioxane	43.7	U	R	ICX	UG/KG
SS	VOA	CGW8FD01P-R01	Isobutanol	31.8	U	R	ICX	UG/KG
SS	SVOA	CGW8FD01P-R01	4-Nitroquinoline-1-oxide	360	U	R	ICX	UG/KG
SS	SVOA	CGW8FD01P-R01	1,3-Dichlorobenzene	360	U	R	BSX	UG/KG
SS	SVOA	CGW8FD01P-R01	3,3-Dimethylbenzidine	360	U	R	BSX	UG/KG
SS	SVOA	CGW8FD01P-R01	Hexachlorocyclopentadiene	360	U	R	BSX	UG/KG
SS	SVOA	CGW8FD01P-R01	4-Nitrophenol	360	U	R	BSX	UG/KG
SS	VOA	CGW8SS02-R01	Acetonitrile	10.7	U	R	ICX	UG/KG
SS	VOA	CGW8SS02-R01	1,4-Dioxane	47.2	U	R	ICX	UG/KG
SS	VOA	CGW8SS02-R01	Isobutanol	34.3	U	R	ICX	UG/KG
SS	SVOA	CGW8SS02-R01	4-Nitroquinoline-1-oxide	393	U	R	ICX	UG/KG
SS	SVOA	CGW8SS02-R01	1,3-Dichlorobenzene	393	U	R	BSX	UG/KG
SS	SVOA	CGW8SS02-R01	3,3-Dimethylbenzidine	393	U	R	BSX	UG/KG
SS	SVOA	CGW8SS02-R01	Hexachlorocyclopentadiene	393	U	R	BSX	UG/KG
SS	SVOA	CGW8SS02-R01	4-Nitrophenol	393	U	R	BSX	UG/KG
SS	VOA	CGW8SS03-R01	Acetonitrile	9.2	U	R	ICX	UG/KG
SS	VOA	CGW8SS03-R01	1,4-Dioxane	40.5	U	R	ICX	UG/KG
SS	VOA	CGW8SS03-R01	Isobutanol	29.5	U	R	ICX	UG/KG
SS	SVOA	CGW8SS03-R01	4-Nitroquinoline-1-oxide	351	U	R	ICX	UG/KG
SS	SVOA	CGW8SS03-R01	1,3-Dichlorobenzene	351	U	R	BSX	UG/KG
SS	SVOA	CGW8SS03-R01	3,3-Dimethylbenzidine	351	U	R	BSX	UG/KG
SS	SVOA	CGW8SS03-R01	Hexachlorocyclopentadiene	351	U	R	BSX	UG/KG
SS	SVOA	CGW8SS03-R01	4-Nitrophenol	351	U	R	BSX	UG/KG
SS	VOA	CGW8SS04-R01	Acetonitrile	9.6	U	R	ICX	UG/KG
SS	VOA	CGW8SS04-R01	1,4-Dioxane	42.2	U	R	ICX	UG/KG
SS	VOA	CGW8SS04-R01	Isobutanol	30.7	U	R	ICX	UG/KG
SS	SVOA	CGW8SS04-R01	4-Nitroquinoline-1-oxide	204	U	R	ICX	UG/KG

Table N.8-1
 Summary of Rejected Data
 SWMU 8

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW8SS04-R01	1,3-Dichlorobenzene	204	U	R	BSX	UG/KG
SS	SVOA	CGW8SS04-R01	3,3-Dimethylbenzidine	204	U	R	BSX	UG/KG
SS	SVOA	CGW8SS04-R01	Hexachlorocyclopentadiene	204	U	R	BSX	UG/KG
SS	SVOA	CGW8SS04-R01	4-Nitrophenol	204	U	R	BSX	UG/KG
SS	VOA	CGW8SS05-R01	Acetonitrile	9.5	U	R	ICX	UG/KG
SS	VOA	CGW8SS05-R01	1,4-Dioxane	41.9	U	R	ICX	UG/KG
SS	VOA	CGW8SS05-R01	Isobutanol	30.5	U	R	ICX	UG/KG
SS	SVOA	CGW8SS05-R01	4-Nitroquinoline-1-oxide	207	U	R	ICX	UG/KG
SS	SVOA	CGW8SS05-R01	1,3-Dichlorobenzene	207	U	R	BSX	UG/KG
SS	SVOA	CGW8SS05-R01	3,3-Dimethylbenzidine	207	U	R	BSX	UG/KG
SS	SVOA	CGW8SS05-R01	Hexachlorocyclopentadiene	207	U	R	BSX	UG/KG
SS	SVOA	CGW8SS05-R01	4-Nitrophenol	207	U	R	BSX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

ICX: Initial Calibration Exceedance

Table N.8-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 8

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	mg/kg	0.33	0.204 - 0.393	0.0186 to 0.0357	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.204 - 0.393	0.0242 to 0.0464	0.062
Hexachlorobenzene	mg/kg	0.33	0.204 - 0.393	0.0328 to 0.0631	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.204 - 0.393	0.0229 to 0.044	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.204 - 0.393	0.0266 to 0.0512	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.204 - 0.393	0.0236 to 0.0452	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.204 - 0.393	0.0335 to 0.0643	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.204 - 0.393	0.0322 to 0.0619	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.204 - 0.393	0.044 to 0.0845	0.034

**Table N.8-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 8**

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	204	393	100	27.3 to 52.4	330
Benzo(a)pyrene	204	393	100	18.6 to 35.7	330
Fluoranthene	204	393	100	17.4 to 33.3	330
Naphthalene	204	393	100	25.4 to 48.8	330
Phenanthrene	204	393	100	25.4 to 48.8	330
Pyrene	204	393	100	19.2 to 36.9	330
Volatile Organic Compounds (UG/KG)					
Benzene	9.20	10.7	10.0	0.37 to 0.43	10
Tetrachloroethene	9.20	10.7	2.00	0.66 to 0.77	10
Vinyl chloride	9.20	10.7	10.0	0.59 to 0.69	10

N.9 SWMU 10

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 10 PA/SI, as well as to provide an assessment of data usability. Section N.9.7.1 discusses the rejected data with respect to data usability. Section N.9.7.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.9.1 SWMU 10 Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected February 9 through February 11, 2004.

N.9.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 354 distinct data points were generated. When rejected results are considered, the volatiles data set is 93.22 percent complete (330 of 354 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 6.78 percent (24 of 354 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.9.1.1.1 below)
- 0.85 percent (3 of 354 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.1.1.2, below)
- 0.56 percent (2 of 354 results) were U-qualified as “attributed to blank contamination” (see Section N.9.1.1.3 below)

N.9.1.1.1 Calibration

A total of 24 volatiles results, consisting of 1,4-dioxane, acetonitrile, and isobutanol in all (six) samples and acrolein and propionitrile in three samples (CGW10GW01-R01, CGW10GW03-R01, and CGWFD03P-R01), were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. There are available acrolein and propionitrile results in samples CGW10GW04-R01, CGW10GW05-R01, and CGW10GW02-R01.

N.9.1.1.2 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.1.1.3 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because toluene was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.9.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 666 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.40 percent complete (642 of 666 semivolatiles results are available for use). The

validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.70 percent (18 of 666 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.9.1.2.1, below)
- 2.70 percent (18 of 666 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.9.1.2.2, below)
- 0.90 percent (6 of 666 results) were R-qualified as “rejected” because of continuing calibration (see section N.9.1.2.3, below)

N.9.1.2.1 Laboratory Control Sample

A total of 18 semivolatiles results, consisting of 1,4-naphthoquinone, a,a-dimethylphenethylamine, and pyridine in all (6) samples, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory.

N.9.1.2.2 Calibration

Six semivolatiles results, consisting of 1,4-Naphthoquinone in every (6) sample, were R-qualified as “rejected” because of continuing calibration. These results were deemed “non-detect” by the laboratory.

A total of 18 results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 174 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (174 of 174 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 4.60 percent (8 of 174 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.9.1.3.1, below)
- 3.45 percent (6 of 174 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.9.1.3.2, below)
- 0.57 percent (1 of 174 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.9.1.3.3, below)

N.9.1.3.1 Calibration

Eight results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.1.3.2 Laboratory Control Sample

Six results were UJ-qualified “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect

the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.1.3.3 Dual-Column Reproducibility

One result was U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.1.4 Herbicides

Herbicides were analyzed by SW-846 8151. Excluding field quality control samples, 24 distinct data points were generated. The herbicides data set is 100 percent complete (24 of 24 herbicides results are available for use). The validation process resulted in no qualification.

N.9.1.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 8330 and EPA 314. Excluding field quality control samples, 78 distinct data point was generated. The explosives data set is 100 percent complete (78 of 78 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 15.38 percent (12 of 78 result) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.9.1.5.1, below)

N.9.1.5.1 Laboratory Control Sample

A total of 12 results were UJ-qualified “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.1.6 Dioxins

Dioxins were analyzed by SW-846 8290. Excluding field quality control samples, 22 distinct data points were generated. The dioxins data set is 100 percent complete (22 of 22 dioxins results are available for use). The validation process resulted in no qualification.

N.9.1.7 Metals

Metals (metals, mercury, and cyanide) were analyzed by SW-846 methods 6010, 7470, and 9012. Excluding field quality control samples, 104 data points were generated. The metals data set is 100 percent complete (104 of 104 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 34.62 percent (36 of 104 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.1.7.1, below)

N.9.1.7.1 Quantitation Limits

A total of 36 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.1.8 Filtered Metals

Filtered metals (metals and mercury) were analyzed by SW-846 methods 6010 and 7470. Excluding field quality control samples, 102 data points were generated. The filtered metals data set is 100 percent complete (102 of 102 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 40.20 percent (41 of 102 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.1.8.1, below)

N.9.1.8.1 Quantitation Limits

A total of 41 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.1.9 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA 376.1. Excluding field quality control samples, two distinct data points were generated. The wet chemistry data set is 100 percent complete (2 of 2 wet chemistry results are available for use). The validation process resulted in no qualification.

N.9.2 SWMU 10 Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on June 7, 2000, and on January 20 and January 22, 2004.

N.9.2.1 Volatile Compounds

Volatiles were analyzed by SW-846 method 8260 and 8260B. Excluding field quality control samples, 1158 distinct data points were generated. When rejected results are considered, the volatiles data set is 94.65 percent complete (1096 of 1158 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.97 percent (46 of 1158 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.9.2.1.1 below)
- 1.55 percent (18 of 1158 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.9.2.1.2, below)
- 1.38 percent (16 of 1158 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.9.2.1.2, below)
- 0.86 percent (10 of 1158 results) were U-qualified as “attributed to blank contamination” (see Section N.9.2.1.3 below)
- 0.43 percent (5 of 1158 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.2.1.4, below)

N.9.2.1.1 Calibration

A total of 46 1,4-dioxane, acetonitrile, and isobutanol results, consisting of 1,4-dioxane and acetonitrile in all (18) of the January, 2004 samples and isobutanol in all (10) of the January 22, 2004 samples, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. There are other available isobutanol results (8) in the January 20, 2004 samples.

N.9.2.1.2 Matrix Spike/Matrix Spike Duplicate

A total of 16 volatiles results, consisting of one-half the volatiles results in NDD012, were R-qualified as “rejected” because of matrix spike exceedances. The rejection of these results does not affect the usability of data in this dataset, because there is another set of non-rejected results in for this sample.

A total of 18 results were UJ-qualified “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.1.3 Blank Contamination

A total of 10 results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.9.2.1.4 Quantitation Limits

Five results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.2 Toxicity Characteristic Leaching Procedure (TCLP) Volatiles

Volatiles were analyzed by SW-846 8260 following TCLP extraction by SW-846 1311. Excluding field quality control samples, 64 distinct data points were generated. The TCLP volatiles data set is 100 percent complete (64 of 64 TCLP volatiles results are available for use). The validation process resulted in no qualification.

N.9.2.3 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 methods 8270 and 8270C. Excluding field quality control samples, 2068 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.62 percent complete (1998 of 2068 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.51 percent (52 of 2068 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.9.2.3.1, below)
- 1.40 percent (29 of 2068 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.9.2.3.2, below)
- 0.82 percent (17 of 2068 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.9.2.3.2, below)
- 0.53 percent (11 of 2068 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.2.3.3, below)

- 0.19 percent (4 of 2068 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.9.2.3.4, below)
- 0.05 percent (1 of 2068 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.9.2.3.4, below)

N.9.2.3.1 Laboratory Control Sample

A total of 52 semivolatiles results, consisting of 3,3-dimethylbenzidine in all (18) of the January, 2004 samples, 1,3-dichlorobenzene in eight samples, hexachlorocyclopentadiene in nine samples, hexachloroethane in eight samples, and pyridine in nine samples, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are ten additional results available for 1,3-dichlorobenzene, nine additional results available for hexachlorocyclopentadiene, ten additional results available for hexachloroethane, and nine additional results available for pyridine in other samples in this dataset.

N.9.2.3.2 Calibration

A total of 17 semivolatiles results, consisting of 4-nitroquinoline-1-oxide in all (17) January, 2004 samples except for CGW10SB06-R01-5, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. There is one available 4-nitroquinoline-1-oxide result in this dataset.

A total of 29 results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.3.3 Quantitation Limits

A total of 11 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.3.4 Matrix Spike/Matrix Spike Duplicate

One result, consisting of a,a-dimethylphenethylamine in CGW10SB10-R01-5, was R-qualified as “rejected” because of matrix spike exceedances. This result was deemed “non-detect” by the laboratory. Available results for this compound are present for 17 other samples in this dataset.

Four results were UJ-qualified “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.4 TCLP Semivolatiles

Semivolatiles were analyzed by SW-846 8270 following TCLP extraction by SW-846 1311. Excluding field quality control samples, 48 distinct data points were generated. The TCLP semivolatiles data set is 100 percent complete (48 of 48 TCLP semivolatiles results are available for use). The validation process resulted in no qualification.

N.9.2.5 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 522 distinct data points were generated. The pesticides/PCBs data

set is 100 percent complete (522 of 522 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 7.85 percent (41 of 522 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.9.2.5.1, below)
- 3.26 percent (17 of 522 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.9.2.5.2, below)
- 2.87 percent (15 of 522 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.2.5.3, below)
- 1.53 percent (8 of 522 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances (see section N.9.2.5.2, below)
- 0.57 percent (3 of 522 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.9.2.5.4, below)
- 0.19 percent (1 of 522 results) were J-qualified as “estimated” because of spiked surrogate recovery exceedances (see section N.9.2.5.1, below)
- 0.19 percent (1 of 522 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.9.2.5.5, below)

N.9.2.5.1 Surrogates

A total of 41 results were UJ-qualified “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. Six more results were J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.5.2 Calibration

A total of 17 results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. Another eight results were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.5.3 Quantitation Limits

A total of 15 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.5.4 Dual-Column Reproducibility

Three results were J-qualified as “estimated” because of a large difference in quantitation between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.5.5 Matrix Spike/Matrix Spike Duplicate

One result was J-qualified as “estimated” because of matrix spike/matrix spike duplicate exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.6 Herbicides

Herbicides were analyzed by SW-846 8151. Excluding field quality control samples, 72 distinct data points were generated. The herbicides data set is 100 percent complete (72 of 72 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 16.67 percent (12 of 72 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.9.2.6.1, below)

N.9.2.6.1 Surrogates

A total of 12 results were UJ-qualified “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.7 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 8330 and EPA 314. Excluding field quality control samples, 234 distinct data points were generated. The explosives data set is 100 percent complete (234 of 234 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.26 percent (17 of 234 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.9.2.7.1, below)
- 5.13 percent (12 of 234 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.9.2.7.2, below)
- 0.43 percent (1 of 234 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.9.2.7.3, below)

N.9.2.7.1 Laboratory Control Sample

A total of 17 results were UJ-qualified “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.7.2 Holding Times

A total of 12 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.7.3 Matrix Spike/Matrix Spike Duplicate

One result was UJ-qualified “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.8 Dioxins

Dioxins were analyzed by SW-846 8290. Excluding field quality control samples, 44 distinct data points were generated. The dioxins data set is 100 percent complete (44 of 44 dioxins results are available for use). The validation process resulted in no qualification.

N.9.2.9 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by SW-846 methods 6010, 7471, and 9012. Excluding field quality control samples, 370 distinct data points were generated. The metals data set is 100 percent complete (370 of 370 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 31.08 percent (115 of 370 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.2.9.1, below)
- 8.11 percent (30 of 370 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.9.2.9.2, below)
- 7.03 percent (26 of 370 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.9.2.9.3, below)
- 1.08 percent (4 of 370 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.9.2.9.2, below)
- 0.27 percent (1 of 370 results) were UJ-qualified as “non-detect, estimated quantitation limit” for reasons of “other” (see section N.9.2.9.4, below)

N.9.2.9.1 Quantitation Limits

A total of 115 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.9.2 Matrix Spike/Matrix Spike Duplicate

A total of 30 results were J-qualified as “estimated” because of matrix spike exceedances. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.9.3 Serial Dilution

A total of 26 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.9.4 Other

If the data validator is not able to find an appropriate valid-value reason code for the reason a result was qualified, the “other” reason code is used. One result was UJ-qualified as “non-detect, estimated quantitation limit” for reasons of “other.” The UJ-qualification of non-

detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.10 TCLP Metals

Metals were analyzed by SW-846 6010 following TCLP extraction by SW-846 1311. Excluding field quality control samples, 32 distinct data points were generated. The TCLP metals data set is 100 percent complete (32 of 32 TCLP metals results are available for use). The validation process resulted in the following qualifiers for results in the TCLP metals fraction:

- 12.50 percent (4 of 32 result) was J-qualified as “estimated” because of matrix spike exceedances (see section N.9.2.10.1, below)

N.9.2.10.1 Matrix Spike/Matrix Spike Duplicate

Four results were J-qualified as “estimated” because of matrix spike exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.11 Total Petroleum Hydrocarbons (TPH)

Petroleum hydrocarbons were analyzed by SW-846 8015D. Excluding field quality control samples, five distinct data points were generated. The TPH data set is 100 percent complete (5 of 5 TPH results are available for use). The validation process resulted in the following qualifiers for results in the TPH fraction:

- 20.00 percent (1 of 5 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.9.2.11.1, below)
- 20.00 percent (1 of 5 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of field duplicate precision exceedances (see section N.9.2.11.2, below)
- 20.00 percent (1 of 5 results) were J-qualified as “estimated” because of field duplicate precision exceedances (see section N.9.2.11.2, below)

N.9.2.11.1 Surrogates

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.2.11.2 Field Duplicates

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of field duplicate precision exceedances. One more result was J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.2.12 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA 376.1. Excluding field quality control samples, four distinct data points were generated. The wet chemistry data set is 100 percent complete (4 of 4 wet chemistry results are available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 50.00 percent (2 of 4 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.2.12.1, below)

N.9.2.12.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3 SWMU 10 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on June 7, 2000 and on January 20 and January 22, 2004.

N.9.3.1 Volatile Compounds

Volatiles were analyzed by SW-846 method 8260 and 8260B. Excluding field quality control samples, 1003 distinct data points were generated. When rejected results are considered, the volatiles data set is 95.21 percent complete (955 of 1003 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.09 percent (41 of 1003 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.9.3.1.1 below)
- 0.70 percent (7 of 1003 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.9.3.1.2, below)
- 0.10 percent (1 of 1003 results) were U-qualified as “attributed to blank contamination” (see Section N.9.3.1.3 below)

N.9.3.1.1 Calibration

A total of 41 1,4-dioxane, acetonitrile, and isobutanol results, consisting of 1,4-dioxane and isobutanol in all (17) of the January, 2004 samples and acetonitrile in CGW10SS06-R01, CGW10SS07-R01, CGW10SS09-R01, CGW10SS10-R01, CGW10SS11-R01, CGW10SS12-R01, and CGW10FD01P-R01, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory. There are other available acetonitrile results (10) in this dataset.

N.9.3.1.2 Laboratory Control Sample

Seven bromomethane samples, consisting of bromomethane in CGW10SS06-R01, CGW10SS07-R01, CGW10SS09-R01, CGW10SS10-R01, CGW10SS11-R01, CGW10SS12-R01, and CGW10FD01P-R01, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are ten other available bromomethane results in this dataset.

N.9.3.1.3 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.9.3.2 Toxicity Characteristic Leaching Procedure (TCLP) Volatiles

Volatiles were analyzed by SW-846 8260 following TCLP extraction by SW-846 1311. Excluding field quality control samples, 64 distinct data points were generated. The TCLP volatiles data set is 100 percent complete (64 of 64 TCLP volatiles results are available for use). The validation process resulted in no qualification.

N.9.3.3 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 methods 8270 and 8270C. Excluding field quality control samples, 1887 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.93 percent complete (1829 of 1887 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.12 percent (40 of 1887 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.9.3.3.1, below)
- 0.90 percent (17 of 1887 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.9.3.3.2, below)
- 0.79 percent (15 of 1887 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.3.3.3, below)
- 0.37 percent (7 of 1887 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.9.3.3.4, below)
- 0.32 percent (6 of 1887 results) were U-qualified as “attributable to blank contamination” see section N.9.3.3.5, below)
- 0.26 percent (5 of 1887 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.9.3.3.2, below)
- 0.05 percent (1 of 1887 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.9.3.3.4, below)

N.9.3.3.1 Laboratory Control Sample

A total of 40 semivolatiles results, consisting of 3,3-dimethylbenzidine in all (17) of the January, 2004 samples, 1,3-dichlorobenzene in 6 samples, hexachlorocyclopentadiene in 11 samples, and hexachloroethane in 6 samples, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory. There are 11 additional results available for 1,3-dichlorobenzene, 6 additional results available for hexachlorocyclopentadiene, and 11 additional results available for hexachloroethane in other samples in this dataset.

N.9.3.3.2 Calibration

A total of 17 semivolatiles results, consisting of 4-nitroquinoline-1-oxide in all (17) January, 2004 sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

Five results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.3.3.3 Quantitation Limits

A total of 15 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.3.4 Matrix Spike/Matrix Spike Duplicate

One result, consisting of *N,N*-dimethylphenethylamine in CGW10SS18-R01, was R-qualified as “rejected” because of matrix spike exceedances. This result was deemed “non-detect” by the laboratory. Available results for this compound are present for all other (16) samples in this dataset.

Seven results were UJ-qualified “non-detect, estimated quantitation limit” because of matrix spike/matrix spike duplicate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.3.3.5 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.9.3.4 TCLP Semivolatiles

Semivolatiles were analyzed by SW-846 8270 following TCLP extraction by SW-846 1311. Excluding field quality control samples, 48 distinct data points were generated. The TCLP semivolatiles data set is 100 percent complete (48 of 48 TCLP semivolatiles results are available for use). The validation process resulted in no qualification.

N.9.3.5 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 493 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 99.80 percent complete (492 of 493 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 5.48 percent (27 of 493 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.3.5.1, below)
- 3.45 percent (17 of 493 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration (see section N.9.3.5.2, below)
- 1.62 percent (8 of 493 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.9.3.5.3, below)
- 1.01 percent (5 of 493 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.9.3.5.3, below)
- 1.01 percent (5 of 493 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances (see section N.9.3.5.2, below)
- 0.41 percent (2 of 493 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.9.3.5.4, below)
- 0.20 percent (1 of 493 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.9.3.5.4, below)

N.9.3.5.1 Quantitation Limits

A total of 27 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.5.2 Calibration

A total of 17 results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration. Another five results were UJ-qualified as “non-detect, estimated quantitation limit” because of initial calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.3.5.3 Dual-Column Reproducibility

Eight results were J-qualified as “estimated” because of a large difference in quantitation between the primary and secondary analytical columns. Five more results were U-qualified as “non-detect” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration. The U-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.3.5.4 Matrix Spike/Matrix Spike Duplicate

One pesticides result, consisting of endosulfan I in CGW10SS18-R01, was R-qualified as “rejected” because of matrix spike exceedances. This result was deemed “non-detect” by the laboratory. Available results for this compound are present for all other (16) samples in this dataset.

Two results were J-qualified as “estimated” because of matrix spike/matrix spike duplicate exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.6 Herbicides

Herbicides were analyzed by SW-846 8151. Excluding field quality control samples, 68 distinct data points were generated. The herbicides data set is 100 percent complete (68 of 68 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 76.47 percent (52 of 68 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.9.3.6.1, below)

N.9.3.6.1 Surrogates

A total of 52 results were UJ-qualified “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.3.7 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 8330 and EPA 314. Excluding field quality control samples, 221 distinct data points were

generated. The explosives data set is 100 percent complete (221 of 221 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.69 percent (17 of 221 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.9.3.7.1, below)

N.9.3.7.1 Laboratory Control Sample

A total of 17 results were UJ-qualified “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.9.3.8 Dioxins

Dioxins were analyzed by SW-846 8290. Excluding field quality control samples, 77 distinct data points were generated. The dioxins data set is 100 percent complete (77 of 77 dioxins results are available for use). The validation process resulted in no qualification.

N.9.3.9 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by SW-846 methods 6010, 7471, and 9012. Excluding field quality control samples, 296 distinct data points were generated. The metals data set is 100 percent complete (296 of 296 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 43.24 percent (128 of 296 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.3.9.1, below)
- 7.77 percent (23 of 296 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.9.3.9.2, below)
- 2.03 percent (6 of 296 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.9.3.9.3, below)

N.9.3.9.1 Quantitation Limits

A total of 128 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.9.2 Serial Dilution

A total of 23 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.9.3 Matrix Spike/Matrix Spike Duplicate

Six results were J-qualified as “estimated” because of matrix spike exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.10 TCLP Metals

Metals were analyzed by SW-846 6010 following TCLP extraction by SW-846 1311. Excluding field quality control samples, 32 distinct data points were generated. The TCLP metals data set is 100 percent complete (32 of 32 TCLP metals results are available for use).

The validation process resulted in the following qualifiers for results in the TCLP metals fraction:

- 12.50 percent (4 of 32 result) was J-qualified as “estimated” because of matrix spike exceedances (see section N.9.3.10.1, below)
- 3.13 percent (1 of 32 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.3.10.2, below)

N.9.3.10.1 Matrix Spike/Matrix Spike Duplicate

Four results were J-qualified as “estimated” because of matrix spike exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.10.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.3.11 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA 376.1. Excluding field quality control samples, seven distinct data points were generated. The wet chemistry data set is 100 percent complete (7 of 7 wet chemistry results are available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 28.57 percent (2 of 7 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.9.3.11.1, below)

N.9.3.11.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.9.4 SWMU 10 Groundwater PARCC

N.9.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.9.4.2 Accuracy

There were 18 results R-qualified as “rejected” and 18 results otherwise qualified because of laboratory control sample exceedances. The rejected results demonstrated an adverse effect on the accuracy of these particular results in the dataset. There were no results qualified as a result of matrix spike/matrix spike duplicate recovery exceedances or spiked surrogate recovery exceedances.

N.9.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.9.4.4 Completeness

Overall, there were 48 R-qualified results in this dataset. The R-qualified results comprised 3.15 percent (48 of 1526 results) of the total number of distinct results; therefore the data validation process demonstrated that 96.85 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.9.4.5 Comparability

There were no issues affecting comparability in this data set.

N.9.5 SWMU 2 Subsurface Soil PARCC

N.9.5.1 Precision

Except in the case of the two results qualified based on field duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in any case. No results were qualified based on matrix spike/matrix spike duplicate precision or laboratory duplicate precision exceedances.

N.9.5.2 Accuracy

There were 52 results R-qualified as “rejected” as a result of laboratory control sample exceedances and 17 results R-qualified as “rejected” as a result of matrix spike/matrix spike duplicate recovery exceedances. In these instances, matrix effects and the laboratory’s ability had adverse effects on the accuracy of the data set. Aside from the rejected results, there were 17 results qualified as a result of laboratory control sample exceedances, 62 results qualified as a result of matrix spike/matrix spike duplicate recovery exceedances, and 55 results qualified as a result of spiked surrogate recovery exceedances. In these instances, matrix effects and the laboratory’s ability affected the data, but not in a way that adversely affected the availability of results to the data user.

N.9.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.9.5.4 Completeness

Overall, there were 132 R-qualified results in this dataset. The R-qualified results comprised 2.86 percent (132 of 4621 results) of the total number of distinct results; therefore the data validation process demonstrated that 97.14 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.9.5.5 Comparability

There were no issues affecting comparability in this data set.

N.9.6 SWMU 10 Surface Soil PARCC

N.9.6.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.9.6.2 Accuracy

A total of 47 results were R-qualified as “rejected” and 17 results were otherwise qualified because of laboratory control sample exceedances. Two results were R-qualified as “rejected” and 19 results were otherwise qualified because of matrix spike/matrix spike duplicate recovery exceedances. A total of 52 results were qualified because of spiked surrogate recovery exceedances. Results R-qualified as “rejected” because of laboratory control sample exceedances and matrix spike/matrix spike recovery exceedances had an adverse effect on accuracy in this dataset.

N.9.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.9.6.4 Completeness

Overall, there were 107 R-qualified results in this dataset. The R-qualified results comprised 2.55 percent (107 of 4196 results) of the total number of distinct results; therefore the data validation process demonstrated that 97.45 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.9.6.5 Comparability

There were no issues affecting comparability in this data set.

N.9.7 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 86.02 percent (8897 of 10343 results) of the data as non-detect and further qualification was not warranted. Another 3.01 percent (311 of 10343 results) were detected and no further qualification was warranted. Another 3.88 percent (401 of 10343 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 92.90 percent (9609 of 10343 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, field duplicate reproducibility, matrix spike exceedances, serial dilution exceedances, and spiked surrogate exceedances. These amounted to 1.04 percent (108 of 10343 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 3.04 percent (314 of 10343 results) and resulted from laboratory control sample exceedances, continuing calibration, field duplicate reproducibility, holding time exceedances, initial calibration exceedances, matrix spike exceedances, spiked surrogate recovery exceedances, and reasons of “other”. A total of 0.18 percent (19 of 10343 results) were U-qualified as “non-detect” as a result of blank contamination. Another 0.06 percent (6 of 10343 results) were U-qualified as “non-detect” as a result of dual-column reproducibility. Based on the above, 4.32 percent (447 of 10343 results) are available for use as qualified. Combining the 92.90 percent with the 4.32 percent results in 97.23 percent (10056 of 10343 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (287 of 10343 results, 2.77 percent of total results) are available for use as qualified.

N.9.7.1 Discussion of Rejected Data

Table N.9-1 lists all R-qualified data for SWMU 10. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

Soil

The non-detect results for 4 VOCs (acetonitrile, bromomethane, 1,4-dioxane, and isobutanol) were rejected variously in the 16 surface soil samples collected at SWMU 10. 1,4-Dioxane and isobutanol were rejected in all surface soil samples. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Based on this information, it is unlikely that 1,4-dioxane or isobutanol would likely have been associated with the domestic sewage treated in the lagoons. Acetonitrile and bromomethane were rejected in 6 of the 16 surface soil samples. However, neither acetonitrile nor bromomethane was detected in any of the remaining 10 surface soil samples. Based on this information, it is unlikely that acetonitrile or bromomethane is present in soil at SWMU 10.

The non-detect results for six SVOCs (1,3-dichlorobenzene, 3,3-dimethylbenzidine, 4-nitroquinoline-1-oxide, a,a-dimethylphenethylamine, hexachlorocyclopentadiene, and hexachloroethane) were rejected variously in the 16 surface soil samples collected at SWMU 10. 3,3-Dimethylbenzidine and 4-nitroquinoline-1-oxide were rejected in all samples. 4-nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. 3,3-dimethylbenzidine is used as an intermediate in the production of dyes and pigments. Hexachlorocyclopentadiene was rejected in 10 of the 16 samples. However, it was not detected in the remaining 6 samples, and those results were not rejected. Hexachlorocyclopentadiene is the key intermediate in the manufacture of some pesticides, and used in the manufacture of flame retardants and some resins and dyes. 1,3-Dichlorobenzene and hexachloroethane were rejected in 6 of the 16 samples. However, neither SVOC was detected in the remaining 10 surface soil samples, the results of which were not rejected. 1,3-Dichlorobenzene is a colorless liquid used to make herbicides, insecticides, medicine, and dyes. Hexachloroethane is primarily used in smoke-producing devices. a,a-Dimethylphenethylamine was rejected in only one surface soil sample (SS-18). However, it was not detected in the remaining 15 samples, the results of which were not rejected. a,a-Dimethylphenethylamine, also known as Phentermine, is an appetite suppressant. Based on the information above, none of the above SVOCs is likely present or associated with the domestic sewage treated in the lagoons at SWMU 10.

The non-detect results for 19 VOCs (acetonitrile, 1,4-dioxane, isobutanol, benzene, m-and p-xylene, o-xylene, trichloroethene, ethylbenzene, tetrachloroethene, 1,3-dichlorobenzene, toluene, carbon tetrachloride, 1,2-dichloroethane, xylene total, 1,2-dichlorobenzene, vinyl chloride, 1,4-dichlorobenzene, 1,1-dichloroethene, and 1,1,1-trichloroethane) were rejected

variously in the 20 subsurface soil samples collected at SWMU 10. The non-detect results for 16 of these 19 VOCs (benzene, m-and p-xylene, o-xylene, trichloroethene, ethylbenzene, tetrachloroethene, 1,3-dichlorobenzene, toluene, carbon tetrachloride, 1,2-dichloroethane, xylene total, 1,2-dichlorobenzene, vinyl chloride, 1,4-dichlorobenzene, 1,1-dichloroethene, and 1,1,1-trichloroethane) were rejected in only one subsurface soil sample (SB-3). At the SB-3 location, there was a duplicate sample collected, in which none of the 16 VOCs was detected, the results of which were not rejected. Of the remaining three SVOCs (acetonitrile, 1,4-dioxane, and isobutanol), 1,4-dioxane and isobutanol were rejected in 16 of the 20 subsurface soil samples, but were not detected and not rejected in the remaining 4 samples. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Acetonitrile was rejected in 10 of the 20 subsurface soil samples but was not detected nor rejected in the other 10 subsurface soil samples. Based on the information above, none of the above VOCs is likely present or associated with the domestic sewage treated in the lagoons at SWMU 10.

The non-detect results for seven SVOCs (1,3-dichlorobenzene, 3,3-dimethylbenzidine, 4-nitroquinoline-1-oxide, a,a-dimethylphenethylamine, hexachlorocyclopentadiene, hexachloroethane, and pyridine) were rejected variously in the 16 subsurface soil samples analyzed for SVOCs. The following lists the compounds and the number of rejected non-detect results:

1,3-Dichlorobenzene (6 of 16)
3,3-Dimethylbenzidine (16 of 16)
4-Nitroquinoline-1-oxide (15 of 16)
a,a-Dimethylphenethylamine (1 of 16)
Hexachlorocyclopentadiene (9 of 16)
Hexachloroethane (6 of 16)
Pyridine (9 of 16)

Other than pyridine, these SVOCs were discussed above for surface soil. Pyridine is used to make many different products such as medicines, vitamins, food flavorings, paints, dyes, rubber products, adhesives, insecticides, and herbicides. Pyridine can also be formed from the breakdown of many natural materials in the environment. As stated for surface soil, none of the above SVOCs is likely present or associated with the domestic sewage treated in the lagoons at SWMU 10.

Groundwater

The non-detect results for five VOCs (1,4-dioxane, acetonitrile, acrolein, isobutanol, and propionitrile) were rejected variously in the five groundwater samples collected at SWMU 10. The non-detect results for 1,4-dioxane, acetonitrile, and isobutanol were rejected in all groundwater samples. These compounds are discussed above in the surface soil section. The non-detect results for acrolein and propionitrile were rejected in only two well samples (MW-1 and MW-3). These constituents were not detected in the other wells, nor were those results rejected. Acrolein is used in the preparation of polyester resin, polyurethane, propylene glycol, acrylic acid, acrylonitrile, and glycerol. Propionitrile is used as a bonding agent in chemical processes. Based on this information, none of the above VOCs is likely present or associated with the domestic sewage treated in the lagoons at SWMU 10.

The non-detect results for four SVOCs (1,4-naphthoquinone, 4-nitroquinoline-1-oxide, a,a-dimethylphenethylamine, and pyridine) were rejected in the five groundwater samples collected at SWMU 10. All four compounds are discussed above except for 1,4-naphthoquinone, which is a polymerization regulator for rubber and polyester resins and synthesis of dyes and pharmaceuticals. Based on this information, none of the above SVOCs is likely present or associated with the domestic sewage treated in the lagoons at SWMU 10.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at SWMU 10.

N.9.7.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.9-2a (surface soil), N.9-2b (subsurface soil), and N.9-2c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at SWMU 10. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential effects on the data quality and usability.

