

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

A

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix A
Lithologic Logs and
Well Construction Diagrams





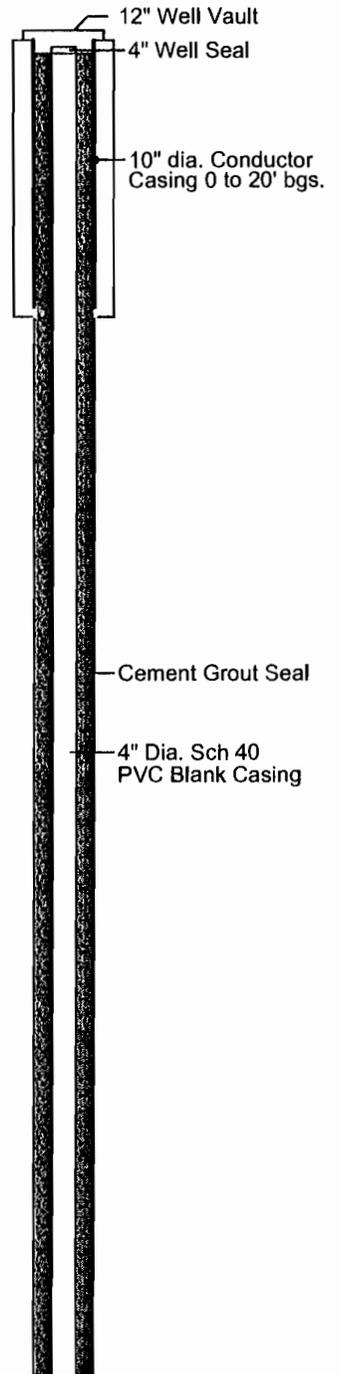
Lithologic Log for Monitor Well MW-18

(Page 1 of 4)

Phase V Drilling September 2009	Start Date : August 27, 2009	Drill Rig : Air Rotary
	Finish Date : September 23, 2009	Driller & Helper : Chad, Tom, and Dan
	Location : UPCO	Latitude : 33 42' 48"
	Logged By : Matt/Adrian	Longitude : 112 04' 13"
	Drilling Subcontractor : Yellow Jacket Drilling	

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS			Date/Time
				% Gravel	% Sand	% Fines	
0							8/28/09
10	SW		Well graded SAND with Gravel, trace to little Silt, reddish brown. Sand is medium to coarse-grained, Gravel is subrounded to subangular.	30	65	5	09:15
20				60	30	10	10:10
30	GP		Poorly graded GRAVEL with Sand, trace to little Silt, light grey. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	30	10	8/31/09 11:15
40				60	40	T	11:35
50			Well graded GRAVEL with Sand, trace to little Silt, trace cobble, light grey. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	35	5	14:00
60			Well graded GRAVEL with Sand, light gray. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	35	5	14:10
70	GW		Well graded GRAVEL with Sand, dark gray. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	50	45	5	14:25
80			Well graded GRAVE with Sand, light gray, WET (driller adding water). Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	35	T	14:35
90				60	40	T	14:50
100							

Well Name: MW-18
Borehole Dia: Nom. 10"