In the surface soil samples, eight non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.9-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.9-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.9-2a, the actual method detection limits for six of the eight SVOCs are significantly below the human health screening values. Therefore, had any of these six constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two SVOCs, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values only about 0.05 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically used in the production of rocket fuels. It is unlikely that either constituent was present in the sewage treatment lagoons at SWMU 10. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 10 surface soil. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 10 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same eight non-detected SVOCs (plus benzo(a)pyrene) as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.9-2b). The method detection limit for benzo(a)pyrene is also well below its human health screening value. Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in SWMU 10 subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 93 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.9-2c). However, other than for thallium, the achieved quantitation limits are similar to those concurred upon and memorialized in the Work Plan. For 27 of the 93 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 23 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Furthermore, except for the inorganics and 4-bromophenyl-phenylether, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, and chrysene, none of the 93 constituents was detected in any other media at the site. 4-Bromophenyl-phenylether is used primarily as a research chemical. The remaining SVOCs are PAHs commonly associated with petroleum product production and burning of coal, oil, and gas. Therefore, it is unlikely that any of these five SVOCs, as well as the other non-detected constituents, were present in the groundwater. Therefore, the non-detect quantitation limits greater than human health screening values in SWMU 10 groundwater do not likely affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, three non-detected SVOCs and three non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.9-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.9-3, even the target quantitation limits for the three SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.9-3, the actual method detection limits for the three SVOCs and three VOCs are significantly below the ecological screening values. Therefore, had any of these six constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 10 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.9-1
Summary of Rejected Data
SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	SVOA	CGW10FD03P-R01	4-Nitroquinoline-1-oxide	10.2	U	R	CC	UG/L
GW	SVOA	CGW10FD03P-R01	a,a-Dimethylphenethylamine	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10FD03P-R01	1,4-Naphthoquinone	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10FD03P-R01	Pyridine	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10GW01-R01	4-Nitroquinoline-1-oxide	10	U	R	CC	UG/L
GW	SVOA	CGW10GW01-R01	a,a-Dimethylphenethylamine	10	U	R	BSX	UG/L
GW	SVOA	CGW10GW01-R01	1,4-Naphthoquinone	10	U	R	BSX	UG/L
GW	SVOA	CGW10GW01-R01	Pyridine	10	U	R	BSX	UG/L
GW	SVOA	CGW10GW02-R01	4-Nitroquinoline-1-oxide	10	U	R	CC	UG/L
GW	SVOA	CGW10GW02-R01	a,a-Dimethylphenethylamine	10	U	R	BSX	UG/L
GW	SVOA	CGW10GW02-R01	1,4-Naphthoquinone	10	U	R	BSX	UG/L
GW	SVOA	CGW10GW02-R01	Pyridine	10	U	R	BSX	UG/L
GW	SVOA	CGW10GW03-R01	4-Nitroquinoline-1-oxide	10.1	U	R	CC	UG/L
GW	SVOA	CGW10GW03-R01	a,a-Dimethylphenethylamine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW10GW03-R01	1,4-Naphthoquinone	10.1	U	R	BSX	UG/L
GW	SVOA	CGW10GW03-R01	Pyridine	10.1	U	R	BSX	UG/L
GW	SVOA	CGW10GW04-R01	4-Nitroquinoline-1-oxide	10.2	U	R	CC	UG/L
GW	SVOA	CGW10GW04-R01	a,a-Dimethylphenethylamine	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10GW04-R01	1,4-Naphthoquinone	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10GW04-R01	Pyridine	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10GW05-R01	4-Nitroquinoline-1-oxide	10.2	U	R	CC	UG/L
GW	SVOA	CGW10GW05-R01	a,a-Dimethylphenethylamine	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10GW05-R01	1,4-Naphthoquinone	10.2	U	R	BSX	UG/L
GW	SVOA	CGW10GW05-R01	Pyridine	10.2	U	R	BSX	UG/L
GW	VOA	CGW10FD03P-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10FD03P-R01	Acrolein	4	U	R	ICX	UG/L
GW	VOA	CGW10FD03P-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW10FD03P-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW10FD03P-R01	Propionitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW01-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW01-R01	Acrolein	4	U	R	ICX	UG/L
GW	VOA	CGW10GW01-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW10GW01-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW10GW01-R01	Propionitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW02-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW02-R01	1,4-Dioxane	40	U	R	ICX	UG/L

Table N.9-1
 Summary of Rejected Data
 SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	VOA	CGW10GW02-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW10GW03-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW03-R01	Acrolein	4	U	R	ICX	UG/L
GW	VOA	CGW10GW03-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW10GW03-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW10GW03-R01	Propionitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW04-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW04-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW10GW04-R01	Isobutanol	20	U	R	ICX	UG/L
GW	VOA	CGW10GW05-R01	Acetonitrile	10	U	R	ICX	UG/L
GW	VOA	CGW10GW05-R01	1,4-Dioxane	40	U	R	ICX	UG/L
GW	VOA	CGW10GW05-R01	Isobutanol	20	U	R	ICX	UG/L
SB	SVOA	CGW10FD02P-R01	4-Nitroquinoline-1-oxide	398	U	R	ICX	UG/KG
SB	SVOA	CGW10FD02P-R01	1,3-Dichlorobenzene	398	U	R	BSX	UG/KG
SB	SVOA	CGW10FD02P-R01	3,3-Dimethylbenzidine	398	U	R	BSX	UG/KG
SB	SVOA	CGW10FD02P-R01	Hexachloroethane	398	U	R	BSX	UG/KG
SB	SVOA	CGW10FD04P-R01	4-Nitroquinoline-1-oxide	377	U	R	ICX	UG/KG
SB	SVOA	CGW10FD04P-R01	1,3-Dichlorobenzene	377	U	R	BSX	UG/KG
SB	SVOA	CGW10FD04P-R01	3,3-Dimethylbenzidine	377	U	R	BSX	UG/KG
SB	SVOA	CGW10FD04P-R01	Hexachloroethane	377	U	R	BSX	UG/KG
SB	SVOA	CGW10SB05-R01-5	4-Nitroquinoline-1-oxide	402	U	R	ICX	UG/KG
SB	SVOA	CGW10SB05-R01-5	1,3-Dichlorobenzene	402	U	R	BSX	UG/KG
SB	SVOA	CGW10SB05-R01-5	3,3-Dimethylbenzidine	402	U	R	BSX	UG/KG
SB	SVOA	CGW10SB05-R01-5	Hexachloroethane	402	U	R	BSX	UG/KG
SB	SVOA	CGW10SB06-R01-5	3,3-Dimethylbenzidine	383	U	R	BSX	UG/KG
SB	SVOA	CGW10SB07-R01-5	4-Nitroquinoline-1-oxide	386	U	R	ICX	UG/KG
SB	SVOA	CGW10SB07-R01-5	3,3-Dimethylbenzidine	386	U	R	BSX	UG/KG
SB	SVOA	CGW10SB07-R01-5	Hexachlorocyclopentadiene	386	U	R	BSX	UG/KG
SB	SVOA	CGW10SB07-R01-5	Pyridine	386	U	R	BSX	UG/KG
SB	SVOA	CGW10SB08-R01-5	4-Nitroquinoline-1-oxide	390	U	R	ICX	UG/KG
SB	SVOA	CGW10SB08-R01-5	1,3-Dichlorobenzene	390	U	R	BSX	UG/KG
SB	SVOA	CGW10SB08-R01-5	3,3-Dimethylbenzidine	390	U	R	BSX	UG/KG
SB	SVOA	CGW10SB08-R01-5	Hexachloroethane	390	U	R	BSX	UG/KG
SB	SVOA	CGW10SB09-R01-5	4-Nitroquinoline-1-oxide	376	U	R	ICX	UG/KG
SB	SVOA	CGW10SB09-R01-5	3,3-Dimethylbenzidine	376	U	R	BSX	UG/KG
SB	SVOA	CGW10SB09-R01-5	Hexachlorocyclopentadiene	376	U	R	BSX	UG/KG

Table N.9-1
 Summary of Rejected Data
 SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	SVOA	CGW10SB09-R01-5	Pyridine	376	U	R	BSX	UG/KG
SB	SVOA	CGW10SB10-R01-5	4-Nitroquinoline-1-oxide	382	U	R	ICX	UG/KG
SB	SVOA	CGW10SB10-R01-5	3,3-Dimethylbenzidine	382	U	R	BSX	UG/KG
SB	SVOA	CGW10SB10-R01-5	Hexachlorocyclopentadiene	382	U	R	BSX	UG/KG
SB	SVOA	CGW10SB10-R01-5	a,a-Dimethylphenethylamine	382	U	R	MSX	UG/KG
SB	SVOA	CGW10SB10-R01-5	Pyridine	382	U	R	BSX	UG/KG
SB	SVOA	CGW10SB11-R01-5	4-Nitroquinoline-1-oxide	373	U	R	ICX	UG/KG
SB	SVOA	CGW10SB11-R01-5	3,3-Dimethylbenzidine	373	U	R	BSX	UG/KG
SB	SVOA	CGW10SB11-R01-5	Hexachlorocyclopentadiene	373	U	R	BSX	UG/KG
SB	SVOA	CGW10SB11-R01-5	Pyridine	373	U	R	BSX	UG/KG
SB	SVOA	CGW10SB12-R01-5	4-Nitroquinoline-1-oxide	383	U	R	ICX	UG/KG
SB	SVOA	CGW10SB12-R01-5	3,3-Dimethylbenzidine	383	U	R	BSX	UG/KG
SB	SVOA	CGW10SB12-R01-5	Hexachlorocyclopentadiene	383	U	R	BSX	UG/KG
SB	SVOA	CGW10SB12-R01-5	Pyridine	383	U	R	BSX	UG/KG
SB	SVOA	CGW10SB13-R01-5	4-Nitroquinoline-1-oxide	394	U	R	ICX	UG/KG
SB	SVOA	CGW10SB13-R01-5	3,3-Dimethylbenzidine	394	U	R	BSX	UG/KG
SB	SVOA	CGW10SB13-R01-5	Hexachlorocyclopentadiene	394	U	R	BSX	UG/KG
SB	SVOA	CGW10SB13-R01-5	Pyridine	394	U	R	BSX	UG/KG
SB	SVOA	CGW10SB14-R01-5	4-Nitroquinoline-1-oxide	365	U	R	ICX	UG/KG
SB	SVOA	CGW10SB14-R01-5	3,3-Dimethylbenzidine	365	U	R	BSX	UG/KG
SB	SVOA	CGW10SB14-R01-5	Hexachlorocyclopentadiene	365	U	R	BSX	UG/KG
SB	SVOA	CGW10SB14-R01-5	Pyridine	365	U	R	BSX	UG/KG
SB	SVOA	CGW10SB15-R01-5	4-Nitroquinoline-1-oxide	369	U	R	ICX	UG/KG
SB	SVOA	CGW10SB15-R01-5	3,3-Dimethylbenzidine	369	U	R	BSX	UG/KG
SB	SVOA	CGW10SB15-R01-5	Hexachlorocyclopentadiene	369	U	R	BSX	UG/KG
SB	SVOA	CGW10SB15-R01-5	Pyridine	369	U	R	BSX	UG/KG
SB	SVOA	CGW10SB16-R01-5	4-Nitroquinoline-1-oxide	386	U	R	ICX	UG/KG
SB	SVOA	CGW10SB16-R01-5	1,3-Dichlorobenzene	386	U	R	BSX	UG/KG
SB	SVOA	CGW10SB16-R01-5	3,3-Dimethylbenzidine	386	U	R	BSX	UG/KG
SB	SVOA	CGW10SB16-R01-5	Hexachloroethane	386	U	R	BSX	UG/KG
SB	SVOA	CGW10SB17-R01-5	4-Nitroquinoline-1-oxide	377	U	R	ICX	UG/KG
SB	SVOA	CGW10SB17-R01-5	1,3-Dichlorobenzene	377	U	R	BSX	UG/KG
SB	SVOA	CGW10SB17-R01-5	3,3-Dimethylbenzidine	377	U	R	BSX	UG/KG
SB	SVOA	CGW10SB17-R01-5	Hexachloroethane	377	U	R	BSX	UG/KG
SB	SVOA	CGW10SB18-R01-5	4-Nitroquinoline-1-oxide	353	U	R	ICX	UG/KG
SB	SVOA	CGW10SB18-R01-5	1,3-Dichlorobenzene	353	U	R	BSX	UG/KG

Table N.9-1
Summary of Rejected Data
SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	SVOA	CGW10SB18-R01-5	3,3-Dimethylbenzidine	353	U	R	BSX	UG/KG
SB	SVOA	CGW10SB18-R01-5	Hexachloroethane	353	U	R	BSX	UG/KG
SB	SVOA	CGW10SB19-R01-5	4-Nitroquinoline-1-oxide	367	U	R	ICX	UG/KG
SB	SVOA	CGW10SB19-R01-5	3,3-Dimethylbenzidine	367	U	R	BSX	UG/KG
SB	SVOA	CGW10SB19-R01-5	Hexachlorocyclopentadiene	367	U	R	BSX	UG/KG
SB	SVOA	CGW10SB19-R01-5	Pyridine	367	U	R	BSX	UG/KG
SB	SVOA	CGW10SB20-R01-5	4-Nitroquinoline-1-oxide	380	U	R	ICX	UG/KG
SB	SVOA	CGW10SB20-R01-5	1,3-Dichlorobenzene	380	U	R	BSX	UG/KG
SB	SVOA	CGW10SB20-R01-5	3,3-Dimethylbenzidine	380	U	R	BSX	UG/KG
SB	SVOA	CGW10SB20-R01-5	Hexachloroethane	380	U	R	BSX	UG/KG
SB	VOA	CGW10FD02P-R01	1,4-Dioxane	41.6	U	R	ICX	UG/KG
SB	VOA	CGW10FD02P-R01	Isobutanol	30.2	U	R	ICX	UG/KG
SB	VOA	CGW10FD04P-R01	1,4-Dioxane	37.8	U	R	ICX	UG/KG
SB	VOA	CGW10FD04P-R01	Isobutanol	27.5	U	R	ICX	UG/KG
SB	VOA	CGW10SB05-R01-5	1,4-Dioxane	50	U	R	ICX	UG/KG
SB	VOA	CGW10SB05-R01-5	Isobutanol	36.4	U	R	ICX	UG/KG
SB	VOA	CGW10SB06-R01-5	Acetonitrile	9.2	U	R	ICX	UG/KG
SB	VOA	CGW10SB06-R01-5	1,4-Dioxane	40.6	U	R	ICX	UG/KG
SB	VOA	CGW10SB06-R01-5	Isobutanol	29.5	U	R	ICX	UG/KG
SB	VOA	CGW10SB07-R01-5	Acetonitrile	9.3	U	R	ICX	UG/KG
SB	VOA	CGW10SB07-R01-5	1,4-Dioxane	40.9	U	R	ICX	UG/KG
SB	VOA	CGW10SB07-R01-5	Isobutanol	29.7	U	R	ICX	UG/KG
SB	VOA	CGW10SB08-R01-5	1,4-Dioxane	45.6	U	R	ICX	UG/KG
SB	VOA	CGW10SB08-R01-5	Isobutanol	33.2	U	R	ICX	UG/KG
SB	VOA	CGW10SB09-R01-5	Acetonitrile	10.1	U	R	ICX	UG/KG
SB	VOA	CGW10SB09-R01-5	1,4-Dioxane	44.5	U	R	ICX	UG/KG
SB	VOA	CGW10SB09-R01-5	Isobutanol	32.4	U	R	ICX	UG/KG
SB	VOA	CGW10SB10-R01-5	Acetonitrile	9.4	U	R	ICX	UG/KG
SB	VOA	CGW10SB10-R01-5	1,4-Dioxane	41.3	U	R	ICX	UG/KG
SB	VOA	CGW10SB10-R01-5	Isobutanol	30	U	R	ICX	UG/KG
SB	VOA	CGW10SB11-R01-5	Acetonitrile	9.6	U	R	ICX	UG/KG
SB	VOA	CGW10SB11-R01-5	1,4-Dioxane	42.3	U	R	ICX	UG/KG
SB	VOA	CGW10SB11-R01-5	Isobutanol	30.7	U	R	ICX	UG/KG
SB	VOA	CGW10SB12-R01-5	Acetonitrile	9.8	U	R	ICX	UG/KG
SB	VOA	CGW10SB12-R01-5	1,4-Dioxane	43.3	U	R	ICX	UG/KG
SB	VOA	CGW10SB12-R01-5	Isobutanol	31.5	U	R	ICX	UG/KG

Table N.9-1
Summary of Rejected Data
SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	VOA	CGW10SB13-R01-5	Acetonitrile	10.3	U	R	ICX	UG/KG
SB	VOA	CGW10SB13-R01-5	1,4-Dioxane	45.4	U	R	ICX	UG/KG
SB	VOA	CGW10SB13-R01-5	Isobutanol	33	U	R	ICX	UG/KG
SB	VOA	CGW10SB14-R01-5	Acetonitrile	9	U	R	ICX	UG/KG
SB	VOA	CGW10SB14-R01-5	1,4-Dioxane	39.6	U	R	ICX	UG/KG
SB	VOA	CGW10SB14-R01-5	Isobutanol	28.8	U	R	ICX	UG/KG
SB	VOA	CGW10SB15-R01-5	Acetonitrile	9.1	U	R	ICX	UG/KG
SB	VOA	CGW10SB15-R01-5	1,4-Dioxane	40.2	U	R	ICX	UG/KG
SB	VOA	CGW10SB15-R01-5	Isobutanol	29.2	U	R	ICX	UG/KG
SB	VOA	CGW10SB16-R01-5	1,4-Dioxane	52.2	U	R	ICX	UG/KG
SB	VOA	CGW10SB16-R01-5	Isobutanol	38	U	R	ICX	UG/KG
SB	VOA	CGW10SB17-R01-5	1,4-Dioxane	40	U	R	ICX	UG/KG
SB	VOA	CGW10SB17-R01-5	Isobutanol	29	U	R	ICX	UG/KG
SB	VOA	CGW10SB18-R01-5	1,4-Dioxane	41.9	U	R	ICX	UG/KG
SB	VOA	CGW10SB18-R01-5	Isobutanol	30.5	U	R	ICX	UG/KG
SB	VOA	CGW10SB19-R01-5	Acetonitrile	8.6	U	R	ICX	UG/KG
SB	VOA	CGW10SB19-R01-5	1,4-Dioxane	38	U	R	ICX	UG/KG
SB	VOA	CGW10SB19-R01-5	Isobutanol	27.6	U	R	ICX	UG/KG
SB	VOA	CGW10SB20-R01-5	1,4-Dioxane	39.1	U	R	ICX	UG/KG
SB	VOA	CGW10SB20-R01-5	Isobutanol	28.4	U	R	ICX	UG/KG
SB	VOA	NDD012	Benzene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	m- and p-Xylene	2	U	R	MSX	UG/KG
SB	VOA	NDD012	o-Xylene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Trichloroethene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	1,3-Dichlorobenzene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Toluene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Carbon tetrachloride	1	U	R	MSX	UG/KG
SB	VOA	NDD012	1,2-Dichloroethane	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Xylene, total	2	U	R	MSX	UG/KG
SB	VOA	NDD012	1,2-Dichlorobenzene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Vinyl chloride	1	U	R	MSX	UG/KG
SB	VOA	NDD012	1,4-Dichlorobenzene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	1,1-Dichloroethene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Ethylbenzene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	Tetrachloroethene	1	U	R	MSX	UG/KG
SB	VOA	NDD012	1,1,1-Trichloroethane	1	U	R	MSX	UG/KG

Table N.9-1
 Summary of Rejected Data
 SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	PEST/PCB	CGW10SS18-R01	Endosulfan I	2	U	R	MSX	UG/KG
SS	SVOA	CGW10FD01P-R01	4-Nitroquinoline-1-oxide	363	U	R	ICX	UG/KG
SS	SVOA	CGW10FD01P-R01	3,3-Dimethylbenzidine	363	U	R	BSX	UG/KG
SS	SVOA	CGW10FD01P-R01	Hexachlorocyclopentadiene	363	U	R	BSX	UG/KG
SS	SVOA	CGW10SS05-R01	4-Nitroquinoline-1-oxide	372	U	R	ICX	UG/KG
SS	SVOA	CGW10SS05-R01	1,3-Dichlorobenzene	372	U	R	BSX	UG/KG
SS	SVOA	CGW10SS05-R01	3,3-Dimethylbenzidine	372	U	R	BSX	UG/KG
SS	SVOA	CGW10SS05-R01	Hexachloroethane	372	U	R	BSX	UG/KG
SS	SVOA	CGW10SS06-R01	4-Nitroquinoline-1-oxide	400	U	R	ICX	UG/KG
SS	SVOA	CGW10SS06-R01	3,3-Dimethylbenzidine	400	U	R	BSX	UG/KG
SS	SVOA	CGW10SS06-R01	Hexachlorocyclopentadiene	400	U	R	BSX	UG/KG
SS	SVOA	CGW10SS07-R01	4-Nitroquinoline-1-oxide	392	U	R	ICX	UG/KG
SS	SVOA	CGW10SS07-R01	3,3-Dimethylbenzidine	392	U	R	BSX	UG/KG
SS	SVOA	CGW10SS07-R01	Hexachlorocyclopentadiene	392	U	R	BSX	UG/KG
SS	SVOA	CGW10SS08-R01	4-Nitroquinoline-1-oxide	401	U	R	ICX	UG/KG
SS	SVOA	CGW10SS08-R01	1,3-Dichlorobenzene	401	U	R	BSX	UG/KG
SS	SVOA	CGW10SS08-R01	3,3-Dimethylbenzidine	401	U	R	BSX	UG/KG
SS	SVOA	CGW10SS08-R01	Hexachloroethane	401	U	R	BSX	UG/KG
SS	SVOA	CGW10SS09-R01	4-Nitroquinoline-1-oxide	375	U	R	ICX	UG/KG
SS	SVOA	CGW10SS09-R01	3,3-Dimethylbenzidine	375	U	R	BSX	UG/KG
SS	SVOA	CGW10SS09-R01	Hexachlorocyclopentadiene	375	U	R	BSX	UG/KG
SS	SVOA	CGW10SS10-R01	4-Nitroquinoline-1-oxide	404	U	R	ICX	UG/KG
SS	SVOA	CGW10SS10-R01	3,3-Dimethylbenzidine	404	U	R	BSX	UG/KG
SS	SVOA	CGW10SS10-R01	Hexachlorocyclopentadiene	404	U	R	BSX	UG/KG
SS	SVOA	CGW10SS11-R01	4-Nitroquinoline-1-oxide	374	U	R	ICX	UG/KG
SS	SVOA	CGW10SS11-R01	3,3-Dimethylbenzidine	374	U	R	BSX	UG/KG
SS	SVOA	CGW10SS11-R01	Hexachlorocyclopentadiene	374	U	R	BSX	UG/KG
SS	SVOA	CGW10SS12-R01	4-Nitroquinoline-1-oxide	361	U	R	ICX	UG/KG
SS	SVOA	CGW10SS12-R01	3,3-Dimethylbenzidine	361	U	R	BSX	UG/KG
SS	SVOA	CGW10SS12-R01	Hexachlorocyclopentadiene	361	U	R	BSX	UG/KG
SS	SVOA	CGW10SS13-R01	4-Nitroquinoline-1-oxide	376	U	R	ICX	UG/KG
SS	SVOA	CGW10SS13-R01	3,3-Dimethylbenzidine	376	U	R	BSX	UG/KG
SS	SVOA	CGW10SS13-R01	Hexachlorocyclopentadiene	376	U	R	BSX	UG/KG
SS	SVOA	CGW10SS14-R01	4-Nitroquinoline-1-oxide	382	U	R	ICX	UG/KG
SS	SVOA	CGW10SS14-R01	3,3-Dimethylbenzidine	382	U	R	BSX	UG/KG
SS	SVOA	CGW10SS14-R01	Hexachlorocyclopentadiene	382	U	R	BSX	UG/KG

Table N.9-1
Summary of Rejected Data
SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW10SS15-R01	4-Nitroquinoline-1-oxide	379	U	R	ICX	UG/KG
SS	SVOA	CGW10SS15-R01	3,3-Dimethylbenzidine	379	U	R	BSX	UG/KG
SS	SVOA	CGW10SS15-R01	Hexachlorocyclopentadiene	379	U	R	BSX	UG/KG
SS	SVOA	CGW10SS16-R01	4-Nitroquinoline-1-oxide	387	U	R	ICX	UG/KG
SS	SVOA	CGW10SS16-R01	1,3-Dichlorobenzene	387	U	R	BSX	UG/KG
SS	SVOA	CGW10SS16-R01	3,3-Dimethylbenzidine	387	U	R	BSX	UG/KG
SS	SVOA	CGW10SS16-R01	Hexachloroethane	387	U	R	BSX	UG/KG
SS	SVOA	CGW10SS17-R01	4-Nitroquinoline-1-oxide	390	U	R	ICX	UG/KG
SS	SVOA	CGW10SS17-R01	1,3-Dichlorobenzene	390	U	R	BSX	UG/KG
SS	SVOA	CGW10SS17-R01	3,3-Dimethylbenzidine	390	U	R	BSX	UG/KG
SS	SVOA	CGW10SS17-R01	Hexachloroethane	390	U	R	BSX	UG/KG
SS	SVOA	CGW10SS18-R01	4-Nitroquinoline-1-oxide	391	U	R	ICX	UG/KG
SS	SVOA	CGW10SS18-R01	1,3-Dichlorobenzene	391	U	R	BSX	UG/KG
SS	SVOA	CGW10SS18-R01	3,3-Dimethylbenzidine	391	U	R	BSX	UG/KG
SS	SVOA	CGW10SS18-R01	Hexachloroethane	391	U	R	BSX	UG/KG
SS	SVOA	CGW10SS18-R01	a,a-Dimethylphenethylamine	391	U	R	MSX	UG/KG
SS	SVOA	CGW10SS19-R01	4-Nitroquinoline-1-oxide	384	U	R	ICX	UG/KG
SS	SVOA	CGW10SS19-R01	3,3-Dimethylbenzidine	384	U	R	BSX	UG/KG
SS	SVOA	CGW10SS19-R01	Hexachlorocyclopentadiene	384	U	R	BSX	UG/KG
SS	SVOA	CGW10SS20-R01	4-Nitroquinoline-1-oxide	371	U	R	ICX	UG/KG
SS	SVOA	CGW10SS20-R01	1,3-Dichlorobenzene	371	U	R	BSX	UG/KG
SS	SVOA	CGW10SS20-R01	3,3-Dimethylbenzidine	371	U	R	BSX	UG/KG
SS	SVOA	CGW10SS20-R01	Hexachloroethane	371	U	R	BSX	UG/KG
SS	VOA	CGW10FD01P-R01	Acetonitrile	10.6	U	R	ICX	UG/KG
SS	VOA	CGW10FD01P-R01	Bromomethane	10.6	U	R	BSX	UG/KG
SS	VOA	CGW10FD01P-R01	1,4-Dioxane	46.5	U	R	ICX	UG/KG
SS	VOA	CGW10FD01P-R01	Isobutanol	33.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS05-R01	1,4-Dioxane	42.4	U	R	ICX	UG/KG
SS	VOA	CGW10SS05-R01	Isobutanol	30.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS06-R01	Acetonitrile	11	U	R	ICX	UG/KG
SS	VOA	CGW10SS06-R01	Bromomethane	11	U	R	BSX	UG/KG
SS	VOA	CGW10SS06-R01	1,4-Dioxane	48.4	U	R	ICX	UG/KG
SS	VOA	CGW10SS06-R01	Isobutanol	35.2	U	R	ICX	UG/KG
SS	VOA	CGW10SS07-R01	Acetonitrile	10.3	U	R	ICX	UG/KG
SS	VOA	CGW10SS07-R01	Bromomethane	10.3	U	R	BSX	UG/KG
SS	VOA	CGW10SS07-R01	1,4-Dioxane	45.2	U	R	ICX	UG/KG

Table N.9-1
Summary of Rejected Data
SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW10SS07-R01	Isobutanol	32.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS08-R01	1,4-Dioxane	47.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS08-R01	Isobutanol	34.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS09-R01	Acetonitrile	12.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS09-R01	Bromomethane	12.6	U	R	BSX	UG/KG
SS	VOA	CGW10SS09-R01	1,4-Dioxane	55.2	U	R	ICX	UG/KG
SS	VOA	CGW10SS09-R01	Isobutanol	40.2	U	R	ICX	UG/KG
SS	VOA	CGW10SS10-R01	Acetonitrile	11.2	U	R	ICX	UG/KG
SS	VOA	CGW10SS10-R01	Bromomethane	11.2	U	R	BSX	UG/KG
SS	VOA	CGW10SS10-R01	1,4-Dioxane	49.4	U	R	ICX	UG/KG
SS	VOA	CGW10SS10-R01	Isobutanol	35.9	U	R	ICX	UG/KG
SS	VOA	CGW10SS11-R01	Acetonitrile	9.3	U	R	ICX	UG/KG
SS	VOA	CGW10SS11-R01	Bromomethane	9.3	U	R	BSX	UG/KG
SS	VOA	CGW10SS11-R01	1,4-Dioxane	40.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS11-R01	Isobutanol	29.7	U	R	ICX	UG/KG
SS	VOA	CGW10SS12-R01	Acetonitrile	9.5	U	R	ICX	UG/KG
SS	VOA	CGW10SS12-R01	Bromomethane	9.5	U	R	BSX	UG/KG
SS	VOA	CGW10SS12-R01	1,4-Dioxane	41.7	U	R	ICX	UG/KG
SS	VOA	CGW10SS12-R01	Isobutanol	30.4	U	R	ICX	UG/KG
SS	VOA	CGW10SS13-R01	1,4-Dioxane	42.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS13-R01	Isobutanol	31	U	R	ICX	UG/KG
SS	VOA	CGW10SS14-R01	1,4-Dioxane	45.1	U	R	ICX	UG/KG
SS	VOA	CGW10SS14-R01	Isobutanol	32.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS15-R01	1,4-Dioxane	40.7	U	R	ICX	UG/KG
SS	VOA	CGW10SS15-R01	Isobutanol	29.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS16-R01	1,4-Dioxane	46.1	U	R	ICX	UG/KG
SS	VOA	CGW10SS16-R01	Isobutanol	33.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS17-R01	1,4-Dioxane	43.6	U	R	ICX	UG/KG
SS	VOA	CGW10SS17-R01	Isobutanol	31.7	U	R	ICX	UG/KG
SS	VOA	CGW10SS18-R01	1,4-Dioxane	46.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS18-R01	Isobutanol	34	U	R	ICX	UG/KG
SS	VOA	CGW10SS19-R01	1,4-Dioxane	41.8	U	R	ICX	UG/KG
SS	VOA	CGW10SS19-R01	Isobutanol	30.4	U	R	ICX	UG/KG
SS	VOA	CGW10SS20-R01	1,4-Dioxane	45.2	U	R	ICX	UG/KG
SS	VOA	CGW10SS20-R01	Isobutanol	32.8	U	R	ICX	UG/KG

Table N.9-1

Summary of Rejected Data

SWMU 10

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
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Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

CC: Continuing Calibration

ICX: Initial Calibration Exceedance

MSX: Matrix Spike Exceedances

Table N.9-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 10

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Dibenz(a,h)anthracene	mg/kg	0.33	0.363-0.404	0.0426 to 0.0477	0.062
Hexachlorobenzene	mg/kg	0.33	0.363-0.404	0.0579 to 0.0649	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.363-0.404	0.0404 to 0.0453	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.363-0.404	0.047 to 0.0526	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.363-0.404	0.0415 to 0.0465	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.363-0.404	0.059 to 0.0661	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.363-0.404	0.0516 to 0.0636	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.363-0.404	0.0776 to 0.0869	0.034

Table N.9-2b Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - SWMU 10					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	mg/kg	0.33	0.353-0.402	0.0321 to 0.0365	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.353-0.402	0.0417 to 0.0474	0.062
Hexachlorobenzene	mg/kg	0.33	0.353-0.402	0.0567 to 0.0645	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.353-0.402	0.0396 to 0.054	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.353-0.402	0.046 to 0.0523	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.353-0.402	0.0406 to 0.0462	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.353-0.402	0.0578 to 0.0657	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.353-0.402	0.0492 to 0.0622	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.353-0.402	0.0759 to 0.0864	0.034

Table N.9-2c
Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Groundwater - SWMU 10

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Antimony	ug/L	60	30-300	2.5 to 12.5	1.5
Beryllium	ug/L	5	5- 25	0.0945 to 0.472	7.3
Cadmium	ug/L	5	5- 25	0.356 to 1.78	1.8
Silver	ug/L	10	10 - 50	0.472 to 2.36	18
Thallium	ug/L	10	50-250	2.54 to 12.7	0.24
Arsenic-dissolved	ug/L	10	10 - 50	2.04 to 10.2	0.045
Beryllium-dissolved	ug/L	5	5 - 25	0.0945 to 0.472	7.3
Cadmium-dissolved	ug/L	5	5 - 25	0.356 to 1.78	1.8
1,1,1,2-Tetrachloroethane	ug/L	1	1 - 1	0.25 to 0.25	0.43
1,1,2,2-Tetrachloroethane	ug/L	1	1 - 1	0.24 to 0.24	0.055
1,1,2-Trichloroethane	ug/L	1	1 - 1	0.4 to 0.4	0.2
1,2,3-Trichloropropane	ug/L	1	1 - 1	0.41 to 0.41	0.0056
1,2-Dibromo-3-chloropropane	ug/L	2	1 - 1	0.78 to 0.78	0.035
1,2-Dibromoethane	ug/L	1	1 - 1	0.25 to 0.25	0.0056
1,2-Dichloroethane	ug/L	1	1 - 1	0.25 to 0.25	0.12
1,2-Dichloropropane	ug/L	1	1 - 1	0.24 to 0.24	0.16
1,4-Dichlorobenzene	ug/L	10	1 - 1	0.1 to 2.8	0.5
Acrolein	ug/L	20	4 - 4	1.8 to 1.8	0.0042
Acrylonitrile	ug/L	20	2 - 2	0.81 to 0.81	0.039
Benzene	ug/L	1	1 - 1	0.18 to 0.18	0.35
Benzyl chloride	ug/L	-	1 - 1	0.15 to 0.15	0.066
Bromodichloromethane	ug/L	1	1 - 1	0.19 to 0.19	0.18
Bromomethane	ug/L	10	1 - 1	0.41 to 0.41	0.87
Carbon tetrachloride	ug/L	1	1 - 1	0.25 to 0.25	0.17
Chloroform	ug/L	1	1 - 1	0.15 to 0.15	0.17
Dibromochloromethane	ug/L	1	1 - 1	0.16 to 0.16	0.13
Dibromomethane	ug/L	1	1 - 1	0.24 to 0.24	0.13
Methacrylonitrile	ug/L	2	10 - 10	2 to 2	0.1
Tetrachloroethene	ug/L	1	1 - 1	0.38 to 0.38	0.1
Trichloroethene	ug/L	1	1 - 1	0.2 to 0.2	0.028
Vinyl chloride	ug/L	2	1 - 1	0.33 to 0.33	0.02
cis-1,3-Dichloropropene	ug/L	1	1 - 1	0.2 to 0.2	0.4
trans-1,3-Dichloropropene	ug/L	1	1 - 1	0.24 to 0.24	0.4
trans-1,4-Dichloro-2-butene	ug/L	1	2 - 2	1.8 to 1.8	0.0012
1,2,4,5-Tetrachlorobenzene	ug/L	10	10-10.2	2.2 to 2.2	1.1
1,2,4-Trichlorobenzene	ug/L	10	10-10.2	2.6 to 2.6	0.72
1,3-Dinitrobenzene	ug/L	5	10-10.2	0.11 to 2.6	0.36
1,4-Dichlorobenzene	ug/L	10	10-10.2	0.1 to 2.8	0.5
2,2'-Oxybis(1-chloropropane)	ug/L	10	10-10.2	3.3 to 3.4 ug/L	0.27
2,4,6-Trichlorophenol	ug/L	10	10-10.2	3.6 to 3.7	0.36
2,4-Dinitrophenol	ug/L	50	50.2-51	5.6 to 5.7	7.3
2,4-Dinitrotoluene	ug/L	10	10-10.2	0.13 to 2.8	7.3
2,6-Dinitrotoluene	ug/L	10	10-10.2	0.13 to 2.8	3.6
2-Chlorophenol	ug/L	10	10-10.2	2.9 to 3	3
2-Methyl-5-nitroaniline	ug/L	-	10-10.2	2.6 to 2.6	2
2-Methylaniline	ug/L	-	10-10.2	2.7 to 2.8	0.28
2-Methylnaphthalene	ug/L	10	10-10.2	2.8 to 2.8	2.4
2-Nitroaniline	ug/L	50	50.2-51	3 to 3.1	11
2-Nitrophenol	ug/L	10	10-10.2	3.4 to 3.5	3
3,3'-Dichlorobenzidine	ug/L	20	20.1-20.4	2.7 to 2.8	0.15
3,3'-Dimethylbenzidine	ug/L	50	10-10.2	5.9 to 6	0.029
3-Nitroaniline	ug/L	50	50.2-51	2.8 to 2.8	1.1
4,6-Dinitro-2-methylphenol	ug/L	50	50.2-51	3.3 to 3.4	0.36
4-Bromophenyl-phenylether	ug/L	10	10-10.2	2.3 to 2.3	0.27
4-Chloro-3-methylphenol	ug/L	10	10-10.2	2.7 to 2.8	3
4-Chlorophenyl-phenylether	ug/L	10	10-10.2	2.5 to 2.6	0.27
4-Nitroaniline	ug/L	50	50.2-51	2.8 to 2.8	3.2
4-Nitrophenol	ug/L	50	50.2-51	2.9 to 3	0.34
Aramite	ug/L	20	10-10.2	2.5 to 2.6	2.7
Benzo(a)anthracene	ug/L	10	10-10.2	2.6 to 2.6	0.092

Table N.9-2c Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Groundwater - SWMU 10					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	ug/L	10	10-10.2	2.8 to 2.8	0.0092
Benzo(b)fluoranthene	ug/L	10	10-10.2	2.6 to 2.6	0.092
Benzo(k)fluoranthene	ug/L	10	10-10.2	2.9 to 3	0.92
Carbazole	ug/L	10	10-10.2	3.1 to 3.2	3.4
Chlorobenzilate	ug/L	10	10-10.2	2.5 to 2.6	0.25
Chrysene	ug/L	10	10-10.2	2.9 to 3	9.2
Diallate	ug/L	20	10-10.2	2.6 to 2.6	1.1
Dibenz(a,h)anthracene	ug/L	10	10-10.2	2.7 to 2.8	0.0092
Dibenzofuran	ug/L	10	10-10.2	2.7 to 2.8	1.2
Hexachlorobenzene	ug/L	10	10-10.2	2.6 to 2.6	0.042
Hexachlorobutadiene	ug/L	10	10-10.2	2.5 to 2.6	0.86
Hexachloroethane	ug/L	10	10-10.2	2.6 to 2.6	3.6
Indeno(1,2,3-cd)pyrene	ug/L	10	10-10.2	2.6 to 2.6	0.092
Naphthalene	ug/L	10	10-10.2	2.8 to 2.8	0.62
Nitrobenzene	ug/L	10	10-10.2	0.12 to 2.8	0.34
Pentachlorobenzene	ug/L	10	10-10.2	2.2 to 2.2	2.9
Pentachloronitrobenzene	ug/L	10	10-10.2	2.4 to 2.4	0.26
Pentachlorophenol	ug/L	50	50.2-51	2.6 to 2.6	0.56
bis(2-Chloroethoxy)methane	ug/L	10	10-10.2	3.5 to 3.6	0.27
bis(2-Chloroethyl)ether	ug/L	10	10-10.2	3 to 3.1	0.01
bis(2-Ethylhexyl)phthalate	ug/L	10	10-10.2	4.4 to 4.5	4.8
n-Nitroso-di-n-butylamine	ug/L	10	10-10.2	2.7 to 2.8	0.002
n-Nitroso-di-n-propylamine	ug/L	10	10-10.2	3 to 3.1	0.0096
n-Nitroso-n-methylethylamine	ug/L	10	10-10.2	2.7 to 2.8	0.0031
n-Nitrosodiethylamine	ug/L	10	10-10.2	3.1 to 3.2	0.00045
n-Nitrosodimethylamine	ug/L	10	10-10.2	2.2 to 2.2	0.0013
n-Nitrosopyrrolidine	ug/L	10	10-10.2	2.7 to 2.8	0.032
1,3-Dinitrobenzene	ug/L	5	2.5-2.6	0.11 to 2.6	0.36
2,4,6-Trinitrotoluene	ug/L	5	2.5-2.6	0.12 to 0.12	1.8
2-Nitrotoluene	ug/L	5	2.5-2.6	0.1 to 0.1	0.049
4-Nitrotoluene	ug/L	5	2.5-2.6	0.11 to 0.11	0.66
Nitrobenzene	ug/L	5	2.5-2.6	0.12 to 2.8	0.34
RDX	ug/L	5	2.5-2.6	0.26 to 0.28	0.61

- None specified in work plan

Table N.9-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 10

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	363	404	100	48.1 to 53.8	330
Naphthalene	363	404	100	44.8 to 50.2	330
Phenanthrene	363	404	100	44.8 to 50.2	330
Volatile Organic Compounds (UG/KG)					
Benzene	9.20	12.6	10.0	0.37 to 0.5	10
Tetrachloroethene	9.20	12.6	2.00	0.66 to 0.9	10
Vinyl chloride	9.20	12.6	10.0	0.59 to 0.8	10

N.10 SWMU 12

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the SWMU 12 PA/SI, as well as to provide an assessment of data usability. Section N.10.3.1 discusses the rejected data with respect to data usability. Section N.10.3.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.10.1 SWMU 12 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on January 19, 2004.

N.10.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 354 distinct data points were generated. When rejected results are considered, the volatiles data set is 94.92 percent complete (336 of 354 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 5.08 percent (18 of 354 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.10.1.1.1 below)

N.10.1.1.1 Calibration

A total of 18 acetonitrile, 1,4-dioxane, and isobutanol results, consisting of acetonitrile, 1,4-dioxane, and isobutanol in every (six) sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.10.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 666 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 96.40 percent complete (642 of 666 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 2.70 percent (18 of 666 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.10.1.2.1, below)
- 0.90 percent (6 of 666 results) were U-qualified as “attributable to blank contamination” (N.10.1.2.2, below)
- 0.60 percent (4 of 666 results) were R-qualified as “rejected” because of continuing calibration exceedances (see section N.10.1.2.3, below)
- 0.60 percent (4 of 666 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.10.1.2.3, below)
- 0.30 percent (2 of 666 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.10.1.2.4, below)
- 0.30 percent (2 of 666 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.10.1.2.3, below)

N.10.1.2.1 Laboratory Control Sample

A total of 18 1,3-dichlorobenzene, 3,3-dimethylbenzidine, and hexachlorocyclopentadiene, consisting of these three compounds in every (six) sample, were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed “non-detect” by the laboratory.

N.10.1.2.2 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.10.1.2.3 Calibration

Four 4-Nitroquinoline-1-oxide results, consisting of 4-Nitroquinoline-1-oxide in CGW12SS01-R01, CGW12SS02-R01, CGW12SS03-R01, and CGW12FD01P-R01, were R-qualified as “rejected” because of continuing calibration recovery exceedances. The remaining two 4-nitroquinoline-1-oxide results (in samples CGW12SS04-R01 and CGW12SS05-R01, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

Four results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.10.1.2.4 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.10.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 174 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (174 of 174 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 6.90 percent (12 of 174 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.10.1.3.1, below)

N.10.1.3.1 Calibration

A total of 12 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.10.1.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 24 distinct data points were generated. The herbicides data set is 100 percent complete (24

of 24 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 33.33 percent (8 of 24 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see section N.10.1.4.1, below)

N.10.1.4.1 Spiked Surrogates

Eight results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.10.1.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 method 8330 and EPA method 314. Excluding field quality control samples, 78 distinct data points were generated. The explosives data set is 100 percent complete (78 of 78 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.69 percent (6 of 78 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample recovery exceedances (see section N.10.1.5.1, below)

N.10.1.5.1 Laboratory Control Sample

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.10.1.6 Dioxins

Dioxins were analyzed by SW-846 method 8290. Excluding field quality control samples, 11 distinct data points were generated. The dioxins data set is 100 percent complete (11 of 11 dioxins results are available for use). The validation process resulted in no qualifiers.

N.10.1.7 Total Metals

Total metals and cyanide were analyzed by SW-846 methods 6010, 7471, and 9012. Excluding field quality control samples, 103 distinct data points were generated. The metals data set is 100 percent complete (103 of 103 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 32.04 percent (33 of 103 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.10.1.7.1, below)
- 22.33 percent (14 of 103 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.10.1.7.2, below)

N.10.1.7.1 Quantitation Limits

A total of 33 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.10.1.7.2 Serial Dilution

A total of 14 metals results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.10.1.8 Wet Chemistry

Wet chemistry (total sulfide) was analyzed by EPA method 376.1. Excluding field quality control samples, one distinct data point was generated. The wet chemistry data set is 100 percent complete (1 of 1 wet chemistry result is available for use). The validation process resulted in no qualifiers.

N.10.2 SWMU 12 Surface Soil PARCC

N.10.2.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, or field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.10.2.2 Accuracy

Except for the 18 results R-qualified as “rejected” because of laboratory control sample exceedances, matrix effects and the laboratory’s ability did not have any adverse effects on the accuracy of the data set. Because only eight results were qualified due to spiked surrogate recoveries, matrix effects and the laboratory’s ability did not have any effect on accuracy in most cases. No results were qualified based on matrix spike exceedances.

N.10.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.10.2.4 Completeness

Overall, there were 42 R-qualified results in this dataset. The R-qualified results comprised 2.98 percent (42 of 1411 results) of the total number of distinct results; therefore, the data validation process demonstrated that 97.02 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.10.2.5 Comparability

There were no issues affecting comparability in this data set.

N.10.3 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 87.95 percent (1241 of 1411 results) of the data as non-detect and further qualification was not warranted. Another 2.41 percent (34 of 1411 results) were detected and no further qualification was warranted. Another 2.48 percent (35 of 1411 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 92.84 percent (1310 of 1411 results) of the data are available for use as reported.

Other J-qualifiers resulted from serial dilution exceedances. These amounted to 1.63 percent (23 of 1411 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 2.13 percent (30 of 1411 results) and resulted from laboratory control sample exceedances, continuing calibration exceedances, and spiked surrogate recovery exceedances. A total of 0.43 percent (6 of 1411 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 4.18 percent (59 of 1411 results) are available for use as qualified. Combining the 92.84 percent with the 4.18 percent results in 97.02 percent (1369 of 1411 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (42 of 1411 results, 2.98 percent of total results) are available for use as qualified.

N.10.3.1 Discussion of Rejected Data

Table N.10-1 lists all R-qualified data for SWMU 12. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The non-detect results for three VOCs (acetonitrile, 1,4-dioxane, and isobutanol) were rejected in all five surface soil samples collected at SWMU 12. Acetonitrile is used mainly as a solvent in the purification of butadiene, which is then used to make rubber and plastics. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. It is unlikely that these three VOCs would have been released at the site, especially considering they were not detected in any of the samples (albeit the results were rejected), their relative obscurity or low potential for presence in the waste accumulated at the site, and that no other VOCs were detected in site soil.

The non-detect results for four SVOCs (1,3-dichlorobenzene, 3,3-dimethylbenzidine, 4-nitroquinoline-1-oxide, and hexachlorocyclopentadiene) were rejected in all five surface soil samples collected at the site. 1,3-Dichlorobenzene is a colorless liquid used to make herbicides, insecticides, medicine, and dyes. 3,3-Dimethylbenzidine is used as an intermediate in the production of dyes and pigments. 4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. Hexachlorocyclopentadiene is the key intermediate in the manufacture of some pesticides, and used in the manufacture of flame retardants and some resins and dyes. Like the VOCs discussed above, it is unlikely that these SVOCs would have been released at the site.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at SWMU 12.

N.10.3.2 Discussion of Non-detect Reporting Limits Above Screening Values

Table N.10-2a (surface soil) list all quantitation limits above human health screening values for non-detected constituents at SWMU 12. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, nine non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.10-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.10-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.10-2a, the actual method detection limits for seven of the SVOCs are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two SVOCs, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values approximately 0.04 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically was used in the production of rocket fuels. It is unlikely that either constituent is associated with the solid waste collection area at SWMU 12. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in SWMU 12 surface soil. Based on the above information, the non-detect quantitation limits above human health screening values in SWMU 12 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs and three non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.10-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.10-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.10-3, the actual method detection limits for the six SVOCs and three VOCs are significantly below the ecological screening values. Therefore, had any of these nine constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in SWMU 12 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.10-1
 Summary of Rejected Data
 SWMU 12

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGW12FD01P-R01	4-Nitroquinoline-1-oxide	337	U	R	CC	UG/KG
SS	SVOA	CGW12FD01P-R01	1,3-Dichlorobenzene	337	U	R	BSX	UG/KG
SS	SVOA	CGW12FD01P-R01	3,3-Dimethylbenzidine	337	U	R	BSX	UG/KG
SS	SVOA	CGW12FD01P-R01	Hexachlorocyclopentadiene	337	U	R	BSX	UG/KG
SS	SVOA	CGW12SS01-R01	4-Nitroquinoline-1-oxide	352	U	R	CC	UG/KG
SS	SVOA	CGW12SS01-R01	1,3-Dichlorobenzene	352	U	R	BSX	UG/KG
SS	SVOA	CGW12SS01-R01	3,3-Dimethylbenzidine	352	U	R	BSX	UG/KG
SS	SVOA	CGW12SS01-R01	Hexachlorocyclopentadiene	352	U	R	BSX	UG/KG
SS	SVOA	CGW12SS02-R01	4-Nitroquinoline-1-oxide	353	U	R	CC	UG/KG
SS	SVOA	CGW12SS02-R01	1,3-Dichlorobenzene	353	U	R	BSX	UG/KG
SS	SVOA	CGW12SS02-R01	3,3-Dimethylbenzidine	353	U	R	BSX	UG/KG
SS	SVOA	CGW12SS02-R01	Hexachlorocyclopentadiene	353	U	R	BSX	UG/KG
SS	SVOA	CGW12SS03-R01	4-Nitroquinoline-1-oxide	346	U	R	CC	UG/KG
SS	SVOA	CGW12SS03-R01	1,3-Dichlorobenzene	346	U	R	BSX	UG/KG
SS	SVOA	CGW12SS03-R01	3,3-Dimethylbenzidine	346	U	R	BSX	UG/KG
SS	SVOA	CGW12SS03-R01	Hexachlorocyclopentadiene	346	U	R	BSX	UG/KG
SS	SVOA	CGW12SS04-R01	4-Nitroquinoline-1-oxide	347	U	R	ICX	UG/KG
SS	SVOA	CGW12SS04-R01	1,3-Dichlorobenzene	347	U	R	BSX	UG/KG
SS	SVOA	CGW12SS04-R01	3,3-Dimethylbenzidine	347	U	R	BSX	UG/KG
SS	SVOA	CGW12SS04-R01	Hexachlorocyclopentadiene	347	U	R	BSX	UG/KG
SS	SVOA	CGW12SS05-R01	4-Nitroquinoline-1-oxide	349	U	R	ICX	UG/KG
SS	SVOA	CGW12SS05-R01	1,3-Dichlorobenzene	349	U	R	BSX	UG/KG
SS	SVOA	CGW12SS05-R01	3,3-Dimethylbenzidine	349	U	R	BSX	UG/KG
SS	SVOA	CGW12SS05-R01	Hexachlorocyclopentadiene	349	U	R	BSX	UG/KG
SS	VOA	CGW12FD01P-R01	Acetonitrile	10	U	R	ICX	UG/KG
SS	VOA	CGW12FD01P-R01	1,4-Dioxane	44	U	R	ICX	UG/KG
SS	VOA	CGW12FD01P-R01	Isobutanol	32	U	R	ICX	UG/KG
SS	VOA	CGW12SS01-R01	Acetonitrile	11.6	U	R	ICX	UG/KG
SS	VOA	CGW12SS01-R01	1,4-Dioxane	51.1	U	R	ICX	UG/KG
SS	VOA	CGW12SS01-R01	Isobutanol	37.2	U	R	ICX	UG/KG
SS	VOA	CGW12SS02-R01	Acetonitrile	10.3	U	R	ICX	UG/KG
SS	VOA	CGW12SS02-R01	1,4-Dioxane	45.5	U	R	ICX	UG/KG
SS	VOA	CGW12SS02-R01	Isobutanol	33.1	U	R	ICX	UG/KG
SS	VOA	CGW12SS03-R01	Acetonitrile	10.1	U	R	ICX	UG/KG
SS	VOA	CGW12SS03-R01	1,4-Dioxane	44.3	U	R	ICX	UG/KG
SS	VOA	CGW12SS03-R01	Isobutanol	32.2	U	R	ICX	UG/KG

Table N.10-1
 Summary of Rejected Data
 SWMU 12

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	VOA	CGW12SS04-R01	Acetonitrile	9.7	U	R	ICX	UG/KG
SS	VOA	CGW12SS04-R01	1,4-Dioxane	42.6	U	R	ICX	UG/KG
SS	VOA	CGW12SS04-R01	Isobutanol	31	U	R	ICX	UG/KG
SS	VOA	CGW12SS05-R01	Acetonitrile	10.1	U	R	ICX	UG/KG
SS	VOA	CGW12SS05-R01	1,4-Dioxane	44.6	U	R	ICX	UG/KG
SS	VOA	CGW12SS05-R01	Isobutanol	32.4	U	R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

BSX: Laboratory Control Sample (Blank Spike) Exceedance

CC: Continuing Calibration

ICX: Initial Calibration Exceedance

Table N.10-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - SWMU 12

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Benzo(a)pyrene	mg/kg	0.33	0.346 - 0.353	0.0307 to 0.0321	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.346 - 0.353	0.0399 to 0.0417	0.062
Hexachlorobenzene	mg/kg	0.33	0.346 - 0.353	0.0542 to 0.0567	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.346 - 0.353	0.0378 to 0.0396	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.346 - 0.353	0.044 to 0.046	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.346 - 0.353	0.0388 to 0.0407	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.346 - 0.353	0.0552 to 0.0578	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.346 - 0.353	0.0532 to 0.0556	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.346 - 0.353	0.0726 to 0.076	0.034

Table N.10-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - SWMU 12

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	346	353	100	45 to 47.1	330
Benzo(a)pyrene	346	353	100	30.7 to 32.1	330
Fluoranthene	346	353	100	28.6 to 30	330
Naphthalene	346	353	100	41.9 to 43.9	330
Phenanthrene	346	353	100	41.9 to 43.9	330
Pyrene	346	353	100	31.7 to 33.2	330
Volatile Organic Compounds (UG/KG)					
Benzene	9.70	11.6	10.0	0.39 to 0.46	10
Tetrachloroethene	9.70	11.6	2.00	0.7 to 0.84	10
Vinyl chloride	9.70	11.6	10.0	0.62 to 0.74	10

N.11 AOC A

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the AOC A PA/SI, as well as to provide an assessment of data usability. No data from AOC A were rejected and there were no non-detect quantitation limits above screening values.

N.11.1 AOC A Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on April 14, 2003.

N.11.1.1 Volatile Compounds

Volatiles (BTEX and MTBE) were analyzed by SW-846 8260B. Excluding field quality control samples, 77 distinct data points were generated. The volatiles data set is 100 percent complete (77 of 77 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 5.19 percent (4 of 77 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.11.1.1.1, below)

N.11.1.1.1 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.11.1.2 Semivolatile Compounds

Semivolatiles (naphthalene) were analyzed by SW-846 8270C. Excluding field quality control samples, 11 distinct data points were generated. The semivolatiles data set is 100 percent complete (11 of 11 semivolatiles results are available for use). The validation process resulted in no qualification for the semivolatile fraction.

N.11.1.3 Total Metals

Total metals (lead) were analyzed by SW-846 6010. Excluding field quality control samples, 11 distinct data points were generated. The metals data set is 100 percent complete (11 of 11 metals results are available for use). The validation process resulted in no qualification for the metals fraction.

N.11.1.4 Total Petroleum Hydrocarbons (TPH)

Total Petroleum Hydrocarbons (C10-C28) was analyzed by SW-846 8015. Excluding field quality control samples, 11 distinct data points were generated. The TPH data set is 100 percent complete (11 of 11 TPH results are available for use). The validation process resulted in the following qualifiers for results in the TPH fraction:

- 18.18 percent (2 of 11 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.11.1.4.1, below)

N.11.1.4.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.11.2 AOC A Subsurface Soil PARCC

N.11.2.1 Precision

There were no results qualified due to matrix spike/matrix spike duplicate precision exceedances, laboratory duplicate precision exceedances, or field duplicate precision exceedances. Therefore, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.11.2.2 Accuracy

There were no results qualified due to matrix spike/matrix spike duplicate recovery exceedances, laboratory control sample recovery exceedances, or spiked surrogate recovery exceedances. Therefore, matrix effects and the laboratory’s ability did not adversely affect accuracy in any case.

N.11.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.11.2.4 Completeness

There were no R-qualified results in this dataset. Therefore, the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the project goal in this data set.

N.11.2.5 Comparability

There were no issues affecting comparability in this data set.

N.11.3 Totals for “Available as Reported,” and “Available as Qualified”

The data quality evaluation showed that the laboratory U-qualified 75.45 percent (83 of 110 results) of the data as non-detect and further qualification was not warranted. Another 19.09 percent (21 of 110 results) were detected and no further qualification was warranted. Another 5.45 percent (6 of 110 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 100 percent (110 of 110 results) of the data are available for use as reported.

All results are available for use as qualified.

N.12 AOC F

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the AOC F PA/SI, as well as to provide an assessment of data usability. Section N.12.3.1 discusses the rejected data with respect to data usability. Section N.12.3.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.12.1 AOC F Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on June 14, 2000.

N.12.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260. Excluding field quality control samples, 336 distinct data points were generated. When rejected results are considered, the volatiles data set is 97.60 percent complete (328 of 336 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 49.11 percent (165 of 336 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery exceedances (see Section N.12.1.1.1 below)
- 1.79 percent (6 of 336 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.12.1.1.2 below)
- 0.89 percent (3 of 336 results) were U-qualified as “non-detect” because of blank contamination (see Section N.12.1.1.3 below)
- 0.60 percent (2 of 336 results) were R-qualified as “rejected” for because of matrix spike recovery exceedances (see Section N.12.1.1.4 below)

N.12.1.1.1 Spiked Surrogates

A total of 165 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries outside of control limits. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.12.1.1.2 Calibration

Six 2-butanone results, consisting of 2-butanone in every sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.12.1.1.3 Blank Contamination

Three results, consisting of acetone in NDD046, NDD048, and NDD049FD1, were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.12.1.1.4 Matrix Spike

Two VOA results, consisting of vinyl acetate and acrolein in NDD048, were R-qualified as “rejected” because of matrix spike exceedances. These results were deemed non-detect by the laboratory. These VOA results were not rejected in the field duplicate of this sample and are, therefore, available for use.

N.12.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270. Excluding field quality control samples, 678 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 98.82 percent complete (670 of 678 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 98.82 percent (670 of 678 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.12.1.2.1, below)
- 0.88 percent (6 of 678 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.12.1.2.2, below)
- 0.29 percent (2 of 678 results) were R-qualified as “rejected” because of matrix spike exceedances (see section N.12.1.2.3, below)

N.12.1.2.1 Holding Times

A total of 670 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.12.1.2.2 Calibration

Six 4-Nitroquinoline-1-oxide results, consisting of 4-Nitroquinoline-1-oxide in every sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.12.1.2.3 Matrix Spike

Two semivolatiles results, consisting of 4,6-dinitro-2-methylphenol and 2,4-dimethylphenol in NDD048, were R-qualified as “rejected” because of matrix spike exceedances. These results were deemed non-detect by the laboratory. These semivolatile results were not rejected in the field duplicate of this sample and are, therefore, available for use

N.12.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 156 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (156 of 156 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 99.36 percent (155 of 156 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.12.1.3.1, below)
- 0.64 percent (1 of 156 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.12.1.3.2, below)

N.12.1.3.1 Holding Times

A total of 155 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.12.1.3.2 Dual-Column Reproducibility

One result was J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. J-qualification of detects does not affect the usability of results because they are available for use as detects at the reported concentration.

N.12.1.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 18 distinct data points were generated. The herbicides data set is 100 percent complete (18 of 18 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 94.44 percent (17 of 18 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.12.1.4.1, below)
- 5.56 percent (1 of 18 results) were J-qualified as “estimated” because of holding time exceedances (see section N.12.1.4.1, below)

N.12.1.4.1 Holding Times

A total of 17 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. Another result was J-qualified as “estimated” for the same reason. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects and J-qualification of detects does not affect the availability of results because they are available for use as non-detects and detects at the reported quantitation limit or result, respectively.

N.12.1.5 Total Metals

Total metals were analyzed by SW-846 methods 6010 and 7471. Excluding field quality control samples, 102 distinct data points were generated. The metals data set is 100 percent complete (102 of 102 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 10.78 percent (11 of 102 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances (see section N.12.1.5.1, below)
- 8.82 percent (9 of 102 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.12.1.5.2, below)
- 0.98 percent (1 of 102 results) were J-qualified as “estimated” because of matrix spike exceedances (see section N.12.1.5.1, below)

N.12.1.5.1 Matrix Spike

A total of 11 metals results were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike exceedances. Another result was J-qualified as “estimated” because of matrix spike exceedances. The UJ-qualification of non-detects and J-qualification of detects does not affect the availability of results because they are available for use as non-detects and detects at the reported quantitation limit or concentration, respectively.

N.12.1.5.2 Quantitation Limits

Nine results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.12.2 AOC F Surface Soil PARCC

N.12.2.1 Precision

Except in the case of results rejected due to matrix spike exceedances, consisting of 4,6-dinitro-2-methylphenol, 2,4-dimethylphenol, vinyl acetate, and acrolein in NDD048, the sample matrix did not interfere with the analytical process or adversely affect precision.

N.12.2.2 Accuracy

Except in the case of results rejected due to matrix spike exceedances, consisting of 4,6-dinitro-2-methylphenol, 2,4-dimethylphenol, vinyl acetate, and acrolein in NDD048, matrix effects and the laboratory’s ability did not have any adverse effects on accuracy.

N.12.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.12.2.4 Completeness

Overall, there were 16 R-qualified results in this dataset. The R-qualified results comprised 1.24 percent (16 of 1290 results) of the total number of distinct results; therefore the data validation process demonstrated that 98.76 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.12.2.5 Comparability

There were no issues affecting comparability in this data set.

N.12.3 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 14.26 percent (184 of 1290 results) of the data as non-detect and further qualification was not warranted. Another 4.42 percent (57 of 1290 results) were detected and no further qualification was warranted. Another 0.70 percent (9 of 1290 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, as described above, 19.38 percent (250 of 1290 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, holding time exceedances, and matrix spike exceedances. These amounted to 0.23 percent (3 of 1290 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 78.91 percent (1018 of 1290 results) and resulted from holding time exceedances, matrix spike exceedances, and spiked surrogate exceedances. A total of 0.23 percent (3 of 1290 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 79.38 percent (1024 of 1290 results) are available for use as qualified. Combining the 19.38 percent with the 79.38 percent results in 98.76 percent (1274 of 1290 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (16 of 1290 results, 1.24 percent of total results) are available for use as qualified.

N.12.3.1 Discussion of Rejected Data

Table N.12-1 lists all R-qualified data for AOC F. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The results for three VOCs (2-butanone, vinyl acetate, and acrolein) were rejected variously in the five surface soil samples collected at AOC F. The results for 2-butanone, which is most commonly used in paints, glues, and other coatings, were rejected in all samples. The non-detect results for vinyl acetate and acrolein were rejected in only one of five samples (SS-5). However, these two VOCs were not detected in the duplicate sample for SS-5 and those results were not rejected. In addition, these two VOCs were not detected in the other four samples at the site, nor were any other VOCs detected in any samples at the site. Vinyl acetate is a chemical building block used to manufacture a wide variety of polymers. Acrolein is used in the preparation of polyester resin, polyurethane, propylene glycol, acrylic acid, acrylonitrile, and glycerol. Based on the above information, and considering AOC F is a rock quarry, it is unlikely that any of the above VOCs would have been released at the site.

The non-detect results for three SVOCs (4-nitroquinoline-1-oxide, 4,6-dinitro-2-methylphenol, and 2,4-dimethylphenol) were rejected variously in the five surface soil samples collected at the site. 4-Nitroquinoline-1-oxide was rejected in all samples at the site.

4-Nitroquinoline-1-oxide is a tumorigenic compound used in the assessment of the efficacy of diets, drugs, and procedures in the prevention and treatment of cancer in animals. 4,6-Dinitro-2-methylphenol and 2,4-dimethylphenol were both rejected in only one sample (SS-5), but were not detected (and not rejected) in the sample duplicate. In addition, these two SVOCs were not detected in the other four surface soil samples and no other SVOCs were detected in any samples at the site. It is unlikely the compounds listed above were related to the used tires or paper waste identified at this rock quarry.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at AOC F.

N.12.3.2 Discussion of Non-detect Reporting Limits Above Screening Values

Table N.12-2a (surface soil) lists all quantitation limits above human health screening values for non-detected constituents at AOC F. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, 19 non-detected SVOCs and two non-detected inorganics had laboratory quantitation limits that exceed human health screening values (Table N.12-2a). However, with the exception of thallium, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, some elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.12-2a, 13 of the target quantitation limits exceed their associated screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.12-2a, the actual method detection limits for 15 of the 19 SVOCs and one of the inorganics are significantly below the human health screening values. Therefore, had any of these 16 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining four SVOCs, n-nitroso-di-n-butylamine, n-nitroso-n-methylethylamine, n-nitrosodiethylamine, and n-nitrosodimethylamine, have screening values only about 0.01 to 0.09 mg/kg (0.3 mg/kg for thallium) below their associated method detection limits. n-Nitroso-di-n-butylamine is mainly used in research. n-Nitroso-n-methylethylamine is found in cigarette smoke. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically was used in the production of rocket fuels. Given that AOC F is a rock quarry, it is unlikely these four SVOCs are present in AOC F soil. Additionally, thallium is not likely present at the site. Thallium is used primarily in the electronics industry, with minor uses in the pharmaceutical and glass manufacturing industries. Prior to 1975, thallium was also

used in rat and ant poison. The thallium analytical method in use when the AOC F samples were collected has since been replaced with a method not prone to the errors inherent to the earlier method. Since that time, samples from additional sites have been analyzed for thallium, the results of which have shown thallium not to be present or to be present at levels below screening values, even in the presence of pesticides. Therefore, thallium is not likely present in SWMU 4 soil. Based on the above information, the non-detect quantitation limits above human health screening values in AOC F surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs and two non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.12-3). However, the achieved quantitation limits are similar to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.12-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.12-3, the actual method detection limits for all six SVOCs and both VOCs are significantly below the ecological screening values. Therefore, had any of these eight constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Therefore, it is unlikely that these eight constituents are present in AOC F soil. Based on the above information, the non-detect quantitation limits above ecological screening values in AOC F surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.12-1
 Summary of Rejected Data
 AOC F

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	NDD044	4-Nitroquinoline-1-oxide	624 U		R	ICX	UG/KG
SS	SVOA	NDD045	4-Nitroquinoline-1-oxide	409 U		R	ICX	UG/KG
SS	SVOA	NDD046	4-Nitroquinoline-1-oxide	739 U		R	ICX	UG/KG
SS	SVOA	NDD047	4-Nitroquinoline-1-oxide	506 U		R	ICX	UG/KG
SS	SVOA	NDD048	4,6-Dinitro-2-methylphenol	3390 U		R	MSX	UG/KG
SS	SVOA	NDD048	2,4-Dimethylphenol	677 U		R	MSX	UG/KG
SS	SVOA	NDD048	4-Nitroquinoline-1-oxide	677 U		R	ICX	UG/KG
SS	SVOA	NDD049FD1	4-Nitroquinoline-1-oxide	490 U		R	ICX	UG/KG
SS	VOA	NDD044	2-Butanone	100 U		R	ICX	UG/KG
SS	VOA	NDD045	2-Butanone	103 U		R	ICX	UG/KG
SS	VOA	NDD046	2-Butanone	144 U		R	ICX	UG/KG
SS	VOA	NDD047	2-Butanone	102 U		R	ICX	UG/KG
SS	VOA	NDD048	2-Butanone	122 U		R	ICX	UG/KG
SS	VOA	NDD048	Vinyl acetate	6 U		R	MSX	UG/KG
SS	VOA	NDD048	Acrolein	6 U		R	MSX	UG/KG
SS	VOA	NDD049FD1	2-Butanone	114 U		R	ICX	UG/KG

Reason Codes (DV_Qual_Code)
 ICX: Initial Calibration Exceedance
 MSX: Matrix Spike Exceedance

Table N.12-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - AOC F

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
1,3-Dinitrobenzene	mg/kg	0.25	0.409 - 0.739	0.025 to 0.045	0.61
2,4,6-Trichlorophenol	mg/kg	0.33	0.409 - 0.739	0.024 to 0.043	0.61
3,3'-Dichlorobenzidine	mg/kg	0.67	0.818 - 1.48	0.019 to 0.035	1.1
3,3'-Dimethylbenzidine	mg/kg	1.6	0.409 - 0.739	0.043 to 0.077	0.21
3-Nitroaniline	mg/kg	1.6	2.04 - 3.69	0.019 to 0.035	1.8
4,6-Dinitro-2-methylphenol	mg/kg	0.99	2.04 - 3.69	0.022 to 0.041	0.61
Benzo(a)anthracene	mg/kg	0.33	0.409 - 0.739	0.021 to 0.038	0.62
Benzo(a)pyrene	mg/kg	0.33	0.409 - 0.739	0.027 to 0.039	0.062
Benzo(b)fluoranthene	mg/kg	0.33	0.409 - 0.739	0.024 to 0.044	0.62
Dibenz(a,h)anthracene	mg/kg	0.33	0.409 - 0.739	0.027 to 0.049	0.062
Hexachlorobenzene	mg/kg	0.33	0.409 - 0.739	0.027 to 0.048	0.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.33	0.409 - 0.739	0.021 to 0.038	0.62
Pentachlorophenol	mg/kg	0.99	2.04 - 3.69	0.022 to 0.041	3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.409 - 0.739	0.028 to 0.051	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.409 - 0.739	0.037 to 0.067	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.409 - 0.739	0.029 to 0.052	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.409 - 0.739	0.094 to 0.17	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.409 - 0.739	0.049 to 0.089	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.409 - 0.739	0.022 to 0.039	0.034
Antimony	mg/kg	6	3.1 - 4.2	0.41 to 0.7	3.1
Thallium	mg/kg	1	41.2 - 55.9	0.62 to 0.84	0.52

**Table N.12-3
Comparison of Non-Detect Quantification Limits With Ecological Screening Values - Surface Soil - AOC F**

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	409	739	100	23 to 41	330
Benzo(a)pyrene	409	739	100	27 to 49	330
Fluoranthene	409	739	100	25 to 46	330
Naphthalene	409	739	100	30 to 55	330
Phenanthrene	409	739	100	24 to 43	330
Pyrene	409	739	100	23 to 41	330
Volatile Organic Compounds (UG/KG)					
Tetrachloroethene	5.00	7.00	2.00	0.5 to 0.8	10
Vinyl chloride	10.0	14.0	10.0	0.5 to 0.7	10

N.13 AOC G

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the AOC G PA/SI, as well as to provide an assessment of data usability. Section N.13.3.1 discusses the rejected data with respect to data usability. Section N.13.3.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.13.1 AOC G Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on January 22, 2004.

N.13.1.1 Volatile Compounds

Volatiles were analyzed by SW-846 8260B. Excluding field quality control samples, 354 distinct data points were generated. When rejected results are considered, the volatiles data set is 96.60 percent complete (342 of 354 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.39 percent (12 of 354 results) were R-qualified as “rejected” because of initial calibration exceedances (see Section N.13.1.1.1 below)
- 0.28 percent (1 of 336 results) were U-qualified as “non-detect” because of blank contamination (see Section N.13.1.1.2 below)

N.13.1.1.1 Calibration

Six 1,4-dioxane and six isobutanol results, consisting of 1,4-dioxane and isobutanol in every sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

N.13.1.1.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.13.1.2 Semivolatile Compounds

Semivolatiles were analyzed by SW-846 8270C. Excluding field quality control samples, 666 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 86.30 percent complete (575 of 666 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 12.91 percent (86 of 666 results) were R-qualified as “rejected” because of laboratory control sample exceedances (see section N.13.1.2.1, below)
- 12.76 percent (85 of 666 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.13.1.2.2, below)
- 1.05 percent (7 of 666 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.13.1.2.3, below)

- 0.75 percent (5 of 666 results) were R-qualified as “rejected” because of initial calibration exceedances (see section N.13.1.2.4, below)
- 0.60 percent (4 of 666 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances (see section N.13.1.2.4, below)
- 0.30 percent (2 of 666 results) were U-qualified as “attributable to blank contamination” (see section N.13.1.2.5, below)

N.13.1.2.1 Laboratory Control Sample

A total of 86 SVOA results, consisting of 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2,2-oxybis(1-chloropropane), 2,4,5-trichlorophenol, 2,4-dichlorophenol, 2-methylnaphthalene, 2-methylphenol, 2-nitrophenol, 3,3-dimethylbenzidine, 3-nitroaniline, 4-bromophenyl-phenylether, 4-chloroaniline, 4-methylphenol, aniline, benzyl alcohol, bis(2-chloroethyl)ether, dibenzylfuran, diethylphthalate, dimethyl phthalate, fluorine, hexachlorobutadiene, hexachloroethane, isosafrole, naphthalene, and nitrobenzene in every sample were R-qualified as “rejected” because of laboratory control sample exceedances. These results were deemed non-detect by the laboratory.

N.13.1.2.2 Holding Times

A total of 85 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.13.1.2.3 Quantitation Limits

Seven results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.13.1.2.4 Calibration

Five 4-Nitroquinoline-1-oxide results, consisting of 4-Nitroquinoline-1-oxide in every sample, were R-qualified as “rejected” because of initial calibration exceedances. These results were deemed “non-detect” by the laboratory.

Four more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.13.1.2.5 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.13.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by SW-846 methods 8081 and 8082. Excluding field quality control samples, 174 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (174 of 174 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 8.05 percent (14 of 174 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.13.1.3.1, below)
- 3.45 percent (6 of 174 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.13.1.3.2, below)
- 2.30 percent (4 of 174 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.13.1.3.3, below)

N.13.1.3.1 Quantitation Limits

A total of 14 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.13.1.3.2 Laboratory Control Sample

A total of six results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.13.1.3.3 Dual-Column Reproducibility

Four results were J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.13.1.4 Herbicides

Herbicides were analyzed by SW-846 method 8151. Excluding field quality control samples, 24 distinct data points were generated. The herbicides data set is 100 percent complete (24 of 24 herbicides results are available for use). The validation process resulted in the following qualifiers for results in the herbicides fraction:

- 66.67 percent (16 of 24 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate exceedances (see section N.13.1.4.1, below)

N.13.1.4.1 Spiked Surrogates

A total of 16 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.13.1.5 Explosives

Explosives (nitroaromatics/nitroamines and perchlorate) were analyzed by SW-846 method 8330 and EPA method 314. Excluding field quality control samples, 78 distinct data points were generated. The explosives data set is 100 percent complete (78 of 78 explosives results are available for use). The validation process resulted in the following qualifiers for results in the explosives fraction:

- 7.69 percent (6 of 78 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances (see section N.13.1.5.1, below)

N.13.1.5.1 Spiked Surrogates

A total of six results were UJ-qualified as “non-detect, estimated quantitation limit” because of laboratory control sample exceedances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.13.1.6 Dioxins

Dioxins were analyzed by SW-846 method 8290. Excluding field quality control samples, 11 distinct data points were generated. The data validation process resulted in no qualification.

N.13.1.7 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by SW-846 methods 6010, 7471, and 9012). Excluding field quality control samples, 103 distinct data points were generated. The metals data set is 100 percent complete (103 of 103 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 45.63 percent (47 of 103 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.13.1.7.1, below)
- 11.65 percent (12 of 103 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.13.1.7.2, below)

N.13.1.7.1 Quantitation Limits

A total of 47 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.13.1.7.2 Serial Dilution

A total of 12 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.13.1.8 Wet Chemistry

Wet Chemistry parameters (sulfide) were analyzed by EPA method 376.1. Excluding field quality control samples, one distinct data points was generated. The wet chemistry data set is 100 percent complete (1 of 1 wet chemistry result is available for use). The validation process resulted in the following qualifiers for results in the wet chemistry fraction:

- 100 percent (1 of 1 result) were J-qualified as “estimated” because the result was below the quantitation limit (see section N.13.1.8.1, below)

N.13.1.8.1 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.13.2 AOC G Surface Soil PARCC

N.13.2.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.13.2.2 Accuracy

Except in the case of results rejected due to laboratory control sample exceedances, consisting of various semivolatiles results outlined in section N.13.1.2.1, above, matrix effects and the laboratory’s ability did not have any adverse effects on accuracy.

N.13.2.3 Representativeness

There were no issues affecting representativeness in this data set.

N.13.2.4 Completeness

Overall, there were 103 R-qualified results in this dataset. The R-qualified results comprised 7.30 percent (103 of 1411 results) of the total number of distinct results; therefore, the data validation process demonstrated that 92.70 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.13.2.5 Comparability

There were no issues affecting comparability in this data set.

N.13.3 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 75.05 percent (1059 of 1411 results) of the data as non-detect and further qualification was not warranted. Another 3.12 percent (44 of 1411 results) were detected and no further qualification was warranted. Another 4.89 percent (69 of 1411 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 83.06 percent (1172 of 1411 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility and serial dilution exceedances. These amounted to 1.13 percent (16 of 1411 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 8.29 percent (117 of 1411 results) and resulted from laboratory control sample exceedances, continuing calibration exceedances, holding time exceedances, and spiked surrogate exceedances. A total of 0.21 percent (3 of 1411 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 9.64 percent (136 of 1411

results) are available for use as qualified. Combining the 83.06 percent with the 9.64 percent results in 92.70 percent (1308 of 1411 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (103 of 1411 results, 7.30 percent of total results) are available for use as qualified.

N.13.3.1 Discussion of Rejected Data

Table N.13-1 lists all R-qualified data for AOC G. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential effects on the data quality and usability. Note that constituents for which there are no human health or ecological screening values are underlined in the discussion. This demarcation is included to show which constituents whose presence or absence, even if the results had not been rejected, would not alter the screening value comparisons done as part of the decision analysis process.

The non-detect results for two VOCs (1,4-dioxane, and isobutanol) were rejected in all five surface soil samples collected at AOC G. 1,4-Dioxane is primarily used in solvent applications for the manufacturing sector. The main use of isobutanol is as a starting material in the manufacture of isobutyl acetate, which is mostly used in the production of lacquer and similar coatings. Based on this information, it is unlikely that these two VOCs were released at the site, especially considering their results were non-detect (albeit rejected) and that there were no other VOCs detected at the site.

The non-detect results for 28 SVOCs were rejected variously in the five surface soil samples collected at the site. Thirteen of the 28 SVOCs were rejected in all samples. They comprise:

1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,2-Oxybis(1-Chloropropane)
2,4,5-Trichlorophenol
3,3-Dimethylbenzidine
4-Nitroquinoline-1-oxide
Benzyl alcohol
Hexachloroethane
Isosafrole
Naphthalene
Nitrobenzene

The other fifteen SVOCs were rejected in only one sample (SS-5), but were not rejected (nor detected) in the sample duplicate (nor the other samples collected at the site). They comprise:

2,4-Dichlorophenol
2-Methylnaphthalene
2-Methylphenol
2-Nitrophenol
3-Nitroaniline

4-Bromophenyl-phenylether
4-Chloroaniline
4-Methylphenol
Aniline
Bis(2-Chloroethyl)ether
Dibenzofuran
Diethylphthalate
Dimethyl phthalate
Fluorene
Hexachlorobutadiene

Given that AOC G managed the domestic sewage from the lagoons (SWMU 10), the SVOC data for SWMU 10 provides additional information regarding the SVOCs potentially present at AOC G. Other than 4-bromophenyl-phenylether and fluorene, none of the SVOCs listed above were detected in surface or subsurface soil at SWMU 10. At SWMU 10, 4-bromophenyl-phenylether and fluorene were detected in only one sample each, approximately an order of magnitude or more below screening values. The information above suggests these SVOCs were not likely released at AOC G and that the rejected data do not likely affect the ability to draw conclusions regarding potential releases at AOC G.

N.13.3.2 Discussion of Non-detect Reporting Limits Above Screening Values

Table N.13-2a (surface soil) lists all quantitation limits above human health screening values for non-detected constituents at AOC G. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential effects on the data quality and usability.

In the surface soil samples, eight non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.13-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.13-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.13-2a, the actual method detection limits for six of the eight SVOCs are significantly below the human health screening values. Therefore, had any of these six constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. The remaining two SVOCs, n-nitrosodiethylamine and n-nitrosodimethylamine have screening values only about 0.05 mg/kg below their associated method detection limits. n-Nitrosodiethylamine is used primarily as a research chemical, but also has minor uses as a

gasoline and lubricant additive, and n-nitrosodimethylamine is also primarily a research chemical, but was historically was used in the production of rocket fuels. It is unlikely that either constituent was present in the pump station and chlorination building at AOC G. This information, together with the facts that the method detection limits are so close to the screening values, and that neither constituent was detected, suggests they are not present in AOC G surface soil. Based on the above information, the non-detect quantitation limits above human health screening values in AOC G surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, three non-detected SVOCs and three non-detected VOCs had laboratory quantitation limits that exceed ecological screening values (Table N.13-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.13-3, even the target quantitation limits for the three SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.13-3, the actual method detection limits for the all three SVOCs and all three VOCs are significantly below the ecological screening values. Therefore, had any of these six constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in AOC G surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.13-1
 Summary of Rejected Data
 AOC G

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGAGSS01-R01	4-Nitroquinoline-1-oxide	367	U	R	ICX	UG/KG
SS	SVOA	CGAGSS01-R01	2,2-Oxybis(1-Chloropropane)	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	Benzyl alcohol	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	1,2-Dichlorobenzene	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	1,3-Dichlorobenzene	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	1,4-Dichlorobenzene	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	3,3-Dimethylbenzidine	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	Hexachloroethane	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	Isosafrole	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	Naphthalene	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	Nitrobenzene	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	1,2,4-Trichlorobenzene	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS01-R01	2,4,5-Trichlorophenol	367	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	4-Nitroquinoline-1-oxide	370	U	R	ICX	UG/KG
SS	SVOA	CGAGSS02-R01	2,2-Oxybis(1-Chloropropane)	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	Benzyl alcohol	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	1,2-Dichlorobenzene	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	1,3-Dichlorobenzene	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	1,4-Dichlorobenzene	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	3,3-Dimethylbenzidine	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	Hexachloroethane	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	Isosafrole	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	Naphthalene	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	Nitrobenzene	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	1,2,4-Trichlorobenzene	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS02-R01	2,4,5-Trichlorophenol	370	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	4-Nitroquinoline-1-oxide	402	U	R	ICX	UG/KG
SS	SVOA	CGAGSS03-R01	2,2-Oxybis(1-Chloropropane)	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	Benzyl alcohol	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	1,2-Dichlorobenzene	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	1,3-Dichlorobenzene	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	1,4-Dichlorobenzene	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	3,3-Dimethylbenzidine	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	Hexachloroethane	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	Isosafrole	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	Naphthalene	402	U	R	BSX	UG/KG

Table N.13-1
 Summary of Rejected Data
 AOC G

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGAGSS03-R01	Nitrobenzene	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	1,2,4-Trichlorobenzene	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS03-R01	2,4,5-Trichlorophenol	402	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	4-Nitroquinoline-1-oxide	382	U	R	ICX	UG/KG
SS	SVOA	CGAGSS04-R01	2,2-Oxybis(1-Chloropropane)	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	Benzyl alcohol	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	1,2-Dichlorobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	1,3-Dichlorobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	1,4-Dichlorobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	3,3-Dimethylbenzidine	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	Hexachloroethane	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	Isosafrole	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	Naphthalene	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	Nitrobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	1,2,4-Trichlorobenzene	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS04-R01	2,4,5-Trichlorophenol	382	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Aniline	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	bis(2-Chloroethyl)ether	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	2,2-Oxybis(1-Chloropropane)	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	4-Bromophenyl-phenylether	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Benzyl alcohol	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	4-Chloroaniline	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Dibenzofuran	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	1,2-Dichlorobenzene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	1,3-Dichlorobenzene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	1,4-Dichlorobenzene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	2,4-Dichlorophenol	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Diethylphthalate	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	3,3-Dimethylbenzidine	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Dimethyl phthalate	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Fluorene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Hexachlorobutadiene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Hexachloroethane	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Isosafrole	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	2-Methylphenol	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	4-Methylphenol	376	U	R	BSX	UG/KG

Table N.13-1
 Summary of Rejected Data
 AOC G

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SS	SVOA	CGAGSS05-R01	2-Methylnaphthalene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Naphthalene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	3-Nitroaniline	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	Nitrobenzene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	2-Nitrophenol	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSS05-R01	1,2,4-Trichlorobenzene	376	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	4-Nitroquinoline-1-oxide	387	U	R	ICX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	2,2-Oxybis(1-Chloropropane)	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	Benzyl alcohol	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	1,2-Dichlorobenzene	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	1,3-Dichlorobenzene	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	1,4-Dichlorobenzene	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	3,3-Dimethylbenzidine	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	Hexachloroethane	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	Isosafrole	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	Naphthalene	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	Nitrobenzene	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	1,2,4-Trichlorobenzene	387	U	R	BSX	UG/KG
SS	SVOA	CGAGSSFD01P-R01	2,4,5-Trichlorophenol	387	U	R	BSX	UG/KG
SS	VOA	CGAGSS01-R01	1,4-Dioxane	48.9	U	R	ICX	UG/KG
SS	VOA	CGAGSS01-R01	Isobutanol	35.6	U	R	ICX	UG/KG
SS	VOA	CGAGSS02-R01	1,4-Dioxane	49.9	U	R	ICX	UG/KG
SS	VOA	CGAGSS02-R01	Isobutanol	36.3	U	R	ICX	UG/KG
SS	VOA	CGAGSS03-R01	1,4-Dioxane	50.4	U	R	ICX	UG/KG
SS	VOA	CGAGSS03-R01	Isobutanol	36.7	U	R	ICX	UG/KG
SS	VOA	CGAGSS04-R01	1,4-Dioxane	51.1	U	R	ICX	UG/KG
SS	VOA	CGAGSS04-R01	Isobutanol	37.2	U	R	ICX	UG/KG
SS	VOA	CGAGSS05-R01	1,4-Dioxane	44.7	U	R	ICX	UG/KG
SS	VOA	CGAGSS05-R01	Isobutanol	32.5	U	R	ICX	UG/KG
SS	VOA	CGAGSSFD01P-R01	1,4-Dioxane	44.8	U	R	ICX	UG/KG
SS	VOA	CGAGSSFD01P-R01	Isobutanol	32.6	U	R	ICX	UG/KG

Reason Codes (DV_Qual_Code)

ICX: Initial Calibration Exceedance

BSX: Laboratory Control Sample (Blank Spike) Exceedance

Table N.13-2a Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - AOC G					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Dibenz(a,h)anthracene	mg/kg	0.33	0.367 - 0.402	0.0433 to 0.0476	0.062
Hexachlorobenzene	mg/kg	0.33	0.367 - 0.402	0.0589 to 0.0646	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.367 - 0.402	0.0411 to 0.0451	0.22
n-Nitroso-di-n-butylamine	mg/kg	0.33	0.367 - 0.402	0.0478 to 0.0524	0.058
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.367 - 0.402	0.0422 to 0.0463	0.069
n-Nitroso-n-methylethylamine	mg/kg	0.33	0.367 - 0.402	0.06 to 0.0658	0.078
n-Nitrosodiethylamine	mg/kg	0.33	0.367 - 0.402	0.0578 to 0.0634	0.011
n-Nitrosodimethylamine	mg/kg	0.33	0.367 - 0.402	0.0789 to 0.0866	0.034

Table N.13-3
 Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - AOC G

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Semivolatile Organic Compounds (UG/KG)					
Anthracene	367	402	100	23 to 41	330
Fluoranthene	367	402	100	25 to 46	330
Phenanthrene	367	402	100	24 to 43	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.2	11.6	10.0	0.1 to 0.2	10
Tetrachloroethene	10.2	11.6	2.00	0.5 to 0.8	10
Vinyl chloride	10.2	11.6	10.0	0.5 to 0.7	10

N.14 PI 4

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PI-4 PA/SI, as well as to provide an assessment of data usability. Section N.14.9.1 discusses the rejected data with respect to data usability. Section N.14.9.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.14.1 PI 4 Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on April 4 and April 5, 2006.

N.14.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 250 distinct data points were generated. When rejected results are considered, the volatiles data set is 98.00 percent complete (245 of 250 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 2.00 percent (5 of 250 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.1.1.1, below)
- 2.00 percent (5 of 250 results) were R-qualified as “rejected” because of initial calibration recovery below the lower control limit (see section N.14.1.1.2, below)
- 1.60 percent (4 of 250 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery below the lower control limit (see section N.14.1.1.3, below)
- 1.20 percent (3 of 250 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.14.1.1.2 below)
- 0.80 percent (2 of 250 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.14.1.1.2 below)
- 0.40 percent (1 of 250 results) were U-qualified as “attributable to blank contamination” (see Section N.14.1.1.4 below)

N.14.1.1.1 Quantitation Limits

Five results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.1.1.2 Calibration

Five volatiles results, consisting of methyl acetate in each (five) sample, were R-qualified as “rejected” because of initial calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory.

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects

does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.1.1.2 Surrogates

Four results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.1.1.4 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 325 distinct data points were generated. The semivolatiles data set is 100 percent complete (325 of 325 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 4.92 percent (16 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.14.1.2.1 below)
- 3.69 percent (12 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.14.1.2.1 below)

N.14.1.2.1 Calibration

A total of 16 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Twelve more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLC03. Excluding field quality control samples, 140 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 99.29 percent complete (139 of 140 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 0.71 percent (1 of 140 results) were R-qualified as “rejected” because of large differences in quantitation between the primary and secondary analytical columns (see section N.14.1.3.1, below)

N.14.1.3.1 Dual-Column Reproducibility

One pesticides result, consisting of heptachlor epoxide in EPI04-GW01-06B, was R-qualified as “rejected” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. This result was detected by the laboratory. There are available heptachlor epoxide results for all other (four) samples in this dataset.

N.14.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 120 distinct data points were generated. The metals data set is 100 percent complete (120 of 120 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 20.00 percent (24 of 120 results) were U-qualified as “attributable to blank contamination” (see section N.14.1.4.1, below)
- 15.00 percent (18 of 120 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.1.4.2, below)
- 0.83 percent (1 of 120 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.14.1.4.3, below)

N.14.1.4.1 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because aluminum, barium, beryllium, cadmium, iron, potassium, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.1.4.2 Quantitation Limits

A total of 18 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.1.4.3 Serial Dilution

One result was J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.1.5 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 115 distinct data points were generated. The filtered metals data set is 100 percent complete (115 of 115 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 25.22 percent (29 of 115 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.1.5.1, below)
- 9.57 percent (11 of 115 results) were U-qualified as “attributable to blank contamination” (see section N.14.1.5.2, below)

- 4.35 percent (5 of 115 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.14.1.5.3, below)

N.14.1.5.1 Quantitation Limits

A total of 29 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.1.5.2 Blank Contamination

A total of 11 results were U-qualified as “attributable to blank contamination” because aluminum, beryllium, and cadmium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.1.5.3 Serial Dilution

Five results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.1.6 Wet Chemistry

Wet Chemistry (total dissolved solids) was analyzed by EPA method 160.1. Excluding field quality control samples, five distinct data points were generated. The wet chemistry data set is 100 percent complete (5 of 5 wet chemistry results are available for use). The validation process resulted in no qualification.

N.14.2 PI 4 Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on January 24 through February 14, 2006.

N.14.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 816 distinct data points were generated. The volatiles data set is 100 percent complete (816 of 816 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 1.47 percent (12 of 816 results) were U-qualified as “attributable to blank contamination” (see section N.14.2.1.1, below)
- 1.23 percent (10 of 816 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.14.2.1.2, below)
- 0.25 percent (2 of 816 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.14.2.1.2, below)

N.14.2.1.1 Blank Contamination

A total of 12 results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank

contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.2.1.2 Calibration

A total of 12 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1105 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.64 percent complete (1101 of 1105 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 4.07 percent (45 of 1105 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.14.2.2.1 below)
- 1.36 percent (15 of 1105 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.14.2.2.1 below)
- 0.36 percent (4 of 1105 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see Section N.14.2.2.1 below)

N.14.2.2.1 Calibration

Four semivolatiles results, consisting of 2,4-dinitrophenol in each (four) sample, were R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. There are 2,4-dinitrophenol results in every other (14) sample in this dataset.

A total of 45 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 15 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 350 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (350 of 350 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 25.22 percent (14 of 350 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.2.3.1, below)

- 0.29 percent (1 of 350 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.14.2.3.2, below)

N.14.2.3.1 Quantitation Limits

A total of 14 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.2.3.2 Dual-Column Reproducibility

One result was U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 408 distinct data points were generated. The metals data set is 100 percent complete (408 of 408 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 33.58 percent (137 of 408 results) were J-qualified as “estimated” for reasons of “other” (see section N.14.2.4.6, below)
- 14.71 percent (60 of 408 results) were U-qualified as “attributable to blank contamination” (see section N.14.2.4.1, below)
- 3.19 percent (13 of 408 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.14.2.4.2, below)
- 1.96 percent (8 of 408 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.2.4.3, below)
- 1.47 percent (6 of 408 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.14.2.4.4, below)
- 0.49 percent (2 of 408 results) were J-qualified as “estimated” because of blank contamination (see section N.14.2.4.1, below)
- 0.49 percent (2 of 408 results) were J-qualified as “estimated” because of laboratory duplicate precision exceedances (see section N.14.2.4.5, below)

N.14.2.4.1 Blank Contamination

A total of 60 results were U-qualified as “attributable to blank contamination” because antimony, arsenic, beryllium, cadmium, lead, potassium, and sodium were detected in associated blank samples. Two more results were J-qualified as “estimated” for the same reason. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.2.4.2 Serial Dilution

A total of 13 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.2.4.3 Quantitation Limits

Eight results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.2.4.4 Matrix Spike/ Matrix Spike Duplicate

Six results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.2.4.5 Laboratory Duplicate

Two results were J-qualified as “estimated” because of laboratory duplicate precision exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.2.4.6 Other

If the data validator is not able to find an appropriate valid-value reason code for the reason a result was qualified, the “other” reason code is used. A total of 137 results were J-qualified as “estimated” for reasons of “other.” The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3 PI 4 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on January 24 to January 31, 2006.

N.14.3.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 816 distinct data points were generated. The volatiles data set is 100 percent complete (816 of 816 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 1.23 percent (10 of 816 results) were U-qualified as “attributable to blank contamination” (see section N.14.3.1.1, below)
- 1.10 percent (9 of 816 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.14.3.1.2, below)
- 0.61 percent (5 of 816 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.14.3.1.2, below)
- 0.25 percent (2 of 816 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.3.1.3, below)

N.14.3.1.1 Blank Contamination

Ten results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.3.1.2 Calibration

Nine results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit. Five more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.3.1.3 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1105 distinct data points were generated. The semivolatiles data set is 98.73 percent complete (1091 of 1105 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 3.71 percent (41 of 1105 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.14.3.2.1 below)
- 1.36 percent (15 of 1105 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.14.3.2.1 below)
- 0.63 percent (7 of 1105 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see Section N.14.3.2.1 below)
- 0.63 percent (7 of 1105 results) were R-qualified as “rejected” because of internal standard recovery below the lower control limit (see Section N.14.3.2.2 below)
- 0.54 percent (6 of 1105 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard recovery below the lower control limit (see Section N.14.3.2.2 below)
- 0.09 percent (1 of 1105 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.3.2.3, below)
- 0.09 percent (1 of 1105 results) were U-qualified as “attributable to blank contamination” (see section N.14.3.2.4, below)

N.14.3.2.1 Calibration

Seven semivolatiles results, consisting of 2,4-dinitrophenol in all (seven) samples, were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit. These results were deemed “non-detect” by the laboratory. There are available 2,4-dinitrophenol results for every other (nine) sample in this dataset.

A total of 41 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Fifteen more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.3.2.2 Internal Standards

Seven semivolatiles results, consisting of benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, di-n-octylphthalate, and indeno(1,2,3-cd)pyrene in EPI04-SS01-0001, were R-qualified as “rejected” because of internal standard recovery below the lower control limit. These results were deemed “non-detect” by the laboratory. There are available results for these compounds in every other (16) sample in this dataset.

Six more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.3.2.3 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.2.4 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.3.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 371 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (371 of 371 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 4.85 percent (18 of 371 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.3.3.1, below)
- 0.27 percent (1 of 371 results) were U-qualified as “attributable to blank contamination” (see section N.14.3.3.2, below)

N.14.3.3.1 Quantitation Limits

A total of 18 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.3.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because gamma chlordane was detected in associated blank samples. The U-qualification of detects to

indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.3.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 408 distinct data points were generated. The metals data set is 100 percent complete (408 of 408 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 34.31 percent (140 of 408 results) were J-qualified as “estimated” for reasons of “other” (see section N.14.3.4.6, below)
- 18.63 percent (76 of 408 results) were U-qualified as “attributable to blank contamination” (see section N.14.3.4.1, below)
- 4.17 percent (17 of 408 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.3.4.2, below)
- 2.70 percent (11 of 408 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.14.3.4.3, below)
- 1.47 percent (6 of 408 results) were J-qualified as “estimated” because of laboratory duplicate precision exceedances (see section N.14.3.4.4, below)
- 1.47 percent (6 of 408 results) were UJ-qualified as “non-detect, estimated quantitation limit” for reasons of “other” (see section N.14.3.4.6, below)
- 0.98 percent (4 of 408 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.14.3.4.5, below)

N.14.3.4.1 Blank Contamination

A total of 76 results were U-qualified as “attributable to blank contamination” because antimony, arsenic, beryllium, cadmium, cobalt, cyanide, nickel, and sodium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.3.4.2 Quantitation Limits

A total of 17 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.4.3 Serial Dilution

A total of 11 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.4.4 Laboratory Duplicate

Six results were J-qualified as “estimated” because of laboratory duplicate precision exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.4.5 Matrix Spike/ Matrix Spike Duplicate

Four results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.3.4.6 Other

If the data validator is not able to find an appropriate valid-value reason code for the reason a result was qualified, the “other” reason code is used. A total of 140 results were J-qualified as “estimated” for reasons of “other.” Six more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.4 PI 4 Surface Water Data

This evaluation assesses the analytical results of the surface water samples collected on March 17, 2006.

N.14.4.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 50 distinct data points were generated. The volatiles data set is 100 percent complete (50 of 50 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.00 percent (2 of 50 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.14.4.1.1, below)
- 2.00 percent (1 of 50 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.4.1.2, below)
- 2.00 percent (1 of 50 results) were U-qualified as “attributable to blank contamination” (see Section N.14.4.1.3 below)

N.14.4.1.1 Calibration

Two results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.4.1.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.4.1.3 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because toluene was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.4.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 65 distinct data points were generated. The semivolatiles data set is 100 percent complete (65 of 65 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 1.54 percent (1 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.14.4.2.1 below)

N.14.4.2.1 Calibration

One result was UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.4.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLC03. Excluding field quality control samples, 28 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (28 of 28 pesticides/PCBs results are available for use). The validation process resulted in no qualification.

N.14.4.4 Explosives

Explosives were analyzed by SW-846 8330. Excluding field quality control samples, 14 distinct data points were generated. The explosives data set is 100 percent complete (14 of 14 explosives results are available for use). The validation process resulted in no qualification.

N.14.4.5 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 24 distinct data points were generated. The metals data set is 100 percent complete (24 of 24 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 37.50 percent (9 of 24 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.14.4.5.1, below)
- 8.33 percent (2 of 24 results) were U-qualified as “attributable to blank contamination” (see section N.14.4.5.2, below)
- 4.17 percent (1 of 24 results) were UJ-qualified as “non-detect, estimated quantitation limit” for reasons of “other” (see section N.14.4.5.3, below)

N.14.4.5.1 Quantitation Limits

Nine results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.14.4.5.2 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because arsenic and selenium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.4.5.3 Other

If the data validator is not able to find an appropriate valid-value reason code for the reason a result was qualified, the “other” reason code is used. One result was UJ-qualified as “non-detect, estimated quantitation limit” for reasons of “other.” The UJ-qualification of non-

detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.4.6 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 23 distinct data points were generated. The filtered metals data set is 100 percent complete (23 of 23 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 52.17 percent (12 of 23 results) were J-qualified as “estimated” for reasons of “other” (see section N.14.4.6.2, below)
- 43.48 percent (10 of 23 results) were UJ-qualified as “non-detect, estimated quantitation limit” for reasons of “other” (see section N.14.4.6.2, below)
- 4.35 percent (1 of 23 results) were U-qualified as “attributable to blank contamination” (see section N.14.4.6.1, below)

N.14.4.6.1 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because vanadium was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.14.4.6.2 Other

If the data validator is not able to find an appropriate valid-value reason code for the reason a result was qualified, the “other” reason code is used. Twelve results were J-qualified as “estimated” for reasons of “other.” Ten more results was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.14.5 Groundwater PARCC

N.14.5.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.14.5.2 Accuracy

Because no results were qualified due to laboratory control sample exceedances or matrix spike recoveries, and only four results were qualified based on spiked surrogate recoveries, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases.

N.14.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.14.5.4 Completeness

There were six R-qualified results in this dataset; therefore the data validation process demonstrated that 99.37 percent of the results are available for use as qualified. Actual completeness exceeded the project goal in this data set.

N.14.5.5 Comparability

There were no issues affecting comparability in this data set.

N.14.6 Subsurface Soil PARCC

N.14.6.1 Precision

Except in the case of the two results qualified due to laboratory duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in any case. No results were qualified based on matrix spike/matrix spike duplicate precision or field duplicate precision exceedances.

N.14.6.2 Accuracy

Except in the case of the six results qualified due to matrix spike recovery exceedances, matrix effects and the laboratory's ability did not have any adverse effects on accuracy. No results were qualified based on spiked surrogate recovery exceedances or laboratory control sample exceedances.

N.14.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.14.6.4 Completeness

Overall, there were four R-qualified results in this dataset. The R-qualified results comprised 0.15 percent (4 of 2679 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.85 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.14.6.5 Comparability

There were no issues affecting comparability in this data set.

N.14.7 Surface Soil PARCC

N.14.7.1 Precision

Because no results were rejected based on matrix spike precision and field duplicate precision, and only six results were qualified based on laboratory duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.14.7.2 Accuracy

Because only seven results were rejected due to internal standard recovery exceedances, matrix effects and the laboratory's ability did not have an adverse affect on accuracy in most cases. Because only six more results were qualified based to internal standard exceedances

and only four results were qualified based on matrix spike recoveries, matrix effects and the laboratory's ability did not have any effect on accuracy in most cases. No results were qualified based on spiked surrogate recoveries.

N.14.7.3 Representativeness

There were no issues affecting representativeness in this data set.

N.14.7.4 Completeness

Overall, there were 14 R-qualified results in this dataset. The R-qualified results comprised 0.52 percent (14 of 2700 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.48 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.14.7.5 Comparability

There were no issues affecting comparability in this data set.

N.14.8 Surface Water PARCC

N.14.8.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.14.8.2 Accuracy

Because no results were qualified due to laboratory control sample exceedances, matrix spike recoveries, or spiked surrogate recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in any case.

N.14.8.3 Representativeness

There were no issues affecting representativeness in this data set.

N.14.8.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the project goal in this data set.

N.14.8.5 Comparability

There were no issues affecting comparability in this data set.

N.14.9 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 82.53 percent (5396 of 6538 results) of the data as non-detect and further qualification was not warranted. Another 3.82 percent (250 of 6538 results) were detected and no further qualification was warranted. Another 1.88 percent (123 of 6538 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the

concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 88.24 percent (5769 of 6538 results) of the data are available for use as reported.

Other J-qualifiers resulted from blank contamination, laboratory duplicate reproducibility, low matrix spike recovery, serial dilution exceedances, and reasons of "other". These amounted to 5.19 percent (339 of 6538 results) of the total results. The percentage of non-detect results UJ-qualified as "non-detect, estimated quantitation limit" amounted to 3.14 percent (205 of 6538 results) and resulted from high and low continuing calibration exceedances, low internal standard recovery exceedances, low spiked surrogate recovery exceedances, and reasons of "other". A total of 3.06 percent (200 of 6538 results) were U-qualified as "non-detect" as a result of blank contamination. A total of 0.01 percent (1 of 6538 results) were U-qualified as "non-detect" as a result of dual-column reproducibility. Based on the above, 11.39 percent (745 of 6538 results) are available for use as qualified. Combining the 88.24 percent with the 11.39 percent results in 99.63 percent (6514 of 6538 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as "rejected" (24 of 6538 results, 0.37 percent of total results) are available for use as qualified.

N.14.9.1 Discussion of Rejected Data

Table N.14-1 lists all R-qualified data for PI 4. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability.

Soil

Seven non-detect SVOC results were rejected in surface soil sample SS01. These SVOCs were not detected in any other sample in any media at PI 4. One non-detect SVOC result, for 2,4-dinitrophenol, was rejected in 6 of the 15 surface soil samples and 3 of 8 subsurface soil samples. However, the SVOC was not detected in any other sample in any media at PI 4.

Groundwater

All 5 non-detect methyl acetate groundwater sample results were rejected. However, methyl acetate was not detected in any samples from other media at PI 4.

Based on the information above, the rejected data do not affect the ability to use existing data to evaluate aspects of environmental conditions at PI 4, including potential releases. However, it is recognized that sufficient data have not been collected to draw conclusions regarding potential releases with adequate confidence. Therefore, additional data collection will be performed.

N.14.9.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.14-2a (surface soil), N.14-2b (subsurface soil), and N.14-2c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at PI 4. For constituents potentially attributable to a CERCLA-related release, the text below

discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, six non-detected analytes (five SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.14-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.14-2a, even the target quantitation limits exceed the screening values (other than for thallium); therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.14-2a, the actual method detection limits for the five SVOCs and thallium are significantly below the human health screening values. Therefore, had any of these six constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PI 4 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same six non-detected analytes (plus benzo(a)pyrene) as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.14-2b). The method detection limit for benzo(a)pyrene is also well below its human health screening value. Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PI 4 subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 55 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.14-2c). However, the achieved quantitation limits are equal to those concurred upon and memorialized in the Work Plan. Therefore, while there is some uncertainty associated with drawing conclusions with respect to human health effects, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized. However, for 29 of the 55 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 29 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Furthermore, except for the inorganics, none of the 55 constituents was detected in any other media at the site. Therefore, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-

detect quantitation limits above human health screening values in PI 4 groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and one non-detected metal had laboratory quantitation limits that exceed ecological screening values (Table N.14-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.14-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.14-3, the actual method detection limits for the six SVOCs, three VOCs, and mercury are significantly below the ecological screening values. Therefore, had any of these 10 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PI 4 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.14-1
 Summary of Rejected Data
 PI-4

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	PEST/PCB	EPI04-GW01-06B	HEPTACHLOR EPOXIDE	0.035	P	R	2C	UG/L
GW	VOA	EPI04-GW01-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
GW	VOA	EPI04-GW02-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
GW	VOA	EPI04-GW03-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
GW	VOA	EPI04-GW04-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
GW	VOA	EPI04-GW05-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
SB	SVOA	EPI04-SB04-0406	2,4-DINITROPHENOL	950	U	R	CCL	UG/KG
SB	SVOA	EPI04-SB14-0406	2,4-DINITROPHENOL	860	U	R	CCL	UG/KG
SB	SVOA	EPI04-SB14P-0406	2,4-DINITROPHENOL	860	U	R	CCL	UG/KG
SB	SVOA	EPI04-SB15-0406	2,4-DINITROPHENOL	890	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS01-0001	2,4-DINITROPHENOL	920	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS01-0001	DI-N-OCTYL PHTHALATE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS01-0001	BENZO(B)FLUORANTHENE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS01-0001	BENZO(K)FLUORANTHENE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS01-0001	BENZO(A)PYRENE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS01-0001	INDENO(1,2,3-CD)PYRENE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS01-0001	DIBENZO(A,H)ANTHRACENE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS01-0001	BENZO(G,H,I)PERYLENE	370	U	R	ISL	UG/KG
SS	SVOA	EPI04-SS02-0001	2,4-DINITROPHENOL	900	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS03-0001	2,4-DINITROPHENOL	880	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS04-0001	2,4-DINITROPHENOL	880	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS05-0001	2,4-DINITROPHENOL	880	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS05P-0001	2,4-DINITROPHENOL	880	U	R	CCL	UG/KG
SS	SVOA	EPI04-SS14-0006	2,4-DINITROPHENOL	910	U	R	CCL	UG/KG

Reason Codes (DV_Qual_Code)

2C: Dual-column reproducibility

CCL: Continuing Calibration - Low Recovery

ICL: Initial Calibration - Low Recovery

ISL: Internal Standards - Low Recovery

Table N.14-2a Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - PI 4					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.88 - 0.93	0.0697	0.61
Dibenz(a,h)anthracene	mg/kg	0.33	0.35 - 0.37	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.35 - 0.37	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.35 - 0.37	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.35 - 0.37	0.02736	0.069
Thallium	mg/kg	0.5	0.53 - 0.56	0.011	0.52

Table N.14-2b

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - PI 4

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 0.95	0.0697	0.610
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.38	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.38	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.38	0.03487	0.300
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.38	0.03224	0.220
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.38	0.02736	0.069
Thallium	mg/kg	0.5	0.52 - 0.58	0.011	0.520

Table N.14-2c Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Groundwater - PI 4					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5 - 0.5	0.08	0.055
1,1,2-Trichloroethane	ug/L	0.5	0.5 - 0.5	0.06	0.2
1,2-Dibromo-3-chloropropane	ug/L	0.5	0.5 - 0.5	0.19	0.035
1,2-Dibromoethane	ug/L	0.5	0.5 - 0.5	0.1	0.0056
1,2-Dichloroethane	ug/L	0.5	0.5 - 0.5	0.05	0.12
1,2-Dichloropropane	ug/L	0.5	0.5 - 0.5	0.04	0.16
Benzene	ug/L	0.5	0.5 - 0.5	0.06	0.35
Bromochloromethane	ug/L	0.5	0.5 - 0.5	0.07	0.18
Bromodichloromethane	ug/L	0.5	0.5 - 0.5	0.04	0.18
Carbon tetrachloride	ug/L	0.5	0.5 - 0.5	0.04	0.17
Dibromochloromethane	ug/L	0.5	0.5 - 0.5	0.04	0.13
Vinyl chloride	ug/L	0.5	0.5 - 0.5	0.05	0.02
cis-1,3-Dichloropropene	ug/L	0.5	0.5 - 0.5	0.08	0.4
trans-1,3-Dichloropropene	ug/L	0.5	0.5 - 0.5	0.07	0.4
1,2,4,5-Tetrachlorobenzene	ug/L	5	5 - 5	0.36	1.1
2,2'-Oxybis(1-chloropropane)	ug/L	5	5 - 5	0.54	0.27
2,4,6-Trichlorophenol	ug/L	5	5 - 5	0.33	0.36
2,4-Dinitrophenol	ug/L	20	20 - 20	7.44	7.3
2,6-Dinitrotoluene	ug/L	5	5 - 5	0.5	3.6
2-Chlorophenol	ug/L	5	5 - 5	0.48	3
2-Methylnaphthalene	ug/L	5	5 - 5	0.28	2.4
2-Nitroaniline	ug/L	20	20 - 20	0.99	11
2-Nitrophenol	ug/L	5	5 - 5	0.44	3
3,3'-Dichlorobenzidine	ug/L	5	5 - 5	0.6	0.15
3-Nitroaniline	ug/L	20	20 - 20	0.93	1.1
4,6-Dinitro-2-methylphenol	ug/L	20	20 - 20	1.08	0.36
4-Bromophenyl-phenylether	ug/L	5	5 - 5	0.28	0.27
4-Chloro-3-methylphenol	ug/L	5	5 - 5	0.41	3
4-Chlorophenyl-phenylether	ug/L	5	5 - 5	0.4	0.27
4-Nitroaniline	ug/L	20	20 - 20	0.73	3.2
4-Nitrophenol	ug/L	20	20 - 20	1.26	0.34
Benzo(a)anthracene	ug/L	5	5 - 5	0.57	0.092
Benzo(a)pyrene	ug/L	5	5 - 5	0.39	0.0092
Benzo(b)fluoranthene	ug/L	5	5 - 5	0.45	0.092
Benzo(k)fluoranthene	ug/L	5	5 - 5	0.48	0.92
Dibenz(a,h)anthracene	ug/L	5	5 - 5	0.36	0.0092
Dibenzofuran	ug/L	5	5 - 5	0.29	1.2
Hexachlorobenzene	ug/L	5	5 - 5	0.52	0.042
Hexachlorobutadiene	ug/L	5	5 - 5	0.58	0.86
Hexachloroethane	ug/L	5	5 - 5	0.64	3.6
Indeno(1,2,3-cd)pyrene	ug/L	5	5 - 5	0.39	0.092
Naphthalene	ug/L	5	5 - 5	0.59	0.62
Nitrobenzene	ug/L	5	5 - 5	0.36	0.34
Pentachlorophenol	ug/L	5	5 - 5	1.01	0.56
bis(2-Chloroethoxy)methane	ug/L	5	5 - 5	0.5	0.27
bis(2-Chloroethyl)ether	ug/L	5	5 - 5	0.49	0.01
bis(2-Ethylhexyl)phthalate*	ug/L	5	5 - 5	9.21	4.8
n-Nitroso-di-n-propylamine	ug/L	5	5 - 5	0.55	0.0096
Arsenic	ug/L	10	10 - 10	0.069	0.045
Cadmium	ug/L	5	5 - 5	0.028	1.8
Thallium	ug/L	1	1 - 1	0.015	0.24
Antimony-dissolved	ug/L	60	60 - 60	0.051	1.5
Arsenic-dissolved	ug/L	10	10 - 10	0.069	0.045
Thallium-dissolved	ug/L	1	1 - 1	0.015	0.24

* The method detection limit for bis(2-ethylhexyl)phthalate calculated by the laboratory is invalid, but the separately calculated quantitation limit is correct.

Table N.14-3
Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PI 4

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Mercury	0.11	0.11	0.10	0.042	0.1
Semivolatile Organic Compounds (UG/KG)					
Anthracene	350	370	100	22.53	330
Benzo(a)pyrene	350	370	100	20.46	330
Fluoranthene	350	370	100	30.1	330
Naphthalene	350	370	100	28.16	330
Phenanthrene	350	370	100	27.96	330
Pyrene	350	370	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	14.0	10.0	0.3	10
Tetrachloroethene	10.0	14.0	2.00	0.2	10
Vinyl chloride	10.0	14.0	10.0	0.23	10

N.15 PI-7

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PI 7 PA/SI, as well as to provide an assessment of data usability. Section N.15.7.1 discusses the rejected data with respect to data usability. Section N.15.7.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.15.1 PI-7 Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on April 6, 2006.

N.15.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 150 distinct data points were generated. When rejected results are considered, the volatiles data set is 98.00 percent complete (147 of 150 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 2.67 percent (4 of 150 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.1.1.1, below)
- 2.00 percent (3 of 150 results) were R-qualified as “rejected” because of initial calibration recovery below the lower control limit (see section N.15.1.1.2, below)
- 2.00 percent (3 of 150 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.15.1.1.2 below)

N.15.1.1.1 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.1.1.2 Calibration

Three volatiles results, consisting of methyl acetate in each (three) sample, were R-qualified as “rejected” because of initial calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory.

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 195 distinct data points were generated. The semivolatiles data set is 100 percent complete (195 of 195 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 6.67 percent (13 of 195 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery below the lower control limit (see section N.15.1.2.1, below)
- 5.13 percent (10 of 195 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.15.1.2.2 below)
- 2.56 percent (5 of 195 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.15.1.2.2 below)

N.15.1.2.1 Surrogates

A total of 13 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.1.2.2 Calibration

Ten results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Five more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLC03. Excluding field quality control samples, 84 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 98.81 percent complete (83 of 84 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 2.38 percent (2 of 84 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.15.1.3.1, below)
- 1.19 percent (1 of 84 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.1.3.2, below)
- 1.19 percent (1 of 84 results) were R-qualified as “rejected” because of large differences in quantitation between the primary and secondary analytical columns (see section N.15.1.3.1, below)

N.15.1.3.1 Dual-Column Reproducibility

One pesticides result, consisting of heptachlor epoxide in EPI07-GW02-06B, was R-qualified as “rejected” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. This result was detected by the laboratory. There are available heptachlor epoxide results for all other (two) samples in this dataset.

One pesticides result was U-qualified as “non-detect” for the same reason. The U-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.1.3.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 72 distinct data points were generated. The metals data set is 100 percent complete (72 of 72 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 16.67 percent (12 of 72 results) were U-qualified as “attributable to blank contamination” (see section N.15.1.4.1, below)
- 11.11 percent (8 of 72 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.1.4.2, below)
- 1.39 percent (1 of 72 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.15.1.4.3, below)

N.15.1.4.1 Blank Contamination

A total of 12 results were U-qualified as “attributable to blank contamination” because aluminum, beryllium, iron, potassium, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.15.1.4.2 Quantitation Limits

Eight results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.1.4.3 Serial Dilution

One result was J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.1.5 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 69 distinct data points were generated. The filtered metals data set is 100 percent complete (69 of 69 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 18.84 percent (13 of 69 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.1.5.1, below)
- 8.70 percent (6 of 69 results) were U-qualified as “attributable to blank contamination” (see section N.15.1.5.2, below)

- 4.35 percent (3 of 69 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.15.1.5.3, below)

N.15.1.5.1 Quantitation Limits

A total of 13 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.1.5.2 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because aluminum and beryllium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.15.1.5.3 Serial Dilution

Three results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.1.6 Wet Chemistry

Wet Chemistry (total dissolved solids) was analyzed by EPA method 160.1. Excluding field quality control samples, three distinct data points were generated. The wet chemistry data set is 100 percent complete (3 of 3 wet chemistry results are available for use). The validation process resulted in no qualification.

N.15.2 PI-7 Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on March 13 through March 16, 2006.

N.15.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 816 distinct data points were generated. When rejected results are considered, the volatiles data set is 99.63 percent complete (813 of 816 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 9.93 percent (81 of 816 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.15.2.1.1, below)
- 2.33 percent (19 of 816 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.15.2.1.1, below)
- 0.74 percent (6 of 816 results) were U-qualified as “attributable to blank contamination” (see section N.15.2.1.2, below)
- 0.37 percent (3 of 816 results) were R-qualified as “rejected” because of initial calibration recovery below the lower control limit (see section N.15.2.1.1, below)

N.15.2.1.1 Calibration

Three volatiles results, consisting of 1,2-dibromo-3-chloropropane in EPI07-SB08-0406, EPI07-SB17-0102, and EPI07-SB18-0204, were R-qualified as “rejected” because of initial calibration recoveries below the lower control limit. These results were deemed “non-

detect” by the laboratory. There are available 1,2-dibromo-3-chloropropane results for all other (16) samples in this dataset.

A total of 81 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. Nineteen more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.2.1.2 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.15.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1235 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.60 percent complete (1230 of 1235 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 4.21 percent (52 of 1235 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.15.2.2.1 below)
- 1.70 percent (21 of 1235 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.15.2.2.1 below)
- 0.40 percent (5 of 1235 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see Section N.15.2.2.1 below)
- 0.08 percent (1 of 1235 results) were J-qualified as “estimated” because the results were below the quantitation limit (see Section N.15.2.2.2 below)
- 0.08 percent (1 of 1235 results) were J-qualified as “estimated” because of continuing calibration recovery greater than the upper control limit (see Section N.15.2.2.1 below)

N.15.2.2.1 Calibration

Five semivolatiles results, consisting of 4-nitrophenol in EPI07-SB06-0406 and 2,4-dinitrophenol in EPI07-SB07-0406, EPI07-SB09-0406, EPI07-SB09P-0406, and EPI07-SB10-0406 were R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. There are available 4-nitrophenol results in every other (18) sample and available 2,4-dinitrophenol results in every other (15) sample.

A total of 52 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 21 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. One result was J-qualified as

“estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of data because these results are available for use as detects at the reported concentration.

N.15.2.2.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 532 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 98.81 percent complete (531 of 532 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 0.94 percent (5 of 532 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.15.2.3.1, below)
- 0.56 percent (3 of 532 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.2.3.2, below)
- 0.19 percent (1 of 532 results) were R-qualified as “rejected” because of large differences in quantitation between the primary and secondary analytical columns (see section N.15.2.3.1, below)

N.15.2.3.1 Dual-Column Reproducibility

One pesticides result, consisting of alpha-chlordane in EPI07-SB16-0204, was R-qualified as “rejected” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. This result was detected by the laboratory. Available alpha-chlordane results exist for all other (18) samples.

Five results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.2.3.2 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 456 distinct data points were generated. When the rejected results are considered, the metals data set is 99.12 percent complete (452 of 456 metals

results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 15.79 percent (72 of 456 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.15.2.4.1, below)
- 11.40 percent (52 of 456 results) were U-qualified as “attributable to blank contamination” (see section N.15.2.4.2, below)
- 6.36 percent (29 of 456 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.2.4.3, below)
- 4.39 percent (20 of 456 results) were J-qualified as “estimated” because of laboratory duplicate precision exceedances (see section N.15.2.4.4, below)
- 4.17 percent (19 of 456 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.15.2.4.5, below)
- 0.88 percent (4 of 456 results) were R-qualified as “rejected” because of holding time exceedances (see section N.15.2.4.6, below)
- 0.44 percent (2 of 456 results) were J-qualified as “estimated” because of holding time exceedances (see section N.15.2.4.6, below)

N.15.2.4.1 Serial Dilution

A total of 72 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.2.4.2 Blank Contamination

A total of 72 results were U-qualified as “attributable to blank contamination” because beryllium, lead, mercury, nickel, potassium, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.15.2.4.3 Quantitation Limits

A total of 29 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.2.4.4 Laboratory Duplicate

A total of 20 results were J-qualified as “estimated” because of laboratory duplicate precision exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.2.4.5 Matrix Spike/ Matrix Spike Duplicate

A total of 19 results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.2.4.6 Holding Times

Four metals results, consisting of cyanide in EPI07-SB07-0406, EPI07-SB09-0406, EPI09P-SB07-0406, and EPI07-SB10-0406, were R-qualified as “rejected” because of holding time exceedances. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation

limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. These results were deemed non-detect by the laboratory. Available cyanide results exist for all other (2) samples.

Two results were J-qualified as “estimated” because of holding time exceedances. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3 PI-7 Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on March 13 to March 16, 2006.

N.15.3.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 960 distinct data points were generated. When rejected results are considered, the volatiles data set is 99.69 percent complete (957 of 960 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 8.44 percent (81 of 960 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.15.3.1.1, below)
- 1.77 percent (17 of 960 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.15.3.1.1, below)
- 0.83 percent (8 of 960 results) were U-qualified as “attributable to blank contamination” (see section N.15.3.1.2, below)
- 0.31 percent (3 of 960 results) were R-qualified as “rejected” because of initial calibration recovery below the lower control limit (see section N.15.3.1.1, below)

N.15.3.1.1 Calibration

Three volatiles results, consisting of 1,2-dibromo-3-chloropropane in EPI07-SS08-0001, EPI07-SS18-0001, and EPI07-SS19-0001, were R-qualified as “rejected” because of initial calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. There are available 1,2-dibromo-3-chloropropane results for all other (17) samples in this dataset.

A total of 81 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. Seventeen more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.3.1.2 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination”

does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.15.3.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1560 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.74 percent complete (1556 of 1560 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 4.36 percent (68 of 1560 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.15.3.2.1 below)
- 1.86 percent (29 of 1560 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.15.3.2.1 below)
- 0.26 percent (4 of 1560 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see Section N.15.3.2.1 below)
- 0.06 percent (1 of 1560 results) were J-qualified as “estimated” because the results were below the quantitation limit (see Section N.15.3.2.2 below)

N.15.3.2.1 Calibration

Four semivolatiles results, consisting of 2,4-dinitrophenol in EPI07-SS06-0001, EPI07-SS07-0001, EPI07-SS09-0001, and EPI07-SS10-0001, were R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. There are available 2,4-dinitrophenol results in every other (6) sample.

A total of 68 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 29 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.3.2.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 672 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (672 of 672 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 1.64 percent (11 of 672 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.15.3.3.1, below)

- 1.49 percent (10 of 672 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.3.3.2, below)
- 0.30 percent (2 of 672 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.15.3.3.1, below)

N.15.3.3.1 Dual-Column Reproducibility

A total of 11 results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. Two more results were J-qualified as “estimated” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.15.3.3.2 Quantitation Limits

Ten results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 576 distinct data points were generated. When the rejected results are considered, the metals data set is 99.65 percent complete (574 of 576 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 14.58 percent (84 of 576 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.15.3.4.1, below)
- 11.11 percent (64 of 576 results) were U-qualified as “attributable to blank contamination” (see section N.15.3.4.2, below)
- 5.56 percent (32 of 576 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.15.3.4.3, below)
- 4.17 percent (24 of 576 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.15.3.4.4, below)
- 3.47 percent (20 of 576 results) were J-qualified as “estimated” because of laboratory duplicate precision exceedances (see section N.15.3.4.5, below)
- 0.52 percent (3 of 576 results) were J-qualified as “estimated” because of holding time exceedances (see section N.15.3.4.6, below)
- 0.35 percent (2 of 576 results) were R-qualified as “rejected” because of holding time exceedances (see section N.15.3.4.6, below)

N.15.3.4.1 Serial Dilution

A total of 84 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3.4.2 Blank Contamination

A total of 64 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, lead, nickel, potassium, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.15.3.4.3 Quantitation Limits

A total of 32 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3.4.4 Matrix Spike/ Matrix Spike Duplicate

A total of 24 results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3.4.5 Laboratory Duplicate

A total of 20 results were J-qualified as “estimated” because of laboratory duplicate precision exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.3.4.6 Holding Times

Two metals results, consisting of cyanide in EPI07-SS09-0001 and EPI07-SS10-0001, were R-qualified as “rejected” because of holding time exceedances. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. These results were deemed non-detect by the laboratory. Available cyanide results exist for all other (3) samples.

Three results were J-qualified as “estimated” for the same reason. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.15.4 Groundwater PARCC

N.15.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.15.4.2 Accuracy

Because only 13 results were qualified due to spiked surrogate recovery exceedances, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases. No results were qualified based on laboratory control sample exceedances or matrix spike recoveries.

N.15.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.15.4.4 Completeness

There were four R-qualified results in this dataset; therefore the data validation process demonstrated that 99.30 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.15.4.5 Comparability

There were no issues affecting comparability in this data set.

N.15.5 Subsurface Soil PARCC

N.15.5.1 Precision

Except in the case of the 20 results qualified due to laboratory duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in any case. No results were qualified based on matrix spike/matrix spike duplicate precision or field duplicate precision exceedances.

N.15.5.2 Accuracy

Except in the case of the 19 results qualified due to matrix spike recovery exceedances, matrix effects and the laboratory's ability did not have any adverse effects on accuracy. No results were qualified based on spiked surrogate recovery exceedances or laboratory control sample exceedances.

N.15.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.15.5.4 Completeness

Overall, there were 13 R-qualified results in this dataset. The R-qualified results comprised 0.43 percent (13 of 3039 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.57 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.15.5.5 Comparability

There were no issues affecting comparability in this data set.

N.15.6 Surface Soil PARCC

N.15.6.1 Precision

Because no results were rejected based on matrix spike precision and field duplicate precision, and only 20 results were qualified based on laboratory duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.15.6.2 Accuracy

Because only 24 results were qualified based on matrix spike/matrix spike duplicate recovery exceedances, and no results were qualified based on spiked surrogate recoveries or laboratory control sample recoveries, matrix effects and the laboratory's ability did not have any effect on accuracy in most cases.

N.15.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.15.6.4 Completeness

Overall, there were 9 R-qualified results in this dataset. The R-qualified results comprised 0.24 percent (9 of 3768 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.76 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.15.6.5 Comparability

There were no issues affecting comparability in this data set.

N.15.7 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 81.49 percent (6014 of 7380 results) of the data as non-detect and further qualification was not warranted. Another 5.72 percent (422 of 7380 results) were detected and no further qualification was warranted. Another 1.38 percent (102 of 7380 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 88.59 percent (6538 of 7380 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, high continuing calibration recovery, holding time exceedances, laboratory duplicate precision exceedances, low matrix spike recoveries, and serial dilution exceedances. These amounted to 3.40 percent (251 of 7380 results) of the total results. The percentage of non-detect results UJ-qualified as "non-detect, estimated quantitation limit" amounted to 5.41 percent (399 of 7380 results) and resulted from high and low continuing calibration exceedances and low spiked surrogate recovery exceedances. A total of 2.00 percent (148 of 7380 results) were U-qualified as "non-detect" as a result of blank contamination. A total of 0.24 percent (18 of 7380 results) were U-qualified as "non-detect" as a result of dual-column reproducibility. Based on the above, 11.06 percent (816 of 7380 results) are available for use as qualified. Combining the 88.59 percent with the 11.06 percent results in 99.65 percent (7354 of 7380 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as "rejected" (26 of 7380 results, 0.35 percent of total results) are available for use as qualified.

N.15.7.1 Discussion of Rejected Data

Table N.15-1 lists all R-qualified data for PI 7. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability.

Soil

Of the 26 surface soil samples analyzed for cyanide, only 2 non-detect results were rejected. Further, cyanide was not detected in sample SS08, a sample collected very close to the locations of the two rejected sample results.

Four non-detect 2,4-dinitrophenol results were rejected of the 11 surface soil samples collected in the central subsection of PI 7. However, 2,4-dinitrophenol was not detected in any other sample in any media at PI 7. Three non-detect 1,2-dibromo-3-chloropropane results were rejected of the 26 surface soil samples collected. However, this SVOC was not detected in any other sample in any media at PI 7.

Of the 18 subsurface soil samples analyzed for cyanide, only 3 non-detect results were rejected.

One non-detect 4-nitrophenol result, 3 non-detect 1,2-dibromo-3-chloropropane results, and 3 non-detect 2,4-dinitrophenol results were rejected in the 18 subsurface samples collected at PI 7. None of these SVOCs was detected in any other samples or media at the site.

Groundwater

All 3 non-detect methyl acetate groundwater sample results were rejected. However, methyl acetate was not detected in any other media at the site.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at PI 7.

N.15.7.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.15-2a (surface soil), N.15-2b (subsurface soil), and N.15-2c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at PI 7. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, six non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.15-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.15-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least

three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.15-2a, the actual method detection limits for the six SVOCs are significantly below the human health screening values. Therefore, had any of these six constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PI 7 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same six non-detected analytes as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.15-2b). Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PI 7 subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 60 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.15-2c). However, the achieved quantitation limits are equal to those concurred upon and memorialized in the Work Plan. Therefore, while there is some uncertainty associated with drawing conclusions with respect to human health effects, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized. Further, for 29 of the 60 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 29 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Furthermore, except for the inorganics, and six of the SVOCs, none of the 60 constituents was detected in any other media at the site. The six SVOCs were detected in one surface sample (EBS PI7-3). However, four surface/subsurface samples collected in locations surrounding EBS PI7-3 detected only one of the SVOCs (bis(2-ethylhexyl)phthalate) at one location in the subsurface soil. It is important to note, however, that the quantitation limit for bis(2-ethylhexyl)phthalate is only 0.2 µg/l above the screening value. Therefore, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-detect quantitation limits above human health screening values in PI 7 groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and one non-detected metal had laboratory quantitation limits that exceed ecological screening values (Table N.15-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.15-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the

uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.15-3, the actual method detection limits for the six SVOCs, three VOCs, and mercury are significantly below the ecological screening values. Therefore, had any of these 10 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PI 4 surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.15-1
 Summary of Rejected Data
 PI-7

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	PEST/PCB	EPI07-GW02-06B	HEPTACHLOR EPOXIDE	0.021	P	R	2C	UG/L
GW	VOA	EPI07-GW01-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
GW	VOA	EPI07-GW02-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
GW	VOA	EPI07-GW03-06B	METHYL ACETATE	0.5	U	R	ICL	UG/L
SB	METAL	EPI07-SB07-0406	CYANIDE	2.8	U	R	HT	MG/KG
SB	METAL	EPI07-SB09-0406	CYANIDE	2.8	U	R	HT	MG/KG
SB	METAL	EPI07-SB09P-0406	CYANIDE	2.7	U	R	HT	MG/KG
SB	METAL	EPI07-SB10-0406	CYANIDE	2.8	U	R	HT	MG/KG
SB	PEST/PCB	EPI07-SB16-0204	ALPHA-CHLORDANE	1.9	P	R	2C	UG/KG
SB	SVOA	EPI07-SB06-0406	4-NITROPHENOL	930	U	R	CCL	UG/KG
SB	SVOA	EPI07-SB07-0406	2,4-DINITROPHENOL	930	U	R	CCL	UG/KG
SB	SVOA	EPI07-SB09-0406	2,4-DINITROPHENOL	920	U	R	CCL	UG/KG
SB	SVOA	EPI07-SB09P-0406	2,4-DINITROPHENOL	900	U	R	CCL	UG/KG
SB	SVOA	EPI07-SB10-0406	2,4-DINITROPHENOL	930	U	R	CCL	UG/KG
SB	VOA	EPI07-SB08-0406	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	ICL	UG/KG
SB	VOA	EPI07-SB17-0102	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	ICL	UG/KG
SB	VOA	EPI07-SB18-0204	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	ICL	UG/KG
SS	METAL	EPI07-SS09-0001	CYANIDE	2.6	U	R	HT	MG/KG
SS	METAL	EPI07-SS10-0001	CYANIDE	2.7	U	R	HT	MG/KG
SS	SVOA	EPI07-SS06-0001	2,4-DINITROPHENOL	870	U	R	CCL	UG/KG
SS	SVOA	EPI07-SS07-0001	2,4-DINITROPHENOL	880	U	R	CCL	UG/KG
SS	SVOA	EPI07-SS09-0001	2,4-DINITROPHENOL	870	U	R	CCL	UG/KG
SS	SVOA	EPI07-SS10-0001	2,4-DINITROPHENOL	880	U	R	CCL	UG/KG
SS	VOA	EPI07-SS08-0001	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	ICL	UG/KG
SS	VOA	EPI07-SS18-0001	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	ICL	UG/KG
SS	VOA	EPI07-SS19-0001	1,2-DIBROMO-3-CHLOROPROPANE	11	U	R	ICL	UG/KG

Reason Codes (DV_Qual_Code)

2C: Dual-column reproducibility

CCL: Continuing Calibration - Low Recovery

HT: Holding Time Exceedances

ICL: Initial Calibration - Low Recovery

Table N.15-2a					
Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - PI 7					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.85 - 0.93	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.37	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.37	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.37	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.37	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.37	0.02736	0.069

Table N.15-2b					
Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - PI 7					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.85 - 0.93	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.37	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.37	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.37	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.37	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.37	0.02736	0.069

Table N.15-2c Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Groundwater - PI 7					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5 - 0.5	0.08	0.055
1,1,2-Trichloroethane	ug/L	0.5	0.5 - 0.5	0.06	0.2
1,2,4,5-Tetrachlorobenzene	ug/L	5	5.0 - 5.0	0.36	1.1
1,2-Dibromo-3-chloropropane	ug/L	0.5	0.5 - 0.5	0.19	0.035
1,2-Dibromoethane	ug/L	0.5	0.5 - 0.5	0.1	0.0056
1,2-Dichloroethane	ug/L	0.5	0.5 - 0.5	0.05	0.12
1,2-Dichloropropane	ug/L	0.5	0.5 - 0.5	0.04	0.16
2,2'-Oxybis(1-chloropropane)	ug/L	5	5.0 - 5.0	0.54	0.27
2,4,6-Trichlorophenol	ug/L	5	5.0 - 5.0	0.33	0.36
2,4-Dinitrophenol	ug/L	20	20 - 20	7.44	7.3
2,6-Dinitrotoluene	ug/L	5	5.0 - 5.0	0.5	3.6
2-Chlorophenol	ug/L	5	5.0 - 5.0	0.48	3
2-Methylnaphthalene	ug/L	5	5.0 - 5.0	0.28	2.4
2-Nitroaniline	ug/L	20	20 - 20	0.99	11
2-Nitrophenol	ug/L	5	5.0 - 5.0	0.44	3
3,3'-Dichlorobenzidine	ug/L	5	5.0 - 5.0	0.6	0.15
3-Nitroaniline	ug/L	20	20 - 20	0.93	1.1
4,6-Dinitro-2-methylphenol	ug/L	20	20 - 20	1.08	0.36
4-Bromophenyl-phenylether	ug/L	5	5.0 - 5.0	0.28	0.27
4-Chloro-3-methylphenol	ug/L	5	5.0 - 5.0	0.41	3
4-Chlorophenyl-phenylether	ug/L	5	5.0 - 5.0	0.4	0.27
4-Nitroaniline	ug/L	20	20 - 20	0.73	3.2
4-Nitrophenol	ug/L	20	20 - 20	1.26	0.34
Antimony	ug/L	60	60 - 60	0.051	1.5
Aroclor-1221	ug/L	0.4	0.4 - 0.4	0.52	0.034
Aroclor-1232	ug/L	0.2	0.2 - 0.2	0.28	0.034
Aroclor-1242	ug/L	0.2	0.2 - 0.2	0.15	0.034
Aroclor-1248	ug/L	0.2	0.2 - 0.2	0.15	0.034
Aroclor-1254	ug/L	0.2	0.2 - 0.2	0.1	0.034
Aroclor-1260	ug/L	0.2	0.2 - 0.2	0.1	0.034
Arsenic	ug/L	10	10 - 10	0.069	0.045
Benzene	ug/L	0.5	0.5 - 0.5	0.06	0.35
Benzo(a)anthracene	ug/L	5	5.0 - 5.0	0.57	0.092
Benzo(a)pyrene	ug/L	5	5.0 - 5.0	0.39	0.0092
Benzo(b)fluoranthene	ug/L	5	5.0 - 5.0	0.45	0.092
Benzo(k)fluoranthene	ug/L	5	5.0 - 5.0	0.48	0.92
bis(2-Chloroethoxy)methane	ug/L	5	5.0 - 5.0	0.5	0.27
bis(2-Chloroethyl)ether	ug/L	5	5.0 - 5.0	0.49	0.01
bis(2-Ethylhexyl)phthalate*	ug/L	5	5.0 - 5.0	9.21	4.8
Bromochloromethane	ug/L	0.5	0.5 - 0.5	0.07	0.18
Bromodichloromethane	ug/L	0.5	0.5 - 0.5	0.04	0.18
Cadmium	ug/L	5	5.0 - 5.0	0.028	1.8
Carbon tetrachloride	ug/L	0.5	0.5 - 0.5	0.04	0.17
cis-1,3-Dichloropropene	ug/L	0.5	0.5 - 0.5	0.08	0.4
Dibenz(a,h)anthracene	ug/L	5	5.0 - 5.0	0.36	0.0092
Dibenzofuran	ug/L	5	5.0 - 5.0	0.29	1.2
Dibromochloromethane	ug/L	0.5	0.5 - 0.5	0.04	0.13
Hexachlorobenzene	ug/L	5	5.0 - 5.0	0.52	0.042
Hexachlorobutadiene	ug/L	5	5.0 - 5.0	0.58	0.86
Hexachloroethane	ug/L	5	5.0 - 5.0	0.64	3.6
Indeno(1,2,3-cd)pyrene	ug/L	5	5.0 - 5.0	0.39	0.092
Naphthalene	ug/L	5	5.0 - 5.0	0.59	0.62
Nitrobenzene	ug/L	5	5.0 - 5.0	0.36	0.34
n-Nitroso-di-n-propylamine	ug/L	5	5.0 - 5.0	0.55	0.0096
Pentachlorophenol	ug/L	5	5.0 - 5.0	1.01	0.56
Thallium	ug/L	1	1.0 - 1.0	0.015	0.24
trans-1,3-Dichloropropene	ug/L	0.5	0.5 - 0.5	0.07	0.4
Trichloroethene	ug/L	0.5	0.5 - 0.5	0.07	0.028
Vanadium	ug/L	50	50 - 50	0.025	3.6
Vinyl chloride	ug/L	0.5	0.5 - 0.5	0.05	0.02

* The method detection limit for bis(2-ethylhexyl)phthalate calculated by the laboratory is invalid, but the separately calculated quantitation limit is correct.

Table N.15-3

Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PI 7

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Mercury	0.10	0.11	0.10	0.042	0.1
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	370	100	22.53	330
Benzo(a)pyrene	340	370	100	20.46	330
Fluoranthene	340	370	100	30.1	330
Naphthalene	340	370	100	28.16	330
Phenanthrene	340	370	100	27.96	330
Pyrene	340	370	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	13.0	10.0	0.3	10
Tetrachloroethene	10.0	13.0	2.00	0.2	10
Vinyl chloride	10.0	13.0	10.0	0.23	10

N.16 PAOC J

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PAOC J PA/SI, as well as to provide an assessment of data usability. Section N.16.5.1 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.16.1 PAOC J Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on March 1 and March 2, 2006.

N.16.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 336 distinct data points were generated. The volatiles data set is 100 percent complete (336 of 336 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 7.74 percent (26 of 336 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.16.1.1.1 below)
- 6.55 percent (22 of 336 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.16.1.1.1 below)

N.16.1.1.1 Calibration

A total of 26 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 22 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 455 distinct data points were generated. The semivolatiles data set is 100 percent complete (455 of 455 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 8.57 percent (39 of 455 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.16.1.2.1 below)
- 2.86 percent (13 of 455 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.16.1.2.1 below)
- 1.76 percent (8 of 455 results) were U-qualified as “attributable to blank contamination” (see section N.16.1.2.2, below)

N.16.1.2.1 Calibration

A total of 39 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 13 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.1.2.2 Blank Contamination

Eight results were U-qualified as “attributable to blank contamination” because acetophenone and bis(2-ethylhexyl)phthalate were detected in associated blank samples. Of these, bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.16.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 196 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (196 of 196 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 3.06 percent (6 of 196 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.16.1.3.1, below)
- 1.02 percent (2 of 196 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.16.1.3.2, below)
- 0.51 percent (1 of 196 results) were NJ-qualified as “presumptively present at approximate quantity” because of large differences in quantitation between the primary and secondary analytical columns (see section N.16.1.3.2, below)
- 0.51 percent (1 of 196 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.16.1.3.2, below)

N.16.1.3.1 Quantitation Limits

Six results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.1.3.2 Dual-Column Reproducibility

Two results were J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. One additional result was NJ-qualified as “presumptively present at approximate quantity” for the same reason. One additional result was U-qualified as “non-detect” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. J-qualification and NJ-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration. The U-qualification of non-detect

results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 168 distinct data points were generated. The metals data set is 100 percent complete (168 of 168 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 25.00 percent (42 of 168 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.16.1.4.1, below)
- 12.50 percent (21 of 168 results) were U-qualified as “attributable to blank contamination” (see section N.16.1.4.2, below)
- 11.90 percent (20 of 168 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.16.1.4.3, below)
- 4.17 percent (7 of 168 results) were J-qualified as “estimated” because of laboratory duplicate reproducibility (see section N.16.1.4.4, below)
- 4.17 percent (7 of 168 results) were J-qualified as “estimated” because of matrix spike recovery exceeding upper control limits (see section N.16.1.4.5, below)
- 2.98 percent (5 of 168 results) were J-qualified as “estimated” because of matrix spike recovery below lower control limits (see section N.16.1.4.5, below)
- 1.19 percent (2 of 168 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recovery below lower control limits (see section N.16.1.4.5, below)

N.16.1.4.1 Serial Dilution

A total of 42 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.1.4.2 Blank Contamination

A total of 21 results were U-qualified as “attributable to blank contamination” because cadmium, nickel, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.16.1.4.3 Quantitation Limits

A total of 20 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.1.4.4 Laboratory Duplicate

Seven results were J-qualified as “estimated” because of laboratory duplicate precision exceeding data validation control limits. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.1.4.5 Matrix Spike/ Matrix Spike Duplicate

Seven results were J-qualified as “estimated” because of matrix spike recoveries exceeding the upper control limit. Another five results were J-qualified as “estimated” because of matrix spike recoveries below the lower control limit. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.2 PAOC J Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on March 1 and March 2, 2006.

N.16.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 336 distinct data points were generated. The volatiles data set is 100 percent complete (336 of 336 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 6.85 percent (23 of 336 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.16.2.1.1 below)
- 5.06 percent (17 of 336 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.16.2.1.1 below)

N.16.2.1.1 Calibration

A total of 22 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 17 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 455 distinct data points were generated. The semivolatiles data set is 100 percent complete (455 of 455 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 8.13 percent (37 of 455 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.16.2.2.1 below)
- 3.08 percent (14 of 455 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.16.2.2.1 below)
- 0.66 percent (3 of 455 results) were U-qualified as “attributable to blank contamination” (see section N.16.2.2.2, below)

N.16.2.2.1 Calibration

A total of 37 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 14 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.2.2.2 Blank Contamination

Three results were U-qualified as “attributable to blank contamination” because acetophenone was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.16.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 196 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (196 of 196 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 1.53 percent (3 of 196 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.16.2.3.1, below)
- 1.02 percent (2 of 196 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.16.2.3.2, below)

N.16.2.3.1 Dual-Column Reproducibility

Three results were J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.2.3.2 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 168 distinct data points were generated. The metals data set is 100 percent complete (168 of 168 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 25.00 percent (42 of 168 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.16.2.4.1, below)
- 14.29 percent (24 of 168 results) were U-qualified as “attributable to blank contamination” (see section N.16.2.4.2, below)

- 9.52 percent (16 of 168 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.16.2.4.3, below)
- 4.17 percent (7 of 168 results) were J-qualified as “estimated” because of laboratory duplicate reproducibility (see section N.16.2.4.4, below)
- 4.17 percent (7 of 168 results) were J-qualified as “estimated” because of matrix spike recovery exceeding upper control limits (see section N.16.2.4.5, below)
- 3.57 percent (6 of 168 results) were J-qualified as “estimated” because of matrix spike recovery below lower control limits (see section N.16.2.4.5, below)
- 0.60 percent (1 of 168 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recovery below lower control limits (see section N.16.2.4.5, below)

N.16.2.4.1 Serial Dilution

A total of 42 results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.2.4.2 Blank Contamination

A total of 24 results were U-qualified as “attributable to blank contamination” because arsenic, cadmium, nickel, silver, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.16.2.4.3 Quantitation Limits

A total of 16 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.2.4.4 Laboratory Duplicate

Seven results were J-qualified as “estimated” because of laboratory duplicate precision exceeding data validation control limits. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.16.2.4.5 Matrix Spike/ Matrix Spike Duplicate

Seven results were J-qualified as “estimated” because of matrix spike recoveries exceeding the upper control limit. Another six results were J-qualified as “estimated” because of matrix spike recoveries below the lower control limit. One more result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.16.3 Subsurface Soil PARCC

N.16.3.1 Precision

Because no results were rejected based on matrix spike precision, laboratory duplicates, and field duplicates, and only seven results were qualified based on laboratory duplicate

precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.16.3.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only 14 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.16.3.3 Representativeness

There were no issues affecting representativeness in this data set.

N.16.3.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.16.3.5 Comparability

There were no issues affecting comparability in this data set.

N.16.4 Surface Soil PARCC

N.16.4.1 Precision

Because no results were rejected based on matrix spike precision, laboratory duplicates, and field duplicates, and only seven results were qualified based on laboratory duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.16.4.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only 14 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.16.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.16.4.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the project goal in this data set.

N.16.4.5 Comparability

There were no issues affecting comparability in this data set.

N.16.5 Totals for “Available as Reported” and “Available as Qualified”

The data quality evaluation showed that the laboratory U-qualified 77.92 percent (1800 of 2310 results) of the data as non-detect and further qualification was not warranted. Another 3.72 percent (86 of 2310 results) were detected and no further qualification was warranted. Another 1.90 percent (44 of 2310 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 83.55 percent (1930 of 2310 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, laboratory duplicate, high and low matrix spike recoveries, and serial dilution exceedances. These amounted to 5.54 percent (128 of 2310 results) of the total results. The percentage of results NJ-qualified as “presumptively present at approximate quantity” amounted to 0.04 percent (1 of 2310 results). The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 8.40 percent (194 of 2310 results) and resulted from high and low continuing calibration exceedances and low matrix spike recoveries. A total of 2.42 percent (56 of 2310 results) were U-qualified as “non-detect” as a result of blank contamination. A total of 0.04 percent (1 of 2310 results) was U-qualified as “non-detect” as a result of dual-column reproducibility. Based on the above, 16.45 percent (380 of 2310 results) are available for use as qualified. Combining the 83.55 percent with the 16.45 percent results in 100 percent (2310 of 2310 results) data available for use, qualified as applicable.

All results are available for use as qualified.

N.16.5.1 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.16-1a (surface soil) and N.16-1b (subsurface soil) list all quantitation limits above human health screening values for non-detected constituents at PAOC J. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, seven non-detected analytes (six SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.16-1a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.16-1a, even the target quantitation limits exceed the screening values (other than for thallium); therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.16-1a, the actual method detection limits for the six SVOCs and thallium are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC J surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same six non-detected SVOCs as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.16-1b). Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PAOC J subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and one non-detected inorganic had laboratory quantitation limits that exceed ecological screening values (Table N.16-2). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.16-2, even the target quantitation limits for the six SVOCs, PCE, and cyanide exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.16-2, the actual method detection limits for the six SVOCs, three VOCs, and cyanide are significantly below the ecological screening values. Therefore, had any of these 10 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PAOC J surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.16-1a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - PAOC J

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 0.94	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.38	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.38	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.38	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.38	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.38	0.02736	0.069
Thallium	mg/kg	0.5	0.52 - 0.57	0.011	0.52

Table N.16-1b Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - PAOC J					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 0.93	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.37	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.37	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.37	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.37	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.37	0.02736	0.069

Table N.16-2

Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PAOC J

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Cyanide	2.60	2.80	1.00	0.14	2.5
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	380	100	22.53	330
Benzo(a)pyrene	340	380	100	20.46	330
Fluoranthene	340	380	100	30.1	330
Naphthalene	340	380	100	28.16	330
Phenanthrene	340	380	100	27.96	330
Pyrene	340	380	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	12.0	10.0	0.3	10
Tetrachloroethene	10.0	12.0	2.00	0.2	10
Vinyl chloride	10.0	12.0	10.0	0.23	10

N.17 PAOC K

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PAOC K PA/SI, as well as to provide an assessment of data usability. Section N.17.5.1 discusses the rejected data with respect to data usability. Section N.17.5.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.17.1 PAOC K Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected February 28 through March 8, 2006.

N.17.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 240 distinct data points were generated. The volatiles data set is 100 percent complete (240 of 240 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.17 percent (10 of 240 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.17.1.1.1 below)
- 0.42 percent (1 of 240 results) were U-qualified as “attributable to blank contamination” (see section N.17.1.1.2, below)

N.17.1.1.1 Calibration

A total of 10 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.1.1.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.17.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OM04. Excluding field quality control samples, 325 distinct data points were generated. The semivolatiles data set is 100 percent complete (325 of 325 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 5.23 percent (17 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.17.1.2.1 below)

- 3.38 percent (11 of 455 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.17.1.2.1 below)

N.17.1.2.1 Calibration

A total of 17 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 11 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 140 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (140 of 140 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 1.43 percent (2 of 140 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.17.1.3.1, below)
- 1.43 percent (2 of 140 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.17.1.3.2, below)
- 0.71 percent (1 of 140 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.17.1.3.2, below)

N.17.1.3.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.1.3.2 Dual-Column Reproducibility

Two results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. One additional result was J-qualified as “estimated” for the same reason. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 120 distinct data points were generated. When rejected results are considered, the metals data set is 98.33 percent complete (118 of 120 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 14.17 percent (17 of 120 results) were U-qualified as “attributable to blank contamination” (see section N.17.1.4.1, below)
- 7.50 percent (9 of 120 results) were J-qualified as “estimated” because of matrix spike recovery below lower control limits (see section N.17.1.4.2, below)
- 2.50 percent (3 of 120 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.17.1.4.3, below)
- 1.67 percent (2 of 120 results) were R-qualified as “rejected” because of holding time exceedances (see section N.17.1.4.4, below)
- 0.83 percent (1 of 120 results) were UJ-qualified as “non-detect” because of matrix spike recovery below lower control limits (see section N.17.1.4.2, below)

N.17.1.4.1 Blank Contamination

A total of 17 results were U-qualified as “attributable to blank contamination” because beryllium, lead, nickel, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.17.1.4.2 Matrix Spike/ Matrix Spike Duplicate

Nine results were J-qualified as “estimated” because of matrix spike recoveries below the lower control limit. One more result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.1.4.3 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.1.4.4 Holding Times

Two mercury results, consisting of mercury in EPAK-SB05-0406 and EPAK-SB02-0406, were R-qualified as “rejected” because of holding time exceedances. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. These results were deemed “non-detect” by the laboratory. Results for mercury are available for all other (3) samples in this data set.

N.17.2 PAOC K Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on February 28 and March 1, 2006.

N.17.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 240 distinct data points were generated. The volatiles data set is 100 percent complete (240 of

240 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 2.50 percent (6 of 240 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.17.2.1.1 below)
- 0.42 percent (1 of 240 results) were U-qualified as “attributable to blank contamination” (see Section N.17.2.1.2 below)

N.17.2.1.1 Calibration

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.2.1.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.17.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OM04. Excluding field quality control samples, 325 distinct data points were generated. The semivolatiles data set is 100 percent complete (325 of 325 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 7.38 percent (24 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard recovery below lower limits (see section N.17.2.2.1, below)
- 6.15 percent (20 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.17.2.2.2 below)
- 4.31 percent (14 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.17.2.2.1 below)
- 0.62 percent (2 of 455 results) were U-qualified as “attributable to blank contamination” (see section N.17.2.2.3, below)

N.17.2.2.1 Internal Standards

A total of 24 results were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard recoveries lower than the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.2.2.2 Calibration

A total of 20 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 14 results were UJ-qualified as “non-detect, estimated quantitation limit” because of

continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.2.2.3 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexyl)phthalate was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.17.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 140 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (140 of 140 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 5.00 percent (7 of 140 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.17.2.3.1, below)
- 1.43 percent (2 of 140 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.17.2.3.2, below)
- 0.71 percent (1 of 140 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.17.2.3.1, below)

N.17.2.3.1 Dual-Column Reproducibility

Seven results were U-qualified as “non-detect, estimated quantitation limit” because of a large percent difference between the primary and secondary analytical columns. One more result was J-qualified as “estimated” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. U-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.2.3.2 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 120 distinct data points were generated. When rejected results are considered, the metals data set is 98.33 percent complete (118 of 120 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 11.67 percent (14 of 120 results) were U-qualified as “attributable to blank contamination” (see section N.17.2.4.1, below)
- 6.67 percent (8 of 120 results) were J-qualified as “estimated” because of matrix spike recovery below lower control limits (see section N.17.2.4.2, below)
- 3.33 percent (4 of 120 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.17.2.4.3, below)
- 1.67 percent (2 of 120 results) were J-qualified as “estimated” because of field duplicate reproducibility exceeding data validation limits (see section N.17.2.4.4, below)
- 1.67 percent (2 of 120 results) were J-qualified as “estimated” because of holding time exceedances (see section N.17.2.4.5, below)
- 1.67 percent (2 of 120 results) were R-qualified as “rejected” because of holding time exceedances (see section N.17.2.4.5, below)
- 1.67 percent (2 of 120 results) were UJ-qualified as “non-detect” because of matrix spike recovery below lower control limits (see section N.17.2.4.2, below)

N.17.2.4.1 Blank Contamination

A total of 14 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.17.2.4.2 Matrix Spike/ Matrix Spike Duplicate

Eight results were J-qualified as “estimated” because of matrix spike recoveries below the lower control limit. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.17.2.4.3 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.2.4.4 Field Duplicate

Two results were J-qualified as “estimated” because the results were characterized by field duplicate reproducibility exceeding data validation control limits. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.1.4.5 Holding Times

Two mercury results, consisting of mercury in EPAK-SS05-0001 and EPAK-SS02-0001, were R-qualified as “rejected” because of holding time exceedances. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. These results were deemed “non-detect” by the laboratory.

Two more mercury results were J-qualified as “estimated” because of holding time exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.17.3 Subsurface Soil PARCC

N.17.3.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.17.3.2 Accuracy

Because no results were rejected due to matrix spike, laboratory control sample, or spiked surrogate recovery exceedances, and only 10 results were qualified due to matrix spike recoveries, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases.

N.17.3.3 Representativeness

There were no issues affecting representativeness in this data set.

N.17.3.4 Completeness

There were only two R-qualified results in this dataset; therefore the data validation process demonstrated that 99.76 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.17.3.5 Comparability

There were no issues affecting comparability in this data set.

N.17.4 Surface Soil PARCC

N.17.4.1 Precision

Because no results were rejected based on matrix spike precision, laboratory duplicates, and field duplicates, and only two results were qualified based on field duplicate exceedances, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.17.4.2 Accuracy

Because no results were rejected due to laboratory control sample, matrix spike, or spiked surrogate exceedances, and only 10 results were qualified due to matrix spike recoveries, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases.

N.17.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.17.4.4 Completeness

There were only two R-qualified results in this dataset; therefore the data validation process demonstrated that 99.76 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.17.4.5 Comparability

There were no issues affecting comparability in this data set.

N.17.5 Totals for “Available as Reported,” “Available as Qualified,” and Rejected

The data quality evaluation showed that the laboratory U-qualified 79.45 percent (1311 of 1650 results) of the data as non-detect and further qualification was not warranted. Another 9.21 percent (152 of 1650 results) were detected and no further qualification was warranted. Another 0.67 percent (11 of 1650 results) were J-qualified as “estimated” and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 89.33 percent (1474 of 1650 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, field duplicate reproducibility, holding time exceedances, and low matrix spike recovery. These amounted to 1.39 percent (23 of 1650 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted 6.36 percent (105 of 1650 results) and resulted from high and low continuing calibration exceedances, low internal standard recovery exceedances, and low matrix spike recoveries. A total of 2.12 percent (35 of 1650 results) were U-qualified as “non-detect” as a result of blank contamination. A total of 0.54 percent (9 of 1650 results) was U-qualified as “non-detect” as a result of dual-column reproducibility. Based on the above, 10.42 percent (172 of 1650 results) are available for use as qualified. Combining the 89.33 percent with the 10.42 percent results in 99.76 percent (1646 of 1650 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (4 of 1650 results, 0.24 percent of total results) are available for use as qualified.

N.17.5.1 Discussion of Rejected Data

Table N.17-1 lists all R-qualified data for PAOC K. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability.

The non-detect mercury results were rejected in 2 of 5 surface soil and 2 of 5 subsurface soil samples. Mercury was not detected above the screening levels in any other surface soil sample, and not detected in any other subsurface soil sample.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at PAOC K.

N.17.5.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.17-2a (surface soil) and N.17-2b (subsurface soil) list all quantitation limits above human health screening values for non-detected constituents at PAOC K. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, seven non-detected analytes (six SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.17-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.17-2a, even the target quantitation limits exceed the screening values (other than for thallium); therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.17-2a, the actual method detection limits for the six SVOCs and thallium are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC K surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same seven non-detected analytes as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.17-2b). Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PAOC K subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and one non-detected inorganic had laboratory quantitation limits that exceed ecological screening values (Table N.17-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.17-3, even the target quantitation limits for the six SVOCs, cyanide and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.17-3, the actual method detection limits for the six SVOCs, three VOCs, and cyanide are significantly below the ecological screening values. Therefore, had any of these 10 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PAOC K surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.17-1
 Summary of Rejected Data
 PAOC K

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	METAL	EPAK-SB02-0406	MERCURY	0.11	U	R	HT	MG/KG
SB	METAL	EPAK-SB05-0406	MERCURY	0.13	U	R	HT	MG/KG
SS	METAL	EPAK-SS02-0001	MERCURY	0.12	U	R	HT	MG/KG
SS	METAL	EPAK-SS05-0001	MERCURY	0.1	U	R	HT	MG/KG

Reason Codes (DV_Qual_Code)

HT: Holding Time Exceedance

Table N.17-2a

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - PAOC K

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 0.98	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.39	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.39	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.39	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.39	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.39	0.02736	0.069
Thallium	mg/kg	0.5	0.52 - 0.59	0.011	0.52

Table N.17-2b

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - PAOC K

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.84 - 1.1	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.33 - 0.43	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.33 - 0.43	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.33 - 0.43	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.33 - 0.43	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.33 - 0.43	0.02736	0.069
Thallium	mg/kg	0.5	0.5 - 0.65	0.011	0.52

Table N.17-3

Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PAOC K

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Cyanide	2.60	3.00	1.00	0.14	2.5
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	390	100	22.53	330
Benzo(a)pyrene	340	390	100	20.46	330
Fluoranthene	340	390	100	30.1	330
Naphthalene	340	390	100	28.16	330
Phenanthrene	340	390	100	27.96	330
Pyrene	340	390	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	11.0	10.0	0.3	10
Tetrachloroethene	10.0	11.0	2.00	0.2	10
Vinyl chloride	10.0	11.0	10.0	0.23	10

N.18 PAOC L

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PAOC L PA/SI, as well as to provide an assessment of data usability. Section N.18.7.1 discusses the rejected data with respect to data usability. Section N.18.7.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.18.1 PAOC L Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on April 6, 2006.

N.18.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 50 distinct data points were generated. The volatiles data set is 100 percent complete (50 of 50 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.00 percent (2 of 50 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.1.1.1, below)
- 4.00 percent (2 of 50 results) were U-qualified as “attributable to blank contamination” (see Section N.18.1.1.2 below)
- 4.00 percent (2 of 50 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.18.1.1.3 below)

N.18.1.1.1 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.1.1.2 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because acetone and methylene chloride were detected in associated blank samples. Acetone and methylene chloride are common laboratory contaminants. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.1.1.3 Calibration

Two results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 65 distinct data points were generated. The semivolatiles data set is 100 percent complete

(65 of 65 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 9.23 percent (6 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery below the lower control limit (see section N.18.1.2.1, below)
- 4.62 percent (3 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.18.1.2.2 below)
- 3.08 percent (2 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.18.1.2.2 below)

N.18.1.2.1 Surrogates

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.1.2.2 Calibration

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLC03. Excluding field quality control samples, 28 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (28 of 28 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 3.57 percent (1 of 28 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.18.1.3.1, below)

N.18.1.3.1 Dual-Column Reproducibility

One result was U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 24 distinct data points were generated. The metals data set is

100 percent complete (24 of 24 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 20.83 percent (5 of 24 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.1.4.1, below)
- 16.67 percent (4 of 24 results) were U-qualified as “attributable to blank contamination” (see section N.18.1.4.2, below)
- 4.17 percent (1 of 24 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.18.1.4.3, below)

N.18.1.4.1 Quantitation Limits

Five results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.1.4.2 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because barium, beryllium, lead, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.1.4.3 Serial Dilution

One result was J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.1.5 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 23 distinct data points were generated. The filtered metals data set is 100 percent complete (23 of 23 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 26.09 percent (6 of 23 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.1.5.1, below)
- 8.70 percent (2 of 23 results) were U-qualified as “attributable to blank contamination” (see section N.18.1.5.2, below)
- 4.35 percent (1 of 23 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.18.1.5.3, below)

N.18.1.5.1 Quantitation Limits

Six results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.1.5.2 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because aluminum and beryllium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.1.5.3 Serial Dilution

One result was J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.1.6 Wet Chemistry

Wet Chemistry (total dissolved solids) was analyzed by EPA method 160.1. Excluding field quality control samples, one distinct data point was generated. The wet chemistry data set is 100 percent complete (1 of 1 wet chemistry result is available for use). The validation process resulted in no qualification.

N.18.2 PAOC L Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on February 27 and March 8, 2006.

N.18.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 192 distinct data points were generated. When rejected results are considered, the volatiles data set is 97.92 percent complete (188 of 192 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.65 percent (7 of 192 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.18.2.1.1, below)
- 2.08 percent (4 of 192 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see section N.18.2.1.1, below)

N.18.2.1.1 Calibration

Four 1,2-dibromo-3-chloropropane results, consisting of 1,2-dibromo-3-chloropropane in each (four) sample, were R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory.

Seven results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 260 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 94.62 percent complete (246 of 260 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 7.69 percent (20 of 260 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.18.2.2.1 below)

- 5.38 percent (14 of 260 results) were R-qualified as “rejected” because of spiked surrogate recovery below the lower control limit (see Section N.18.2.2.2 below)
- 1.54 percent (4 of 260 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.18.2.2.1 below)

N.18.2.2.1 Calibration

A total of 20 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 14 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.2.2.2 Surrogates

A total of 14 results, consisting of 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 2,4-dimethylphenol, 2,4-dinitrophenol, 2-chlorophenol, 2-methylphenol, 2-nitrophenol, 4,6-dinitro-2-methylphenol, 4-chloro-3-methylphenol, 4-methylphenol, 4-nitrophenol, pentachlorophenol, and phenol in EPAL-SB04-0204, were R-qualified as “rejected” because of spiked surrogate recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. Available results for these compounds still exist for all other (three) samples.

N.18.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 112 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (112 of 112 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 23.21 percent (26 of 112 results) were J-qualified as “estimated” because of holding time exceedances (see section N.18.2.3.1, below)
- 3.57 percent (4 of 112 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.18.2.3.2, below)
- 1.79 percent (2 of 112 results) were J-qualified as “estimated” because of holding time exceedances (see section N.18.2.3.1, below)
- 0.89 percent (1 of 112 results) were U-qualified as “attributable to blank contamination” (see section N.18.2.3.3, below)

N.18.2.3.1 Holding Times

A total of 26 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. Another two results were J-qualified as “estimated” for the same reason. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of

detects does not affect the availability of results because they are usable as detects at the reported concentration.

N.18.2.3.2 Dual-Column Reproducibility

Four results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.2.3.3 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because gamma-chlordane detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 96 distinct data points were generated. The metals data set is 100 percent complete (96 of 96 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 10.42 percent (10 of 96 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.2.4.1, below)
- 6.25 percent (6 of 96 results) were U-qualified as “attributable to blank contamination” (see section N.18.2.4.2, below)
- 4.17 percent (4 of 96 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.18.2.4.3, below)
- 4.17 percent (4 of 96 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.18.2.4.4, below)

N.18.2.4.1 Quantitation Limits

Ten results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.2.4.2 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because nickel, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.2.4.3 Matrix Spike/ Matrix Spike Duplicate

Four results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.2.4.4 Serial Dilution

Four results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3 PAOC L Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on February 27 and March 8, 2006.

N.18.3.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 240 distinct data points were generated. When the rejected results are considered, the volatiles data set is 99.58 percent complete (239 of 240 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 2.08 percent (5 of 240 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.18.3.1.1, below)
- 0.42 percent (1 of 240 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.3.1.2, below)
- 0.42 percent (1 of 240 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see section N.18.3.1.1, below)

N.18.3.1.1 Calibration

One volatiles result, consisting of 1,2-dibromo-3-chloropropane in EPAL-SS04-0001, was R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. This result was deemed “non-detect” by the laboratory. There are available 1,2,-dibromo-3-chloropropane results for all (four) other samples.

Five more volatiles results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.2.4.1 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 325 distinct data points were generated. The semivolatiles data set is 100 percent complete (325 of 325 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 20.00 percent (65 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.18.3.2.1, below)
- 4.00 percent (13 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.18.3.2.2 below)

- 3.08 percent (10 of 325 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.3.2.3, below)
- 3.08 percent (10 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.18.3.2.2 below)

N.18.3.2.1 Holding Times

A total of 65 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.3.2.2 Calibration

A total of 13 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Ten more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.18.3.2.3 Quantitation Limits

Ten results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 140 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 99.29 percent complete (139 of 140 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 31.43 percent (44 of 140 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.18.3.3.1, below)
- 2.86 percent (4 of 140 results) were J-qualified as “estimated” because of holding time exceedances (see section N.18.3.3.1, below)
- 2.86 percent (4 of 140 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.18.3.3.2, below)
- 1.43 percent (2 of 140 results) were NJ-qualified as “presumptively present at approximate quantity” because of large differences in quantitation between the primary and secondary analytical columns (see section N.18.3.3.2, below)
- 0.71 percent (1 of 140 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.18.3.3.2, below)

- 0.71 percent (1 of 140 results) were R-qualified as “rejected” because of large differences in quantitation between the primary and secondary analytical columns (see section N.18.3.3.2, below)
- 0.71 percent (1 of 140 results) were U-qualified as “attributable to blank contamination” (see section N.18.3.3.3, below)

N.18.3.3.1 Holding Times

A total of 44 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. Four more results were J-qualified as “estimated” for the same reason. If a sample has exceeded its hold time, a data validator will generally J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit.” If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.3.2 Dual-Column Reproducibility

One pesticide result, consisting of heptachlor epoxide in EPAL-SS01-0002, was R-qualified as “rejected” because of large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. This result was detected by the laboratory. There are available heptachlor epoxide results for all (four) other samples.

Four results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. Another two results were NJ-qualified as “presumptively present at approximate quantity” for the same reason. One more result was J-qualified as “estimated” for the same reason. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The NJ-qualification and J-qualification of detect results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.3.3 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because gamma chlordane was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.3.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 120 distinct data points were generated. The metals data set is 100 percent complete (120 of 120 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 13.33 percent (16 of 120 results) were U-qualified as “attributable to blank contamination” (see section N.18.3.4.1, below)
- 7.50 percent (9 of 120 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.18.3.4.2, below)
- 4.17 percent (5 of 120 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.18.3.4.3, below)
- 4.17 percent (5 of 120 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.18.3.4.4, below)
- 1.67 percent (2 of 120 results) were J-qualified as “estimated” because of field duplicate reproducibility exceedances (see section N.18.3.4.5, below)

N.18.3.4.1 Blank Contamination

A total of 16 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, nickel, sodium, and thallium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.18.3.4.2 Quantitation Limits

Nine results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.4.3 Matrix Spike/ Matrix Spike Duplicate

Five results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.4.4 Serial Dilution

Five results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.3.4.5 Field Duplicates

Two results were J-qualified as “estimated” because of field duplicate reproducibility exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.18.4 Groundwater PARCC

N.18.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.18.4.2 Accuracy

Because no results were qualified due to laboratory control sample exceedances or matrix spike recoveries, and only six results were qualified based on spiked surrogate recoveries, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases.

N.18.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.18.4.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal in this data set.

N.18.4.5 Comparability

There were no issues affecting comparability in this data set.

N.18.5 Subsurface Soil PARCC

N.18.5.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.18.5.2 Accuracy

Except in the case of the 14 results rejected due to spiked surrogate recoveries, matrix effects and the laboratory's ability did not have any adverse effects on accuracy. Because only four results were qualified based on matrix spike recovery exceedances, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases. No results were qualified based on laboratory control sample exceedances.

N.18.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.18.5.4 Completeness

Overall, there were 18 R-qualified results in this dataset. The R-qualified results comprised 2.73 percent (18 of 660 results) of the total number of distinct results; therefore the data validation process demonstrated that 97.27 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.18.5.5 Comparability

There were no issues affecting comparability in this data set.

N.18.6 Surface Soil PARCC

N.18.6.1 Precision

Because no results were rejected based on matrix spike precision, laboratory duplicates, and field duplicates, and only two results were qualified based on field duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.18.6.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only five results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases. No results were qualified based on spiked surrogate recoveries.

N.18.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.18.6.4 Completeness

Overall, there were two R-qualified results in this dataset. The R-qualified results comprised 0.24 percent (2 of 825 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.76 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.18.6.5 Comparability

There were no issues affecting comparability in this data set.

N.18.7 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 71.30 percent (1195 of 1676 results) of the data as non-detect and further qualification was not warranted. Another 8.29 percent (139 of 1676 results) were detected and no further qualification was warranted. Another 2.57 percent (43 of 1676 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 82.16 percent (1377 of 1676 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, field duplicate reproducibility, holding time exceedances, low matrix spike recoveries, and serial dilution exceedances. These amounted to 1.73 percent (29 of 1676 results) of the total results. The percentage of results NJ-qualified as "presumptively present at approximate quantity" amounted to 0.12 percent (2 of 1676) and resulted from dual-column reproducibility. The percentage of non-detect results UJ-qualified as "non-detect, estimated quantitation limit" amounted to 12.35 percent (207 of 1676 results) and resulted from high and low continuing calibration exceedances, holding time exceedances, and low spiked surrogate recoveries. A total of 1.91 percent (32 of 1676 results) were U-qualified as "non-detect" as a result of blank contamination. A total of 0.54 percent (9 of 1676 results) were U-qualified as "non-detect" as a result of dual-column reproducibility. Based on the above, 16.65 percent (279 of 1676 results) are available for use as qualified. Combining the 82.16 percent with the 16.65 percent results in 98.81 percent (1656 of 1676 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as "rejected" (20 of 1676 results, 1.19 percent of total results) are available for use as qualified.

N.18.7.1 Discussion of Rejected Data

Table N.18-1 lists all R-qualified data for PAOC L. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability.

Heptachlor epoxide was rejected in 1 of 4 surface soil samples at PAOC L; however it was not detected in any other samples or media at the site. Of the four surface and subsurface soil samples collected at PAOC L, one surface soil and four subsurface soil non-detect 1,2-dibromo-3-chloropropane results were rejected. However, the SVOC was not detected in any other sample or media at the site. Fourteen non-detect SVOCs were also rejected in subsurface soil samples SB04. However, none of the SVOCs were detected in any of the other samples or media at the site.

Based on the information above, the rejected data do not affect the ability to use existing data to evaluate aspects of environmental conditions at PAOC L, including potential releases. However, it is recognized that sufficient data have not been collected to draw conclusions regarding potential releases with adequate confidence. Therefore, additional data collection will be performed.

N.18.7.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.18-2a (surface soil), N.18-2b (subsurface soil), and N.18-2c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at PAOC L. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, 25 non-detected analytes (5 SVOCs, 12 pesticides, 7 PCBs, and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.18-2a). However, the achieved quantitation limits for the SVOCs, thallium, and some of the pesticide/PCB analyses are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. Several of the pesticide/PCB non-detect quantitation limits are elevated by two orders of magnitude due to a 100-percent dilution. As shown in Table N.18-2a, the target quantitation limits for the five SVOCs exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as "below quantitation limit" by the laboratory.

As shown in Table N.18-2a, the actual method detection limits for the 5 SVOCs, 12 pesticides, 7 PCBs, and thallium are significantly below the human health screening values. Therefore, had any of these 25 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below

quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC L surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same non-detected metal (thallium) and five non-detected SVOCs (plus benzo(a)pyrene) as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.18-2b). The method detection limit for benzo(a)pyrene is also well below its human health screening value. Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PAOC L subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 69 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.18-2c). However, the achieved quantitation limits for most are equal to those concurred upon and memorialized in the Work Plan. Several others are within 1 µg/l. The quantitation limit for only one constituent (2,4-dinitrophenol) is more than 1 µg/l above the target quantitation limit. However, the method detection limit for this constituent is approximately the same as the screening value. For another 35 of the 69 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 35 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Furthermore, except for the inorganics, 3 SVOCs, and 1 pesticide, none of the 69 constituents was detected in any other media at the site. The three SVOCs and pesticide were detected in only one sample each in the surface soil, and none were detected in the subsurface soil. Therefore, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC L groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, 10 non-detected pesticides, 4 non-detected SVOCs, 3 non-detected VOCs, and 1 non-detected metal had laboratory quantitation limits that exceed ecological screening values (Table N.18-3). However, other than the pesticides, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. The pesticides maximum quantitation limits are elevated by two orders of magnitude due to the 100 percent dilution necessitated by other pesticide concentrations. As shown in Table N.18-3, even the target quantitation limits for five of the pesticides, three of the SVOCs, and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.18-3, the actual method detection limits for all of these analytes except for six pesticides (including atrazine) are significantly below the ecological screening values. Therefore, had any of these 12 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below

quantitation limit" by the laboratory. Further, the screening levels for the other six pesticides are not achievable using the Work Plan-prescribed analytical method, from either a quantitation limit or method detection limit perspective. Therefore, while there is some uncertainty associated with conclusions drawn based on the pesticide results, the conclusions are based on best available technology protocol. However, further evaluation of the site for pesticides is planned.

Table N.18-1
 Summary of Rejected Data
 PAOC L

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	SVOA	EPAL-SB04-0204	PHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2-CHLOROPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2-METHYLPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	4-METHYLPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2-NITROPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2,4-DIMETHYLPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2,4-DICHLOROPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	4-CHLORO-3-METHYLPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2,4,6-TRICHLOROPHENOL	370	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2,4,5-TRICHLOROPHENOL	930	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	2,4-DINITROPHENOL	930	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	4-NITROPHENOL	930	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	4,6-DINITRO-2-METHYLPHENOL	930	U	R	SSL	UG/KG
SB	SVOA	EPAL-SB04-0204	PENTACHLOROPHENOL	930	U	R	SSL	UG/KG
SB	VOA	EPAL-SB01-0204	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	CCL	UG/KG
SB	VOA	EPAL-SB02-0406	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	CCL	UG/KG
SB	VOA	EPAL-SB03-0406	1,2-DIBROMO-3-CHLOROPROPANE	10	U	R	CCL	UG/KG
SB	VOA	EPAL-SB04-0204	1,2-DIBROMO-3-CHLOROPROPANE	13	U	R	CCL	UG/KG
SS	PEST/PCB	EPAL-SS01-0002	HEPTACHLOR EPOXIDE	2	P	R	2C	UG/KG
SS	VOA	EPAL-SS04-0001	1,2-DIBROMO-3-CHLOROPROPANE	12	U	R	CCL	UG/KG

Reason Codes (DV_Qual_Code)

2C: Dual-Column Reproducibility

CCL: Continuing Calibration - Low Recovery

SSL: Spiked Surrogate - Low Recovery

Table N.18-2a
Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Surface Soil - PAOC L

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.85 - 0.92	0.0697	0.61
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.37	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.37	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.37	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.37	0.02736	0.069
Thallium	mg/kg	0.5	0.51 - 0.55	0.011	0.52
Aldrin	mg/kg	0.0017	0.0018-0.180	0.00054	0.029
Aroclor-1016	mg/kg	0.033	0.036-3.500	0.00348	0.39
Aroclor-1221	mg/kg	0.067	0.073-7.100	0.01309	0.11
Aroclor-1232	mg/kg	0.033	0.036-3.500	0.00947	0.11
Aroclor-1242	mg/kg	0.033	0.036-3.500	0.00421	0.11
Aroclor-1248	mg/kg	0.033	0.036-3.500	0.0079	0.11
Aroclor-1254	mg/kg	0.033	0.036-3.500	0.00579	0.11
Aroclor-1260	mg/kg	0.033	0.036-3.500	0.00434	0.11
Endrin aldehyde	mg/kg	0.0033	0.036-3.500	0.00099	1.8
Endrin ketone	mg/kg	0.0033	0.036-3.500	0.0004	1.8
Heptachlor	mg/kg	0.0017	0.0018-0.180	0.00069	0.11
Heptachlor epoxide	mg/kg	0.0017	0.0018-0.180	0.0004	0.053
Toxaphene	mg/kg	0.17	0.180-18.000	0.02264	0.44
alpha-BHC	mg/kg	0.0017	0.018-1.800	0.00043	0.09
alpha-Chlordane	mg/kg	0.0017	0.018-1.800	0.00048	1.6
beta-BHC	mg/kg	0.0017	0.018-1.800	0.00039	0.32
delta-BHC	mg/kg	0.0017	0.018-1.800	0.00028	0.44
gamma-BHC (Lindane)	mg/kg	0.0017	0.018-1.800	0.00019	0.44
gamma-Chlordane	mg/kg	0.0017	0.018-1.800	0.00055	1.6

Table N.18-2b

Comparison of Non-Detect Quantitation Limits with Human Health Screening Values - Subsurface Soil - PAOC L

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.9 - 0.94	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.36 - 0.38	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.36 - 0.38	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.36 - 0.38	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.36 - 0.38	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.36 - 0.38	0.02736	0.069
Thallium	mg/kg	0.5	0.53 - 0.57	0.011	0.52

Table N.18-2c Comparison of Non-Detect Quantification Limits with Human Health Screening Values - Groundwater - PAOC L					
Chemical	Units	Work Plan Specified Quantification Limit	Quantification Limit Range	Method Detection Limit	Screening Toxicity Value
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5-0.5	0.08	0.055
1,1,2-Trichloroethane	ug/L	0.5	0.5-0.5	0.06	0.2
1,2,4,5-Tetrachlorobenzene	ug/L	5	5.3-5.3	0.36	1.1
1,2-Dibromo-3-chloropropane	ug/L	0.5	0.5-0.5	0.19	0.035
1,2-Dibromoethane	ug/L	0.5	0.5-0.5	0.1	0.0056
1,2-Dichloroethane	ug/L	0.5	0.5-0.5	0.05	0.12
1,2-Dichloropropane	ug/L	0.5	0.5-0.5	0.04	0.16
2,2'-Oxybis(1-chloropropane)	ug/L	5	5.3-5.3	0.54	0.27
2,4,6-Trichlorophenol	ug/L	5	5.3-5.3	0.33	0.36
2,4-Dinitrophenol	ug/L	5	21-21	7.44	7.3
2,6-Dinitrotoluene	ug/L	5	5.3-5.3	0.5	3.6
2-Chlorophenol	ug/L	5	5.3-5.3	0.48	3
2-Methylnaphthalene	ug/L	5	5.3-5.3	0.28	2.4
2-Nitroaniline	ug/L	20	21-21	0.99	11
2-Nitrophenol	ug/L	5	5.3-5.3	0.44	3
3,3'-Dichlorobenzidine	ug/L	5	5.3-5.3	0.6	0.15
3-Nitroaniline	ug/L	20	21-21	0.93	1.1
4,6-Dinitro-2-methylphenol	ug/L	20	21-21	1.08	0.36
4-Bromophenyl-phenylether	ug/L	5	5.3-5.3	0.28	0.27
4-Chloro-3-methylphenol	ug/L	5	5.3-5.3	0.41	3
4-Chlorophenyl-phenylether	ug/L	5	5.3-5.3	0.4	0.27
4-Nitroaniline	ug/L	20	21-21	0.73	3.2
4-Nitrophenol	ug/L	20	21-21	1.26	0.34
Aldrin	ug/L	0.01	0.01-0.01	0.00449	0.004
Antimony	ug/L	60	60-60	0.051	1.5
Antimony-dissolved	ug/L	60	60-60	0.051	1.5
Aroclor-1221	ug/L	0.4	0.4-0.4	0.52	0.034
Aroclor-1232	ug/L	0.2	0.2-0.2	0.28	0.034
Aroclor-1242	ug/L	0.2	0.2-0.2	0.15	0.034
Aroclor-1248	ug/L	0.2	0.2-0.2	0.15	0.034
Aroclor-1254	ug/L	0.2	0.2-0.2	0.10	0.034
Aroclor-1260	ug/L	0.2	0.2-0.2	0.10419	0.034
Arsenic	ug/L	10	10-10	0.069	0.045
Arsenic-dissolved	ug/L	10	10-10	0.069	0.045
Atrazine	ug/L	5	5.3-5.3	0.48	0.3
Benzene	ug/L	0.5	0.5-0.5	0.06	0.35
Benzo(a)anthracene	ug/L	5	5.3-5.3	0.57	0.092
Benzo(a)pyrene	ug/L	5	5.3-5.3	0.39	0.0092
Benzo(b)fluoranthene	ug/L	5	5.3-5.3	0.45	0.092
Benzo(k)fluoranthene	ug/L	5	5.3-5.3	0.48	0.92
bis(2-Chloroethoxy)methane	ug/L	5	5.3-5.3	0.5	0.27
bis(2-Chloroethyl)ether	ug/L	5	5.3-5.3	0.49	0.01
bis(2-Ethylhexyl)phthalate*	ug/L	5	5.3-5.3	9.21	4.8
Bromochloromethane	ug/L	0.5	0.5-0.5	0.07	0.18
Bromodichloromethane	ug/L	0.5	0.5-0.5	0.04	0.18
Cadmium	ug/L	5	5-5	0.028	1.8
Cadmium-dissolved	ug/L	5	5-5	0.028	1.8
Carbon tetrachloride	ug/L	0.5	0.5-0.5	0.04	0.17
cis-1,3-Dichloropropene	ug/L	0.5	0.5-0.5	0.08	0.4
Dibenz(a,h)anthracene	ug/L	5	5.3-5.3	0.36	0.0092
Dibenzofuran	ug/L	5	5.3-5.3	0.29	1.2
Dibromochloromethane	ug/L	0.5	0.5-0.5	0.04	0.13
Dieldrin	ug/L	0.02	0.02-0.02	0.00412	0.0042
Heptachlor epoxide	ug/L	0.01	0.01-0.01	0.00472	0.0074
Hexachlorobenzene	ug/L	5	5.3-5.3	0.52	0.042
Hexachlorobutadiene	ug/L	5	5.3-5.3	0.58	0.86
Hexachloroethane	ug/L	5	5.3-5.3	0.64	3.6
Indeno(1,2,3-cd)pyrene	ug/L	5	5.3-5.3	0.39	0.092
Naphthalene	ug/L	5	5.3-5.3	0.59	0.62
Nitrobenzene	ug/L	5	5.3-5.3	0.36	0.34
n-Nitroso-di-n-propylamine	ug/L	5	5.3-5.3	0.55	0.0096
Pentachlorophenol	ug/L	5	5.3-5.3	1.01	0.56
Tetrachloroethene	ug/L	0.5	0.5-0.5	0.06	0.1
Thallium	ug/L	1	1-1	0.015	0.24
Thallium-dissolved	ug/L	1	1-1	0.015	0.24
Toxaphene	ug/L	1	1-1	0.52	0.061
trans-1,3-Dichloropropene	ug/L	0.5	0.5-0.5	0.07	0.4
Vanadium	ug/L	50	50-50	0.025	3.6
Vinyl chloride	ug/L	0.5	0.5-0.5	0.05	0.02

* The method detection limit for bis(2-ethylhexyl)phthalate calculated by the laboratory is invalid, but the separately calculated quantitation limit is correct.

Table N.18-3

Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PAOC L

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Mercury	0.10	0.11	0.10	0.042	0.1
Pesticide/Polychlorinated Biphenyls (UG/KG)					
Aldrin	1.80	180	0.06	0.54	1.7
Endosulfan I	1.80	180	0.01	0.53	1.7
Endosulfan II	3.60	350	0.01	0.56	3.3
Endrin aldehyde	3.60	350	100	0.99	3.3
Endrin ketone	3.60	350	100	0.4	3.3
Heptachlor	1.80	180	0.70	0.69	1.7
Heptachlor epoxide	1.80	180	0.0002	0.4	1.7
alpha-BHC	1.80	180	3.00	0.43	1.7
beta-BHC	1.80	180	9.00	0.39	1.7
gamma-BHC (Lindane)	1.80	180	0.05	0.19	1.7
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	370	100	22.3	330
Atrazine	340	370	0.20	52.23	330
Naphthalene	340	370	100	28.16	330
Phenanthrene	340	370	100	27.96	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	12.0	10.0	0.3	10
Tetrachloroethene	10.0	12.0	2.00	0.2	10
Vinyl chloride	10.0	12.0	10.0	0.23	10

N.19 PAOC N

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PAOC N PA/SI, as well as to provide an assessment of data usability. Section N.19.7.1 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.19.1 PAOC N Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on April 3 and April 4, 2006.

N.19.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 50 distinct data points were generated. The volatiles data set is 100 percent complete (50 of 50 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.00 percent (2 of 50 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery lower than the lower control limit (see Section N.19.1.1.1 below)
- 2.00 percent (1 of 50 results) were U-qualified as “attributable to blank contamination” (see Section N.19.1.1.2 below)

N.19.1.1.1 Surrogates

Two results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.19.1.1.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 65 distinct data points were generated. The semivolatiles data set is 100 percent complete (65 of 65 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 3.08 percent (2 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.19.1.2.1 below)

- 1.54 percent (1 of 65 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.19.1.2.1 below)

N.19.1.2.1 Calibration

Two results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. One more result was UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.19.1.3 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 48 distinct data points were generated. The metals data set is 100 percent complete (48 of 48 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 16.67 percent (8 of 48 results) were U-qualified as “attributable to blank contamination” (see section N.19.1.3.1, below)
- 14.58 percent (7 of 48 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.1.3.2, below)
- 4.17 percent (2 of 48 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.19.1.3.3, below)

N.19.1.3.1 Blank Contamination

Eight results were U-qualified as “attributable to blank contamination” because aluminum, beryllium, cadmium, cobalt, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.1.3.2 Quantitation Limits

Seven results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.1.3.3 Serial Dilution

Two results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.1.4 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 46 distinct data points were generated. The filtered metals data set is 100 percent complete (46 of 46 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 26.09 percent (12 of 46 results) were U-qualified as “attributable to blank contamination” (see section N.19.1.4.1, below)

- 4.35 percent (2 of 46 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.1.4.2, below)
- 4.35 percent (2 of 46 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.19.1.4.3, below)

N.19.1.4.1 Blank Contamination

A total of 12 results were U-qualified as “attributable to blank contamination” because aluminum, barium, beryllium, cadmium, cobalt, nickel, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.1.4.2 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.1.4.3 Serial Dilution

Two results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.1.5 Total Petroleum Hydrocarbons (TPH)

Total petroleum hydrocarbons (TPH) diesel range organics (DRO), gasoline range organics (GRO), and oil range organics (ORO) were analyzed by SW-846 methods 8015 and 8015B. Excluding field quality control samples, three distinct data points were generated. The TPH data set is 100 percent complete (3 of 3 TPH results are available for use). The validation process resulted in no qualification.

N.19.1.6 Wet Chemistry

Wet Chemistry (total dissolved solids) was analyzed by EPA method 160.1. Excluding field quality control samples, two distinct data points were generated. The wet chemistry data set is 100 percent complete (2 of 2 wet chemistry results are available for use). The validation process resulted in no qualification.

N.19.2 PAOC N Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on February 1, 2006.

N.19.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 192 distinct data points were generated. The volatiles data set is 100 percent complete (192 of 192 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 2.08 percent (4 of 192 results) were U-qualified as “attributable to blank contamination” (see section N.19.2.1.1, below)

N.19.2.1.1 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 260 distinct data points were generated. The semivolatiles data set is 100 percent complete (260 of 260 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 9.23 percent (24 of 260 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.19.2.2.1 below)
- 1.15 percent (3 of 260 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.2.2.2, below)

N.19.2.2.1 Calibration

A total of 24 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.19.2.2.2 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.2.3 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 96 distinct data points were generated. The metals data set is 100 percent complete (96 of 96 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 14.58 percent (14 of 96 results) were U-qualified as “attributable to blank contamination” (see section N.19.2.3.1, below)
- 10.42 percent (10 of 96 results) were J-qualified as “estimated” because of matrix spike recovery exceeding upper control limits (see section N.19.2.3.2, below)
- 7.29 percent (7 of 96 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.2.3.3, below)
- 2.08 percent (2 of 96 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.19.2.3.4, below)
- 1.04 percent (1 of 96 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recovery below lower control limits (see section N.19.2.3.2, below)

N.19.2.3.1 Blank Contamination

A total of 14 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, lead, nickel, potassium, selenium, and sodium were detected in

associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.2.3.2 Matrix Spike/ Matrix Spike Duplicate

Ten results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. Another result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.19.2.3.3 Quantitation Limits

Seven results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.2.3.4 Serial Dilution

Two results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.2.4 TPH

TPH-DRO, TPH-GRO, and TPH-ORO were analyzed by SW-846 8015 and 8015B. Excluding field quality control samples, 12 distinct data points were generated. The TPH data set is 100 percent complete (12 of 12 TPH results are available for use). The validation process resulted in the following qualifiers for results in the TPH fraction:

- 33.33 percent (4 of 12 results) were U-qualified as “attributable to blank contamination” (see section N.19.2.4.1, below)
- 8.33 percent (1 of 12 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.2.4.2, below)

N.19.2.4.1 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because TPH-ORO was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.2.4.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.3 PAOC N Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on February 1, 2006.

N.19.3.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 240 distinct data points were generated. The volatiles data set is 100 percent complete (240 of 240 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 2.08 percent (5 of 240 results) were U-qualified as “attributable to blank contamination” (see section N.19.3.1.1, below)

N.19.3.1.1 Blank Contamination

Five results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.3.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OM04. Excluding field quality control samples, 325 distinct data points were generated. The semivolatiles data set is 100 percent complete (325 of 325 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 9.23 percent (3 of 325 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.19.3.2.1 below)
- 1.23 percent (4 of 12 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.3.2.2, below)

N.19.3.2.1 Calibration

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.19.3.2.2 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.3.3 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 120 distinct data points were generated. The metals data set is 100 percent complete (120 of 120 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 10.83 percent (13 of 120 results) were U-qualified as “attributable to blank contamination” (see section N.19.3.3.1, below)
- 10.00 percent (12 of 120 results) were J-qualified as “estimated” because of matrix spike recovery below lower control limits (see section N.19.3.3.2, below)

- 3.33 percent (4 of 120 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.3.3.3, below)
- 3.33 percent (4 of 120 results) were J-qualified as “estimated” because of field duplicate reproducibility exceedances (see section N.19.3.3.4, below)
- 3.33 percent (4 of 120 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.19.3.3.5, below)
- 2.50 percent (3 of 120 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recovery below lower control limits (see section N.19.3.3.2, below)

N.19.3.3.1 Blank Contamination

A total of 13 results were U-qualified as “attributable to blank contamination” because cadmium, nickel, potassium, and sodium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.3.3.2 Matrix Spike/ Matrix Spike Duplicate

A total of 12 results were J-qualified as “estimated” because of matrix spike recoveries below the lower control limit. Three more results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.19.3.3.3 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.3.3.4 Field Duplicate

Four results were J-qualified as “estimated” because of field duplicate precision exceeding data validation control limits. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.3.3.5 Serial Dilution

Four results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.3.4 TPH

TPH-DRO, TPH-GRO, and TPH-ORO were analyzed by SW-846 8015 and 8015B. Excluding field quality control samples, 15 distinct data points were generated. The TPH data set is 100 percent complete (15 of 15 TPH results are available for use). The validation process resulted in the following qualifiers for results in the TPH fraction:

- 33.33 percent (5 of 15 results) were U-qualified as “attributable to blank contamination” (see section N.19.3.4.1, below)
- 20.00 percent (3 of 15 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.19.3.4.2, below)

N.19.3.4.1 Blank Contamination

Five results were U-qualified as “attributable to blank contamination” because TPH-ORO was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.19.3.4.2 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.19.4 Groundwater PARCC

N.19.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.19.4.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, matrix spike recoveries, or spiked surrogate recoveries, and only two results were qualified based on surrogate recoveries, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases.

N.19.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.19.4.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.19.4.5 Comparability

There were no issues affecting comparability in this data set.

N.19.5 Subsurface Soil PARCC

N.19.5.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.19.5.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only 11 results were qualified due to matrix spike recoveries, matrix effects and the laboratory’s ability did not have any effects on accuracy in most cases.

N.19.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.19.5.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.19.5.5 Comparability

There were no issues affecting comparability in this data set.

N.19.6 Surface Soil PARCC

N.19.6.1 Precision

Because no results were rejected based on matrix spike precision, laboratory duplicates, and field duplicates, and only four results were qualified based on field duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.19.6.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only 15 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.19.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.19.6.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.19.6.5 Comparability

There were no issues affecting comparability in this data set.

N.19.7 Totals for "Available as Reported" and "Available as Qualified"

The data quality evaluation showed that the laboratory U-qualified 78.90 percent (1163 of 1474 results) of the data as non-detect and further qualification was not warranted. Another 7.80 percent (115 of 1474 results) were detected and no further qualification was warranted. Another 1.20 percent (31 of 1474 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 88.81 percent (1309 of 1474 results) of the data are available for use as reported.

Other J-qualifiers resulted from field duplicate reproducibility, low matrix spike recoveries, and serial dilution exceedances. These amounted to 2.44 percent (36 of 1474 results) of the total results. The percentage of non-detect results UJ-qualified as “non-detect, estimated quantitation limit” amounted to 4.27 percent (63 of 1474 results) and resulted from high and low continuing calibration exceedances, low matrix spike recoveries, and low spiked surrogate recoveries. A total of 4.48 percent (66 of 1474 results) were U-qualified as “non-detect” as a result of blank contamination. Based on the above, 11.19 percent (165 of 1474 results) are available for use as qualified. Combining the 88.81 percent with the 11.19 percent results in 100 percent (1474 of 1474 results) data available for use, qualified as applicable.

All results are available for use as qualified.

N.19.7.1 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.19-1a (surface soil), N.19-1b (subsurface soil), and N.19-1c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at PAOC N. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, seven non-detected analytes (six SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.19-1a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.19-1a, even the target quantitation limits exceed the screening values (other than for thallium); therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.19-1a, the actual method detection limits for the six SVOCs and thallium are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC N surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same seven non-detected analytes as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.19-1b). Therefore, for the same reasons as stated above, the non-detect quantitation limits greater

than human health screening values in PAOC N subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 63 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.19-1c). However, the achieved quantitation limits are equal to those concurred upon and memorialized in the Work Plan. Therefore, while there is some uncertainty associated with drawing conclusions with respect to human health effects, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized. For 37 of the 63 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 37 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Furthermore, except for the inorganics and two detections of bis(2-ethylhexyl)phthalate in surface soil and two in subsurface soil, none of the 63 constituents was detected in any other media at the site. However, the reporting limit for bis(2-ethylhexyl)phthalate is only 0.2 µg/l above the screening value. Therefore, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC N groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and two non-detected inorganics had laboratory quantitation limits that exceed ecological screening values (Table N.19-2). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.19-2, even the target quantitation limits for the six SVOCs, cyanide, and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.19-2, the actual method detection limits for the six SVOCs, three VOCs, cyanide, and mercury are significantly below the ecological screening values. Therefore, had any of these 11 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PAOC N surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.19-1a Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Surface Soil - PAOC N					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.870-0.90	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.35 - 0.36	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.35 - 0.36	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.35 - 0.36	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.35 - 0.36	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.35 - 0.36	0.02736	0.069
Thallium	mg/kg	0.5	0.52-0.54	0.011	0.52

Table N.19-1b

Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Subsurface Soil - PAOC N

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.860-0.910	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.340-0.360	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.340-0.360	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.340-0.360	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.340-0.360	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.340-0.360	0.02736	0.069
Thallium	mg/kg	0.5	0.52-0.55	0.011	0.52

Table N.19-1c Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Groundwater - PAOC N					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
Antimony	ug/L	60	60-60	0.051	1.5
Arsenic	ug/L	10	10-10	0.069	0.045
Cadmium	ug/L	5	5-5	0.028	1.8
Selenium	ug/L	35	35-35	0.227	18
Thallium	ug/L	1	1-1	0.015	0.24
Vanadium	ug/L	50	50-50	0.05	3.6
Antimony-dissolved	ug/L	60	60-60	0.051	1.5
Arsenic-dissolved	ug/L	10	10-10	0.069	0.045
Cadmium-dissolved	ug/L	5	5-5	0.028	1.8
Selenium-dissolved	ug/L	35	35-35	0.227	18
Thallium-dissolved	ug/L	1	1-1	0.015	0.24
Vanadium-dissolved	ug/L	50	50-50	0.025	3.6
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5-0.5	0.08	0.055
1,1,2-Trichloroethane	ug/L	0.5	0.5-0.5	0.06	0.2
1,2-Dibromo-3-chloropropane	ug/L	0.5	0.5-0.5	0.19	0.035
1,2-Dibromoethane	ug/L	0.5	0.5-0.5	0.1	0.0056
1,2-Dichloroethane	ug/L	0.5	0.5-0.5	0.05	0.12
1,2-Dichloropropane	ug/L	0.5	0.5-0.5	0.04	0.16
Benzene	ug/L	0.5	0.5-0.5	0.06	0.35
Bromochloromethane	ug/L	0.5	0.5-0.5	0.07	0.18
Bromodichloromethane	ug/L	0.5	0.5-0.5	0.04	0.18
Carbon tetrachloride	ug/L	0.5	0.5-0.5	0.04	0.17
Chloroform	ug/L	0.5	0.5-0.5	0.07	0.17
Dibromochloromethane	ug/L	0.5	0.5-0.5	0.04	0.13
Tetrachloroethene	ug/L	0.5	0.5-0.5	0.06	0.1
Trichloroethene	ug/L	0.5	0.5-0.5	0.07	0.028
Vinyl chloride	ug/L	0.5	0.5-0.5	0.05	0.02
cis-1,3-Dichloropropene	ug/L	0.5	0.5-0.5	0.08	0.4
trans-1,3-Dichloropropene	ug/L	0.5	0.5-0.5	0.07	0.4
1,2,4,5-Tetrachlorobenzene	ug/L	5	5-5	0.36	1.1
2,2'-Oxybis(1-chloropropane)	ug/L	5	5-5	0.54	0.27
2,4,6-Trichlorophenol	ug/L	5	5-5	0.33	0.36
2,4-Dinitrophenol	ug/L	20	20-20	7.44	7.3
2,6-Dinitrotoluene	ug/L	5	5-5	0.5	3.6
2-Chlorophenol	ug/L	5	5-5	0.48	3
2-Methylnaphthalene	ug/L	5	5-5	0.28	2.4
2-Nitroaniline	ug/L	20	20-20	0.99	11
2-Nitrophenol	ug/L	5	5-5	0.44	3
3,3'-Dichlorobenzidine	ug/L	5	5-5	0.6	0.15
3-Nitroaniline	ug/L	20	20-20	0.93	1.1
4,6-Dinitro-2-methylphenol	ug/L	20	20-20	1.08	0.36
4-Bromophenyl-phenylether	ug/L	5	5-5	0.28	0.27
4-Chloro-3-methylphenol	ug/L	5	5-5	0.41	3
4-Chlorophenyl-phenylether	ug/L	5	5-5	0.4	0.27
4-Nitroaniline	ug/L	20	20-20	0.73	3.2
4-Nitrophenol	ug/L	20	20-20	1.26	0.34
Benzo(a)anthracene	ug/L	5	5-5	0.57	0.092
Benzo(a)pyrene	ug/L	5	5-5	0.39	0.0092
Benzo(b)fluoranthene	ug/L	5	5-5	0.45	0.092
Benzo(k)fluoranthene	ug/L	5	5-5	0.48	0.92
Dibenz(a,h)anthracene	ug/L	5	5-5	0.36	0.0092
Dibenzofuran	ug/L	5	5-5	0.29	1.2
Hexachlorobenzene	ug/L	5	5-5	0.52	0.042
Hexachlorobutadiene	ug/L	5	5-5	0.58	0.86
Hexachloroethane	ug/L	5	5-5	0.64	3.6
Indeno(1,2,3-cd)pyrene	ug/L	5	5-5	0.39	0.092
Naphthalene	ug/L	5	5-5	0.59	0.62
Nitrobenzene	ug/L	5	5-5	0.36	0.34
Pentachlorophenol	ug/L	5	5-5	1.01	0.56
bis(2-Chloroethoxy)methane	ug/L	5	5-5	0.5	0.27
bis(2-Chloroethyl)ether	ug/L	5	5-5	0.49	0.01
bis(2-Ethylhexyl)phthalate*	ug/L	5	5-5	9.21	4.8
n-Nitroso-di-n-propylamine	ug/L	5	5-5	0.55	0.0096

* The method detection limit for bis(2-ethylhexyl)phthalate calculated by the laboratory is invalid, but the separately calculated quantitation limit is correct.

Table N.19-2
Comparison of Non-Detect Quantification Limits With Ecological Screening Values - Surface Soil - PAOC N

Chemical	Minimum Quantification Limit	Maximum Quantification Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantification Limit
Inorganics (MG/KG)					
Cyanide	2.60	2.70	1.00	0.14	2.5
Mercury	0.10	0.11	0.10	0.042	0.1
Semivolatile Organic Compounds (UG/KG)					
Anthracene	350	360	100	22.3	330
Benzo(a)pyrene	350	360	100	20.46	330
Fluoranthene	350	360	100	30.1	330
Naphthalene	350	360	100	28.16	330
Phenanthrene	350	360	100	27.96	330
Pyrene	350	360	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	11.0	10.0	0.3	10
Tetrachloroethene	10.0	11.0	2.00	0.2	10
Vinyl chloride	10.0	11.0	10.0	0.23	10

N.20 PAOC S

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PAOC S PA/SI, as well as to provide an assessment of data usability. Section N.20.7.1 discusses the rejected data with respect to data usability. Section N.20.7.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.20.1 PAOC S Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on April 4, 2006.

N.20.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 100 distinct data points were generated. The volatiles data set is 100 percent complete (100 of 100 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 1.00 percent (1 of 100 results) were U-qualified as “attributable to blank contamination” (see Section N.20.1.1.1 below)

N.20.1.1.1 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 130 distinct data points were generated. The semivolatiles data set is 100 percent complete (130 of 130 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 5.38 percent (7 of 130 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.20.1.2.1 below)
- 3.85 percent (5 of 130 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.20.1.2.1 below)

N.20.1.2.1 Calibration

Seven results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Five results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLC03. Excluding field quality control samples, 65 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (65 of 65 pesticides/PCBs results are available for use). The validation process resulted in no qualification.

N.20.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 48 distinct data points were generated. The metals data set is 100 percent complete (48 of 48 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 20.83 percent (10 of 48 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.1.4.1, below)
- 10.42 percent (5 of 48 results) were U-qualified as “attributable to blank contamination” (see section N.20.1.4.2, below)
- 4.17 percent (2 of 48 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.20.1.4.3, below)

N.20.1.4.1 Quantitation Limits

Ten results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.1.4.2 Blank Contamination

Five results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.1.4.3 Serial Dilution

Two results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.1.5 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 46 distinct data points were generated. The filtered metals data set is 100 percent complete (46 of 46 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 13.04 percent (6 of 46 results) were U-qualified as “attributable to blank contamination” (see section N.20.1.5.1, below)
- 10.87 percent (5 of 46 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.1.5.2, below)
- 4.35 percent (2 of 46 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.20.1.5.3, below)

N.20.1.5.1 Blank Contamination

A total of 6 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, thallium, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.1.5.2 Quantitation Limits

Five results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.1.5.3 Serial Dilution

Two results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.1.6 Wet Chemistry

Wet Chemistry (total dissolved solids) was analyzed by EPA method 160.1. Excluding field quality control samples, two distinct data points were generated. The wet chemistry data set is 100 percent complete (2 of 2 wet chemistry results are available for use). The validation process resulted in no qualification.

N.20.2 PAOC S Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on February 2 through February 16, 2006.

N.20.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1008 distinct data points were generated. The volatiles data set is 100 percent complete (1008 of 1008 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.76 percent (48 of 1008 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery above the upper control limit (see section N.20.2.1.1, below)
- 4.17 percent (42 of 1008 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.20.2.1.2, below)
- 1.49 percent (15 of 1008 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.20.2.1.2, below)
- 0.69 percent (7 of 1008 results) were U-qualified as “attributable to blank contamination” (see section N.20.2.1.3, below)

N.20.2.1.1 Surrogates

A total of 48 results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.2.1.2 Calibration

A total of 42 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 15 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.2.1.3 Blank Contamination

Seven results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1365 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.78 percent complete (1362 of 1365 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 5.27 percent (72 of 1365 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.20.2.2.1 below)
- 3.08 percent (42 of 1365 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.20.2.2.1 below)
- 0.22 percent (3 of 1365 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.2.2.2, below)
- 0.22 percent (3 of 1365 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see Section N.20.2.2.1 below)
- 0.07 percent (1 of 1365 results) were U-qualified as “attributable to blank contamination” (see section N.20.2.2.3, below)

N.20.2.2.1 Calibration

Three 2,4-dinitrophenol results, consisting of 2,4-dinitrophenol in EPAS-SB13-0406, EPAS-SB14-0406, and EPAS-SB16-0204.5, were R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. Available 2,4-dinitrophenol results exist for 18 other samples.

A total of 72 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 42 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.2.2.2 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.2.2.3 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because bis(2-ethylhexylphthalate) was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 168 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (168 of 168 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 1.79 percent (3 of 168 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.2.3.1, below)
- 2.98 percent (5 of 168 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.20.2.3.2, below)

N.20.2.3.1 Quantitation Limits

Three results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.2.3.2 Dual-Column Reproducibility

Three results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 144 distinct data points were generated. The metals data set is 100 percent complete (144 of 144 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 12.50 percent (18 of 144 results) were U-qualified as “attributable to blank contamination” (see section N.20.2.4.1, below)
- 8.33 percent (12 of 144 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.20.2.4.2, below)
- 2.78 percent (4 of 144 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.2.4.3, below)

- 2.78 percent (4 of 144 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.20.2.4.4, below)

N.20.2.4.1 Blank Contamination

A total of 18 results were U-qualified as “attributable to blank contamination” because beryllium, nickel, potassium, and sodium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.2.4.2 Matrix Spike/ Matrix Spike Duplicate

Eight results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.2.4.3 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.2.4.4 Serial Dilution

Four results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.3 PAOC N Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on February 2 through February 16, 2006.

N.20.3.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1152 distinct data points were generated. The volatiles data set is 100 percent complete (1152 of 1152 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 4.51 percent (52 of 1152 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.20.3.1.1, below)
- 1.48 percent (17 of 1152 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.20.3.1.1, below)
- 0.35 percent (4 of 1152 results) were U-qualified as “attributable to blank contamination” (see section N.20.3.1.2, below)

N.20.3.1.1 Calibration

A total of 52 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. An additional 17 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-

detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.3.1.2 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because acetone was detected in associated blank samples. Acetone is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.3.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 1560 distinct data points were generated. When rejected results are considered, the semivolatiles data set is 99.68 percent complete (1555 of 1560 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 5.06 percent (79 of 1560 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.20.3.2.1 below)
- 2.56 percent (40 of 1560 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.20.3.2.1 below)
- 0.45 percent (7 of 1560 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of internal standard recovery below the lower control limit (see section N.20.3.2.2 below)
- 0.32 percent (5 of 1560 results) were R-qualified as “rejected” because of continuing calibration recovery below the lower control limit (see Section N.20.3.2.1 below)
- 0.13 percent (2 of 1560 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.3.2.3, below)
- 0.13 percent (2 of 1560 results) were U-qualified as “attributable to blank contamination” (see section N.20.3.2.4, below)
- 0.13 percent (2 of 1560 results) were U-qualified as “non-detect” because of continuing calibration recovery below the lower control limit (see Section N.20.3.2.1 below)
- 0.06 percent (1 of 1560 results) were U-qualified as “non-detect” because of continuing calibration recovery greater than the upper control limit (see Section N.20.3.2.1 below)

N.20.3.2.1 Calibration

Five 2,4-dinitrophenol results, consisting of 2,4-dinitrophenol in EPAS-SS21P-0002, EPAS-SS20-0002, EPAS-SS13-0002, EPAS-SS14-0002, and EPAS-SS18-0002, were R-qualified as “rejected” because of continuing calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory. Available 2,4-dinitrophenol results exist for 19 other samples.

A total of 79 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Two more results were U-qualified as “non-detect” for the same reason. An additional 40 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. One more result was U-qualified as “non-detect” for

the same reason. The UJ-qualification and U-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.3.2.2 Internal Standards

Seven results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.3.2.3 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.3.2.4 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexylphthalate) was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.3.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 168 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (168 of 168 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 2.98 percent (5 of 168 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.20.3.3.1, below)
- 0.61 percent (1 of 168 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.3.3.2, below)

N.20.3.3.1 Dual-Column Reproducibility

Five results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.20.3.3.2 Quantitation Limits

One result was J-qualified as “estimated” simply because the result was lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.3.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 144 distinct data points were generated. The metals data set is

100 percent complete (144 of 144 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 11.11 percent (16 of 144 results) were U-qualified as “attributable to blank contamination” (see section N.20.3.4.1, below)
- 9.72 percent (14 of 144 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.20.3.4.2, below)
- 8.33 percent (12 of 144 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.20.3.4.3, below)
- 3.47 percent (5 of 144 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.20.3.4.4, below)
- 0.69 percent (1 of 144 results) were J-qualified as “estimated” because of field duplicate reproducibility exceedances (see section N.20.3.4.5, below)

N.20.3.4.1 Blank Contamination

A total of 16 results were U-qualified as “attributable to blank contamination” because beryllium, nickel, potassium, and sodium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.20.3.4.2 Quantitation Limits

A total of 14 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.3.4.3 Matrix Spike/ Matrix Spike Duplicate

A total of 12 results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.3.4.4 Serial Dilution

Five results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.3.4.5 Field Duplicates

One result was J-qualified as “estimated” because of field duplicate reproducibility exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.20.4 Groundwater PARCC

N.20.4.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.20.4.2 Accuracy

Because no results were qualified due to laboratory control sample exceedances, matrix spike recoveries, or spiked surrogate recoveries matrix effects and the laboratory's ability did not have any effects on accuracy in any case.

N.20.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.20.4.4 Completeness

There were no R-qualified results in this dataset; therefore the data validation process demonstrated that 100 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.20.4.5 Comparability

There were no issues affecting comparability in this data set.

N.20.5 Subsurface Soil PARCC

N.20.5.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.20.5.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only 48 results were qualified due to spiked surrogate recoveries and 12 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.20.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.20.5.4 Completeness

Overall, there were three R-qualified results in this dataset. The R-qualified results comprised 0.11 percent (3 of 2685 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.89 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.20.5.5 Comparability

There were no issues affecting comparability in this data set.

N.20.6 Surface Soil PARCC

N.20.6.1 Precision

Because no results were rejected based on matrix spike precision, laboratory duplicates, and field duplicates, and only one result was qualified based on field duplicate precision, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.20.6.2 Accuracy

Because no results were rejected due to laboratory control sample exceedances, and only seven results were qualified due to internal standard recoveries and 12 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.20.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.20.6.4 Completeness

Overall, there were five R-qualified results in this dataset. The R-qualified results comprised 0.17 percent (5 of 3024 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.83 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.20.6.5 Comparability

There were no issues affecting comparability in this data set.

N.20.7 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 87.41 percent (5324 of 6091 results) of the data as non-detect and further qualification was not warranted. Another 2.96 percent (180 of 6091 results) were detected and no further qualification was warranted. Another 0.69 percent (42 of 6091 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 91.05 percent (5546 of 6091 results) of the data are available for use as reported.

Other J-qualifiers resulted from field duplicate reproducibility, low matrix spike recoveries, and serial dilution exceedances. These amounted to 0.62 percent (38 of 6091 results) of the total results. The percentage of non-detect results UJ-qualified as "non-detect, estimated quantitation limit" amounted to 6.99 percent (426 of 6091 results) and resulted from high and low continuing calibration exceedances, low internal standard recoveries, and high spiked surrogate recoveries. A total of 0.99 percent (60 of 6091 results) were U-qualified as "non-detect" as a result of blank contamination. A total of 0.21 percent (13 of 6091 results) were U-qualified as "non-detect" as a result of dual-column reproducibility or high or low continuing calibration recovery. Based on the above, 8.65 percent (527 of 6091 results) are

available for use as qualified. Combining the 91.05 percent with the 8.82 percent results in 99.87 percent (6083 of 6091 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (8 of 6091 results, 0.13 percent of total results) are available for use as qualified.

N.20.7.1 Discussion of Rejected Data

Table N.20-1 lists all R-qualified data for PAOC S. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability.

Four non-detect 2,4-dinitrophenol surface soil sample results and three subsurface soil sample results were rejected of the 16 pipeline and valve location surface and subsurface samples collected. 2,4-dinitrophenol was not detected in any of the 12 other surface and 13 subsurface soil samples collected at the site.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at PAOC S.

N.20.7.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.20-2a (surface soil), N.20-2b (subsurface soil), and N.20-2c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at PAOC S. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, seven non-detected analytes (six SVOCs and thallium) had laboratory quantitation limits that exceed human health screening values (Table N.20-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.20-2a, even the target quantitation limits exceed the screening values (other than for thallium); therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.20-2a, the actual method detection limits for the six SVOCs and thallium are significantly below the human health screening values. Therefore, had any of these seven constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC S surface soil do not affect the usability of the data

for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same six non-detected SVOCs as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.20-2b). Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PAOC S subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 62 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.20-2c). However, the achieved quantitation limits are equal to those concurred upon and memorialized in the Work Plan. Therefore, while there is some uncertainty associated with drawing conclusions with respect to human health effects, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized. For 36 of the 62 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 36 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Furthermore, except for the inorganics and bis(2-ethylhexyl)phthalate,, none of the 62 constituents was detected in any other media at the site. Bis(2-ethylhexyl)phthalate is used in the manufacture of plastics, and as such, is not expected to be associated with a release at PAOC S. Further, its non-detect quantitation limit is within 2 µg/l of the screening value. Based on the above information, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC S groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and one non-detected inorganic had laboratory quantitation limits that exceed ecological screening values (Table N.20-3). However, the achieved quantitation limits are similar to those concurred upon and memorialized in the Work Plan, elevated due to one or more of the common occurrences stated in Section N.2. As shown in Table N.20-3, even the target quantitation limits for the six SVOCs, cyanide, and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.20-3, the actual method detection limits for the six SVOCs, three VOCs, and cyanide are significantly below the ecological screening values. Therefore, had any of these 10 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PAOC S surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.20-1
 Summary of Rejected Data
 PAOC S

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
SB	SVOA	EPAS-SB13-0406	2,4-DINITROPHENOL	990	U	R	CCL	UG/KG
SB	SVOA	EPAS-SB14-0406	2,4-DINITROPHENOL	920	U	R	CCL	UG/KG
SB	SVOA	EPAS-SB15-0204.5	2,4-DINITROPHENOL	930	U	R	CCL	UG/KG
SS	SVOA	EPAS-SS13-0002	2,4-DINITROPHENOL	910	U	R	CCL	UG/KG
SS	SVOA	EPAS-SS14-0002	2,4-DINITROPHENOL	890	U	R	CCL	UG/KG
SS	SVOA	EPAS-SS18-0002	2,4-DINITROPHENOL	890	U	R	CCL	UG/KG
SS	SVOA	EPAS-SS20-0002	2,4-DINITROPHENOL	1200	U	R	CCL	UG/KG
SS	SVOA	EPAS-SS21P-0002	2,4-DINITROPHENOL	1000	U	R	CCL	UG/KG

Reason Codes (DV_Qual_Code)

CCL: Continuing Calibration - Low Recovery

Table N.20-2a Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Surface Soil - PAOC S					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 1.2	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.47	0.0205	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.47	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.47	0.0349	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.47	0.0322	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.47	0.0274	0.069
Thallium	mg/kg	0.5	0.52 - 0.57	0.011	0.52

Table N.20-2b Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Subsurface Soil - PAOC S					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.88 - 1.1	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.35 - 0.45	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.35 - 0.45	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.35 - 0.45	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.35 - 0.45	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.35 - 0.45	0.02736	0.069

Table N.20-2c Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Groundwater - PAOC S					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5 - 0.5	0.08	0.055
1,1,2-Trichloroethane	ug/L	0.5	0.5 - 0.5	0.06	0.2
1,2-Dibromo-3-chloropropane	ug/L	0.5	0.5 - 0.5	0.19	0.035
1,2-Dibromoethane	ug/L	0.5	0.5 - 0.5	0.1	0.0056
1,2-Dichloroethane	ug/L	0.5	0.5 - 0.5	0.05	0.12
1,2-Dichloropropane	ug/L	0.5	0.5 - 0.5	0.04	0.16
Benzene	ug/L	0.5	0.5 - 0.5	0.06	0.35
Bromochloromethane	ug/L	0.5	0.5 - 0.5	0.07	0.18
Bromodichloromethane	ug/L	0.5	0.5 - 0.5	0.04	0.18
Carbon tetrachloride	ug/L	0.5	0.5 - 0.5	0.04	0.17
Chloroform	ug/L	0.5	0.5 - 0.5	0.07	0.17
Dibromochloromethane	ug/L	0.5	0.5 - 0.5	0.04	0.13
Tetrachloroethene	ug/L	0.5	0.5 - 0.5	0.06	0.1
Trichloroethene	ug/L	0.5	0.5 - 0.5	0.07	0.028
Vinyl chloride	ug/L	0.5	0.5 - 0.5	0.05	0.02
cis-1,3-Dichloropropene	ug/L	0.5	0.5 - 0.5	0.08	0.4
trans-1,3-Dichloropropene	ug/L	0.5	0.5 - 0.5	0.07	0.4
1,2,4,5-Tetrachlorobenzene	ug/L	5	5 - 5	0.36	1.1
2,2'-Oxybis(1-chloropropane)	ug/L	5	5 - 5	0.54	0.27
2,4,6-Trichlorophenol	ug/L	5	5 - 5	0.33	0.36
2,4-Dinitrophenol	ug/L	20	20 - 20	7.44	7.3
2,6-Dinitrotoluene	ug/L	5	5 - 5	0.5	3.6
2-Chlorophenol	ug/L	5	5 - 5	0.48	3
2-Methylnaphthalene	ug/L	5	5 - 5	0.28	2.4
2-Nitroaniline	ug/L	20	20 - 20	0.99	11
2-Nitrophenol	ug/L	5	5 - 5	0.44	3
3,3'-Dichlorobenzidine	ug/L	5	5 - 5	0.6	0.15
3-Nitroaniline	ug/L	20	20 - 20	0.93	1.1
4,6-Dinitro-2-methylphenol	ug/L	20	20 - 20	1.08	0.36
4-Bromophenyl-phenylether	ug/L	5	5 - 5	0.28	0.27
4-Chloro-3-methylphenol	ug/L	5	5 - 5	0.41	3
4-Chlorophenyl-phenylether	ug/L	5	5 - 5	0.4	0.27
4-Nitroaniline	ug/L	20	20 - 20	0.73	3.2
4-Nitrophenol	ug/L	20	20 - 20	1.26	0.34
Benzo(a)anthracene	ug/L	5	5 - 5	0.57	0.092
Benzo(a)pyrene	ug/L	5	5 - 5	0.39	0.0092
Benzo(b)fluoranthene	ug/L	5	5 - 5	0.45	0.092
Benzo(k)fluoranthene	ug/L	5	5 - 5	0.48	0.92
Dibenz(a,h)anthracene	ug/L	5	5 - 5	0.36	0.0092
Dibenzofuran	ug/L	5	5 - 5	0.29	1.2
Hexachlorobenzene	ug/L	5	5 - 5	0.52	0.042
Hexachlorobutadiene	ug/L	5	5 - 5	0.58	0.86
Hexachloroethane	ug/L	5	5 - 5	0.64	3.6
Indeno(1,2,3-cd)pyrene	ug/L	5	5 - 5	0.39	0.092
Naphthalene	ug/L	5	5 - 5	0.59	0.62
Nitrobenzene	ug/L	5	5 - 5	0.36	0.34
Pentachlorophenol	ug/L	5	5 - 5	1.01	0.56
bis(2-Chloroethoxy)methane	ug/L	5	5 - 5	0.5	0.27
bis(2-Chloroethyl)ether	ug/L	5	5 - 5	0.49	0.01
bis(2-Ethylhexyl)phthalate*	ug/L	5	5 - 5	9.21	4.8
n-Nitroso-di-n-propylamine	ug/L	5	5 - 5	0.55	0.0096
Antimony	ug/L	60	60 - 60	0.051	1.5
Arsenic	ug/L	10	10 - 10	0.069	0.045
Cadmium	ug/L	5	5 - 5	0.028	1.8
Thallium	ug/L	1	1 - 1	0.015	0.24
Vanadium	ug/L	50	50 - 50	0.025	3.6
Antimony-dissolved	ug/L	60	60 - 60	0.051	1.5
Arsenic-dissolved	ug/L	10	10 - 10	0.069	0.045
Cadmium-dissolved	ug/L	5	5 - 5	0.028	1.8
Selenium-dissolved	ug/L	35	35 - 35	0.227	18
Thallium-dissolved	ug/L	1	1 - 1	0.015	0.24
Vanadium-dissolved	ug/L	50	50 - 50	0.025	3.6

* The method detection limit for bis(2-ethylhexyl)phthalate calculated by the laboratory is invalid, but the separately calculated quantitation limit is correct.

Table N.20-3

Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PAOC S

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Cyanide	2.60	2.90	1.00	0.14	2.5
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	470	100	22.3	330
Benzo(a)pyrene	340	470	100	20.46	330
Fluoranthene	340	470	100	30.1	330
Naphthalene	340	470	100	28.16	330
Phenanthrene	340	470	100	27.96	330
Pyrene	340	470	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	16.0	10.0	0.3	10
Tetrachloroethene	10.0	16.0	2.00	0.2	10
Vinyl chloride	10.0	16.0	10.0	0.23	10

N.21 PAOC U

The purpose of this data quality evaluation is to summarize the findings of the data validation and any effects on the availability of the data for the PAOC U PA/SI, as well as to provide an assessment of data usability. Section N.21.7.1 discusses the rejected data with respect to data usability. Section N.21.7.2 discusses non-detect quantitation limits above screening values (i.e., project action limits) with respect to data usability.

N.21.1 PAOC U Groundwater Data

This evaluation assesses the analytical results of the groundwater samples collected on April 3, 2006.

N.21.1.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 100 distinct data points were generated. When rejected results are considered, the volatiles data set is 98 percent complete (98 of 100 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.00 percent (3 of 100 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery below the lower control limit (see section N.21.1.1.1, below)
- 2.00 percent (2 of 100 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.21.1.1.2, below)
- 2.00 percent (2 of 100 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.21.1.1.3, below)
- 2.00 percent (2 of 100 results) were R-qualified as “rejected” because of initial calibration recovery below the lower control limit (see section N.21.1.1.2, below)
- 2.00 percent (2 of 100 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.21.1.1.2, below)

N.21.1.1.1 Surrogates

Three results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.1.1.2 Calibration

Two methyl acetate results, consisting of methyl acetate in both samples (EPAU-GW01-06B and EPAU-GW01P-06B,) were R-qualified as “rejected” because of initial calibration recoveries below the lower control limit. These results were deemed “non-detect” by the laboratory.

Two results were UJ-qualified “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Two more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not

affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.1.1.3 Quantitation Limits

Two results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.1.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLC03. Excluding field quality control samples, 130 distinct data points were generated. The semivolatiles data set is 100 percent complete (130 of 130 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 4.62 percent (6 of 130 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.21.1.2.1 below)
- 4.62 percent (6 of 130 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recovery below the lower control limit (see Section N.21.1.2.2 below)
- 3.85 percent (5 of 130 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.21.1.2.1 below)

N.21.1.2.1 Calibration

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. Five results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.1.2.2 Surrogates

Six results were UJ-qualified as “non-detect, estimated quantitation limit” because of spiked surrogate recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.1.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLC03. Excluding field quality control samples, 56 distinct data points were generated. The pesticides/PCBs data set is 100 percent complete (56 of 56 pesticides/PCBs results are available for use). The validation process resulted in no qualification.

N.21.1.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 48 distinct data points were generated. The metals data set is 95.83 percent complete (46 of 48 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 25.00 percent (12 of 48 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.21.1.4.1, below)
- 12.50 percent (6 of 48 results) were U-qualified as “attributable to blank contamination” (see section N.21.1.4.2, below)
- 4.17 percent (2 of 48 results) were R-qualified as “rejected” because of field duplicate reproducibility exceedances (see section N.21.1.4.3, below)
- 2.08 percent (1 of 48 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.21.1.4.4, below)

N.21.1.4.1 Quantitation Limits

A total of 12 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.1.4.2 Blank Contamination

Six results were U-qualified as “attributable to blank contamination” because barium, beryllium, potassium, and vanadium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.21.1.4.3 Field Duplicates

Two metals results, consisting of aluminum and iron in EPAU-GW01P-06B, were R-qualified as “rejected” because of field duplicate reproducibility exceeding data validation control limits. These analytes were detected by the laboratory. An available aluminum and iron result were reported for sample EPAU-GW01-06B, which was collected from the same location.

N.21.1.4.4 Serial Dilution

One result was J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.1.5 Filtered Metals

Filtered metals (metals and mercury) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 46 distinct data points were generated. The filtered metals data set is 100 percent complete (46 of 46 filtered metals results are available for use). The validation process resulted in the following qualifiers for results in the filtered metals fraction:

- 30.43 percent (14 of 46 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.21.1.5.1, below)
- 8.70 percent (4 of 46 results) were U-qualified as “attributable to blank contamination” (see section N.21.1.5.2, below)
- 4.35 percent (2 of 46 results) were J-qualified as “estimated” because of serial dilution exceedances (see section N.21.1.5.3, below)

N.21.1.5.1 Quantitation Limits

A total of 14 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.1.5.2 Blank Contamination

Four results were U-qualified as “attributable to blank contamination” because aluminum and beryllium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.21.1.5.3 Serial Dilution

Two results were J-qualified as “estimated” because of serial dilution exceedances. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.1.6 Wet Chemistry

Wet Chemistry (total dissolved solids) was analyzed by EPA method 160.1. Excluding field quality control samples, two distinct data points were generated. The wet chemistry data set is 100 percent complete (2 of 2 wet chemistry results are available for use). The validation process resulted in no qualification.

N.21.2 PAOC U Subsurface Soil Data

This evaluation assesses the analytical results of the subsurface soil samples collected on March 2 and March 3, 2006.

N.21.2.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 480 distinct data points were generated. The volatiles data set is 100 percent complete (480 of 480 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.96 percent (19 of 480 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.21.2.1.1, below)
- 2.08 percent (10 of 480 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.21.2.1.1, below)

N.21.2.1.1 Calibration

A total of 19 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 10 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.2.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 650 distinct data points were generated. The semivolatiles data set is 100 percent complete (650 of 650 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 9.85 percent (64 of 650 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances (see section N.21.2.2.1, below)

- 7.38 percent (48 of 650 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.21.2.2.2 below)
- 4.15 percent (27 of 650 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.21.2.2.2 below)
- 0.15 percent (1 of 650 results) were U-qualified as “attributable to blank contamination” (see section N.21.2.2.2, below)

N.21.2.2.1 Holding Times

A total of 64 results were UJ-qualified as “non-detect, estimated quantitation limit” because of holding time exceedances. In general, a data validator will J-qualify detects as “estimated” and UJ-qualify non-detects as “non-detect, estimated quantitation limit” when a sample has exceeded its hold time but has not exceeded twice its hold time. If a sample has exceeded twice its hold time, a data validator will generally J-qualify detects as “estimated” and R-qualify non-detects as “rejected.” However, this is up to the data validator’s professional judgment, and depends on the circumstances. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.2.2.2 Calibration

A total of 48 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 27 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.2.2.2 Blank Contamination

One result was U-qualified as “attributable to blank contamination” because acetophenone was detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.21.2.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 280 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 99.29 percent complete (278 of 280 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 2.86 percent (8 of 280 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.21.2.3.1, below)
- 0.71 percent (2 of 280 results) were R-qualified as “rejected” because of large differences in quantitation between the primary and secondary analytical columns (see section N.21.2.3.1, below)

- 0.36 percent (1 of 280 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.21.2.3.1, below)

N.21.2.3.1 Dual-Column Reproducibility

One alpha-chlordane and one gamma-chlordane result, consisting of alpha-chlordane and gamma-chlordane in EPAU-SB03-0406, were R-qualified as “rejected” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the contractor at the time of laboratory award. These pesticides were detected by the laboratory. Nine other available alpha-chlordane and nine other available gamma-chlordane results are present in this data set.

Eight results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. One more result was J-qualified as “estimated” for the same reason. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detect results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.2.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 240 distinct data points were generated. The metals data set is 100 percent complete (240 of 240 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 17.92 percent (43 of 240 results) were U-qualified as “attributable to blank contamination” (see section N.21.2.4.1, below)
- 5.83 percent (14 of 240 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.21.2.4.2, below)
- 4.58 percent (11 of 240 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.21.2.4.3, below)
- 2.50 percent (6 of 240 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recoveries below the lower control limits (see section N.21.2.4.2, below)

N.21.2.4.1 Blank Contamination

A total of 43 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, lead, nickel, potassium, silver, and sodium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.21.2.4.2 Matrix Spike/ Matrix Spike Duplicate

A total of 14 results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. Another six results were UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported

concentration. The UJ-qualification of results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.2.4.3 Quantitation Limits

A total of 11 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.2.5 Wet Chemistry

Wet Chemistry (pH) was analyzed by SW-846 9045C. Excluding field quality control samples, 10 distinct data points were generated. The wet chemistry data set is 100 percent complete (10 of 10 wet chemistry results are available for use). The validation process resulted in no qualification.

N.21.3 PAOC U Surface Soil Data

This evaluation assesses the analytical results of the surface soil samples collected on March 2 and March 3, 2006.

N.21.3.1 Volatile Compounds

Volatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 480 distinct data points were generated. The volatiles data set is 100 percent complete (480 of 480 volatiles results are available for use). The validation process resulted in the following qualifiers for results in the volatiles fraction:

- 3.96 percent (19 of 480 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see section N.21.3.1.1, below)
- 1.88 percent (9 of 480 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see section N.21.3.1.1, below)
- 0.21 percent (1 of 480 results) were J-qualified as “estimated” because of continuing calibration recovery below the lower control limit (see section N.21.3.1.1, below)

N.21.3.1.1 Calibration

A total of 19 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. Nine more results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. One result was J-qualified as “estimated” for the same reason. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detects does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.3.2 Semivolatile Compounds

Semivolatiles were analyzed by EPA CLP OLM04. Excluding field quality control samples, 650 distinct data points were generated. The semivolatiles data set is 100 percent complete (650 of 650 semivolatiles results are available for use). The validation process resulted in the following qualifiers for results in the semivolatiles fraction:

- 6.15 percent (40 of 650 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery greater than the upper control limit (see Section N.21.3.2.1 below)
- 5.08 percent (33 of 650 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recovery below the lower control limit (see Section N.21.3.2.1 below)
- 0.31 percent (2 of 650 results) were U-qualified as “attributable to blank contamination” (see section N.21.3.2.2, below)

N.21.3.2.1 Calibration

A total of 40 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries greater than the upper control limit. An additional 33 results were UJ-qualified as “non-detect, estimated quantitation limit” because of continuing calibration recoveries below the lower control limit. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.3.2.2 Blank Contamination

Two results were U-qualified as “attributable to blank contamination” because bis(2-ethylhexylphthalate) was detected in associated blank samples. bis(2-Ethylhexyl)phthalate is a common laboratory contaminant. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.21.3.3 Pesticides/PCBs

Pesticides and PCBs were analyzed by EPA CLP OLM04. Excluding field quality control samples, 280 distinct data points were generated. When rejected results are considered, the pesticides/PCBs data set is 99.64 percent complete (279 of 280 pesticides/PCBs results are available for use). The validation process resulted in the following qualifiers for results in the pesticides/PCBs fraction:

- 2.14 percent (6 of 280 results) were U-qualified as “non-detect” because of large differences in quantitation between the primary and secondary analytical columns (see section N.21.3.3.1, below)
- 1.43 percent (4 of 280 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.21.3.3.2, below)
- 0.71 percent (2 of 280 results) were J-qualified as “estimated” because of large differences in quantitation between the primary and secondary analytical columns (see section N.21.3.3.1, below)
- 0.36 percent (1 of 280 results) were R-qualified as “rejected” because of large differences in quantitation between the primary and secondary analytical columns (see section N.21.3.3.1, below)

N.21.3.3.1 Dual-Column Reproducibility

One beta-BHC result, consisting of beta-BHC in EPAU-SS09-0001, was R-qualified as “rejected” because of a large percent difference between the primary and secondary analytical columns. In general, the laboratory reports the higher of the two results (from both columns) as this is the most conservative approach. However, this is a laboratory preference, is specific to the laboratory’s analytical SOP, and can be specified by the

contractor at the time of laboratory award. This pesticide was detected by the laboratory. Nine other available beta-BHC results are present in this data set.

Six results were U-qualified as “non-detect” because of a large percent difference between the primary and secondary analytical columns. Two more results were J-qualified as “estimated” for the same reason. The U-qualification of non-detect results does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit. The J-qualification of detect results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.3.3.2 Quantitation Limits

Four results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.3.4 Total Metals

Total metals (metals, mercury, and cyanide) were analyzed by EPA CLP ILM05. Excluding field quality control samples, 240 distinct data points were generated. The metals data set is 100 percent complete (240 of 240 metals results are available for use). The validation process resulted in the following qualifiers for results in the metals fraction:

- 10.00 percent (24 of 240 results) were U-qualified as “attributable to blank contamination” (see section N.21.3.4.1, below)
- 7.92 percent (19 of 240 results) were J-qualified as “estimated” because of matrix spike recovery below the lower control limits (see section N.21.3.4.2, below)
- 7.50 percent (18 of 240 results) were J-qualified as “estimated” because the results were below the quantitation limit (see section N.21.3.4.3, below)
- 0.42 percent (1 of 240 results) were UJ-qualified as “non-detect, estimated quantitation limit” because of matrix spike recovery below the lower control limits (see section N.21.3.4.2, below)

N.21.3.4.1 Blank Contamination

A total of 24 results were U-qualified as “attributable to blank contamination” because beryllium, cadmium, nickel, and sodium were detected in associated blank samples. The U-qualification of detects to indicate that they are “attributable to blank contamination” does not affect the availability of results because they are available for use as non-detects at the adjusted quantitation limit.

N.21.3.4.2 Matrix Spike/ Matrix Spike Duplicate

A total of 19 results were J-qualified as “estimated” because of matrix spike recoveries lower than the lower control limit. One more result was UJ-qualified as “non-detect, estimated quantitation limit” for the same reason. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration. The UJ-qualification of non-detects does not affect the availability of results because they are available for use as non-detects at the reported quantitation limit.

N.21.3.4.3 Quantitation Limits

A total of 18 results were J-qualified as “estimated” simply because the results were lower than the quantitation limit. The J-qualification of results does not affect the availability of results because they are available for use as detects at the reported concentration.

N.21.4 Groundwater PARCC

N.21.4.1 Precision

Because no results were qualified based on matrix spike precision or laboratory duplicates, and only two results were rejected based on field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in most cases.

N.21.4.2 Accuracy

Because no results were qualified due to laboratory control sample exceedances or matrix spike recoveries, and only nine results were qualified based on spiked surrogate recoveries, matrix effects and the laboratory's ability did not have any effect on accuracy in most cases.

N.21.4.3 Representativeness

There were no issues affecting representativeness in this data set.

N.21.4.4 Completeness

Overall, there were four R-qualified results in this dataset. The R-qualified results comprised 1.05 percent (4 of 382 results) of the total number of distinct results; therefore the data validation process demonstrated that 98.95 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.21.4.5 Comparability

There were no issues affecting comparability in this data set.

N.21.5 Subsurface Soil PARCC

N.21.5.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.21.5.2 Accuracy

Because no results were rejected due to laboratory control sample or spiked surrogate recovery exceedances, and only 20 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.21.5.3 Representativeness

There were no issues affecting representativeness in this data set.

N.21.5.4 Completeness

Overall, there were two R-qualified results in this dataset. The R-qualified results comprised 0.12 percent (2 of 1660 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.88 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.21.5.5 Comparability

There were no issues affecting comparability in this data set.

N.21.6 Surface Soil PARCC

N.21.6.1 Precision

Because no results were qualified based on matrix spike precision, laboratory duplicates, and field duplicates, the sample matrix did not interfere with the analytical process or adversely affect precision in any case.

N.21.6.2 Accuracy

Because no results were rejected due to laboratory control sample or spiked surrogate recovery exceedances, and only 20 results were qualified due to matrix spike recoveries, matrix effects and the laboratory's ability did not have any effects on accuracy in most cases.

N.21.6.3 Representativeness

There were no issues affecting representativeness in this data set.

N.21.6.4 Completeness

Overall, there was one R-qualified result in this dataset. The R-qualified results comprised 0.06 percent (1 of 1660 results) of the total number of distinct results; therefore the data validation process demonstrated that 99.94 percent of the results are available for use as qualified. Actual completeness exceeded the 85 percent project goal for this data set.

N.21.6.5 Comparability

There were no issues affecting comparability in this data set.

N.21.7 Totals for "Available as Reported," "Available as Qualified," and Rejected

The data quality evaluation showed that the laboratory U-qualified 78.23 percent (2896 of 3702 results) of the data as non-detect and further qualification was not warranted. Another 8.21 percent (304 of 3702 results) were detected and no further qualification was warranted. Another 1.65 percent (61 of 3702 results) were J-qualified as "estimated" and no further qualification was warranted. These results were J-qualified simply because the concentration was lower than the quantitation limit; results J-qualified for this reason are also available for use as reported. Thus, the above 88.09 percent (3261 of 3702 results) of the data are available for use as reported.

Other J-qualifiers resulted from dual-column reproducibility, low continuing calibration recoveries, low matrix spike recoveries, and serial dilution exceedances. These amounted to 1.08 percent (40 of 3702 results) of the total results. The percentage of non-detect results UJ-qualified as "non-detect, estimated quantitation limit" amounted to 8.10 percent (300 of 3702 results) and resulted from high and low continuing calibration exceedances, holding time exceedances, low matrix spike recoveries, and low spiked surrogate recoveries. A total of 2.16 percent (80 of 3702 results) were U-qualified as "non-detect" as a result of blank contamination. A total of 0.38 percent (14 of 3702 results) were U-qualified as "non-detect" as a result of dual-column reproducibility. Based on the above, 11.72 percent (434 of 3702

results) are available for use as qualified. Combining the 88.09 percent with the 11.72 percent results in 99.81 percent (3695 of 3702 results) data available for use, qualified as applicable.

All results, with the exception of those R-qualified as “rejected” (7 of 3702 results, 0.19 percent of total results) are available for use as qualified.

N.21.7.1 Discussion of Rejected Data

Table N.21-1 lists all R-qualified data for PAOC U. For constituents potentially attributable to a CERCLA-related release, the text below discusses the rejected data with respect to potential affects on the data quality and usability.

Aluminum and iron were rejected in the groundwater field duplicate sample; however, the aluminum and iron results for the associated sample were not rejected. Additionally, the non-detect methyl acetate results were rejected in the groundwater sample and its associated duplicate. Methyl acetate was not detected in any other sample or any other media at PAOC U.

Based on the information above, the rejected data do not affect the ability to draw conclusions regarding potential releases at PAOC U.

N.21.7.2 Discussion of Non-detect Reporting Limits Above Screening Values

Tables N.21-2a (surface soil), N.21-2b (subsurface soil), and N.21-2c (groundwater) list all quantitation limits above human health screening values for non-detected constituents at PAOC U. For constituents potentially attributable to a CERCLA-related release, the text below discusses the screening value exceedances with respect to potential affects on the data quality and usability.

In the surface soil samples, six non-detected SVOCs had laboratory quantitation limits that exceed human health screening values (Table N.21-2a). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.21-2a, even the target quantitation limits exceed the screening values; therefore, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

In accordance with the Department of Defense Quality Services Manual version 3 (DOD Environmental Data Quality Workgroup, January 2006), laboratories performing sample analyses for the Department of Defense are required to set their quantitation limits at least three times higher than the method detection limits. Therefore, an analyte could theoretically be detected at or above the method detection limit but below the quantitation limit, and the result would be J-qualified as “below quantitation limit” by the laboratory.

As shown in Table N.21-2a, the actual method detection limits for the six SVOCs are significantly below the human health screening values. Therefore, had any of these six constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as “below quantitation limit” by the laboratory. Based on the above information, the non-detect quantitation limits above human health

screening values in PAOC U surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In subsurface soil, the same six non-detected analytes (plus arsenic) as those for surface soil had laboratory quantitation limits that exceed human health screening values (Table N.21-2b). The method detection limit for arsenic is also well below its human health screening value. Therefore, for the same reasons as stated above, the non-detect quantitation limits greater than human health screening values in PAOC U subsurface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In groundwater, 57 non-detected analytes had laboratory quantitation limits that exceed human health screening values (Table N.21-2c). However, the achieved quantitation limits are equal to those concurred upon and memorialized in the Work Plan. Therefore, while there is some uncertainty associated with drawing conclusions with respect to human health effects, the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized. For 31 of the 57 analytes, the method detection limits are below the human health screening values. Therefore, had any of these 31 constituents been present at or greater than the human health screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Furthermore, except for the inorganics, none of the 57 constituents was detected in any other media at the site. Therefore, it is unlikely that any of the constituents were present in the groundwater. Based on the above information, the non-detect quantitation limits above human health screening values in PAOC U groundwater do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential human health effects.

In the surface soil samples, six non-detected SVOCs, three non-detected VOCs, and one non-detected metal had laboratory quantitation limits that exceed ecological screening values (Table N.21-3). However, the achieved quantitation limits are approximately equal to those concurred upon and memorialized in the Work Plan, elevated slightly due to one or more of the common occurrences stated in Section N.2. As shown in Table N.21-3, even the target quantitation limits for the six SVOCs and PCE exceed the screening values, so the uncertainty associated with these quantitation limits was recognized and deemed acceptable at the time the Work Plan was finalized.

As shown in Table N.21-3, the actual method detection limits for the six SVOCs, three VOCs, and mercury are significantly below the ecological screening values. Therefore, had any of these 10 constituents been present at or greater than the ecological screening values, they likely would have been detected and J-qualified as "below quantitation limit" by the laboratory. Based on the above information, the non-detect quantitation limits above ecological screening values in PAOC U surface soil do not affect the usability of the data for drawing conclusions regarding potential releases at the site with respect to potential ecological effects.

Table N.21-1
 Summary of Rejected Data
 PAOC U

Matrix	Analysis_Group	Sample_ID	Chem_Name	Ana_Value	Lab_Qual	DV_Qual	DV_Qual_Code	Units
GW	METAL	EPAU-GW01P-06B	ALUMINUM	430		R	FD	UG/L
GW	METAL	EPAU-GW01P-06B	IRON	390		R	FD	UG/L
GW	VOA	EPAU-GW01-06B	METHYL ACETATE	0.5 U		R	ICL	UG/L
GW	VOA	EPAU-GW01P-06B	METHYL ACETATE	0.5 U		R	ICL	UG/L
SB	PEST/PCB	EPAU-SB03-0406	ALPHA-CHLORDANE	4.2 P		R	2C	UG/KG
SB	PEST/PCB	EPAU-SB03-0406	GAMMA-CHLORDANE	2.3 P		R	2C	UG/KG
SS	PEST/PCB	EPAU-SS09-0001	BETA-BHC	3.2 P		R	2C	UG/KG

Reason Codes (DV_Qual_Code)

2C: Poor dual-column reproducibility

FD: Poor dual-column reproducibility

ICL: Initial Calibration - Low Recovery

Table N.21-2a					
Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Surface Soil - PAOC U					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 0.94	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.38	0.0205	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.38	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.38	0.0349	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.38	0.0322	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.38	0.0274	0.069

Table N.21-2b

Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Subsurface Soil - PAOC U

Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
4,6-Dinitro-2-methylphenol	mg/kg	0.83	0.86 - 0.95	0.0697	0.61
Benzo(a)pyrene	mg/kg	0.33	0.34 - 0.38	0.02046	0.062
Dibenz(a,h)anthracene	mg/kg	0.33	0.34 - 0.38	0.0368	0.062
Hexachlorobenzene	mg/kg	0.33	0.34 - 0.38	0.03487	0.3
bis(2-Chloroethyl)ether	mg/kg	0.33	0.34 - 0.38	0.03224	0.22
n-Nitroso-di-n-propylamine	mg/kg	0.33	0.34 - 0.38	0.02736	0.069
Arsenic	mg/kg	1	1 - 1.2	0.027	0.39

Table N.21-2c Comparison of Non-Detect Quantitation Limit with Human Health Screening Values - Groundwater - PAOC U					
Chemical	Units	Work Plan Specified Quantitation Limit	Quantitation Limit Range	Method Detection Limit	Screening Toxicity Value
1,1,2,2-Tetrachloroethane	ug/L	0.5	0.5-0.5	0.08	0.055
1,1,2-Trichloroethane	ug/L	0.5	0.5-0.5	0.06	0.2
1,2-Dibromo-3-chloropropane	ug/L	0.5	0.5-0.5	0.19	0.035
1,2-Dibromoethane	ug/L	0.5	0.5-0.5	0.1	0.0056
1,2-Dichloroethane	ug/L	0.5	0.5-0.5	0.05	0.12
1,2-Dichloropropane	ug/L	0.5	0.5-0.5	0.04	0.16
Benzene	ug/L	0.5	0.5-0.5	0.06	0.35
Bromochloromethane	ug/L	0.5	0.5-0.5	0.07	0.18
Bromodichloromethane	ug/L	0.5	0.5-0.5	0.04	0.18
Carbon tetrachloride	ug/L	0.5	0.5-0.5	0.04	0.17
Dibromochloromethane	ug/L	0.5	0.5-0.5	0.04	0.13
Tetrachloroethene	ug/L	0.5	0.5-0.5	0.06	0.1
Trichloroethene	ug/L	0.5	0.5-0.5	0.07	0.028
Vinyl chloride	ug/L	0.5	0.5-0.5	0.05	0.02
cis-1,3-Dichloropropene	ug/L	0.5	0.5-0.5	0.08	0.4
trans-1,3-Dichloropropene	ug/L	0.5	0.5-0.5	0.07	0.4
1,2,4,5-Tetrachlorobenzene	ug/L	5	5-5	0.36	1.1
2,2'-Oxybis(1-chloropropane)	ug/L	5	5-5	0.54	0.27
2,4,6-Trichlorophenol	ug/L	5	5-5	0.33	0.36
2,4-Dinitrophenol	ug/L	20	20-20	7.44	7.3
2,6-Dinitrotoluene	ug/L	5	5-5	0.5	3.6
2-Chlorophenol	ug/L	5	5-5	0.48	3
2-Methylnaphthalene	ug/L	5	5-5	0.28	2
2-Nitroaniline	ug/L	20	20-20	0.99	11
2-Nitrophenol	ug/L	5	5-5	0.44	3
3,3'-Dichlorobenzidine	ug/L	5	5-5	0.6	0.15
3-Nitroaniline	ug/L	20	20-20	0.93	1.1
4,6-Dinitro-2-methylphenol	ug/L	20	20-20	1.08	0.36
4-Bromophenyl-phenylether	ug/L	5	5-5	0.28	0.27
4-Chloro-3-methylphenol	ug/L	5	5-5	0.41	3
4-Chlorophenyl-phenylether	ug/L	5	5-5	0.4	0.27
4-Nitroaniline	ug/L	20	20-20	0.73	3.2
4-Nitrophenol	ug/L	20	20-20	1.26	0.34
Benzo(a)anthracene	ug/L	5	5-5	0.57	0.092
Benzo(a)pyrene	ug/L	5	5-5	0.39	0.0092
Benzo(b)fluoranthene	ug/L	5	5-5	0.45	0.092
Benzo(k)fluoranthene	ug/L	5	5-5	0.48	0.92
Dibenz(a,h)anthracene	ug/L	5	5-5	0.36	0.0092
Dibenzofuran	ug/L	5	5-5	0.29	1.2
Hexachlorobenzene	ug/L	5	5-5	0.52	0.042
Hexachlorobutadiene	ug/L	5	5-5	0.58	0.8600
Hexachloroethane	ug/L	5	5-5	0.64	3.6
Indeno(1,2,3-cd)pyrene	ug/L	5	5-5	0.39	0.092
Naphthalene	ug/L	5	5-5	0.59	0.62
Nitrobenzene	ug/L	5	5-5	0.36	0.34
Pentachlorophenol	ug/L	5	5-5	1.01	0.56
bis(2-Chloroethoxy)methane	ug/L	5	5-5	0.5	0.27
bis(2-Chloroethyl)ether	ug/L	5	5-5	0.49	0.01
bis(2-Ethylhexyl)phthalate	ug/L	5	5-5	9.21	4.8
n-Nitroso-di-n-propylamine	ug/L	5	5-5	0.55	0.0096
Antimony	ug/L	60	60-60	0.051	1.5
Arsenic	ug/L	10	10-10	0.069	0.045
Cadmium	ug/L	5	5-5	0.028	1.8
Thallium	ug/L	1	1-1	0.015	0.24
Antimony-dissolved	ug/L	60	60-60	0.051	1.5
Arsenic-dissolved	ug/L	10	10-10	0.069	0.045
Thallium-dissolved	ug/L	1	1-1	0.015	0.24

* The method detection limit for bis(2-ethylhexyl)phthalate calculated by the laboratory is invalid, but the separately calculated quantitation limit is correct.

Table N.21-3

Comparison of Non-Detect Quantitation Limits With Ecological Screening Values - Surface Soil - PAOC U

Chemical	Minimum Quantitation Limit	Maximum Quantitation Limit	Screening Value	Method Detection Limit	Work Plan Specified Quantitation Limit
Inorganics (MG/KG)					
Mercury	0.10	0.11	0.10	0.042	0.1
Semivolatile Organic Compounds (UG/KG)					
Anthracene	340	380	100	22.3	330
Benzo(a)pyrene	340	380	100	20.46	330
Fluoranthene	340	380	100	30.1	330
Naphthalene	340	380	100	28.16	330
Phenanthrene	340	380	100	27.96	330
Pyrene	340	380	100	30.75	330
Volatile Organic Compounds (UG/KG)					
Benzene	10.0	11.0	10.0	0.3	10
Tetrachloroethene	10.0	11.0	2.00	0.2	10
Vinyl chloride	10.0	11.0	10.0	0.23	10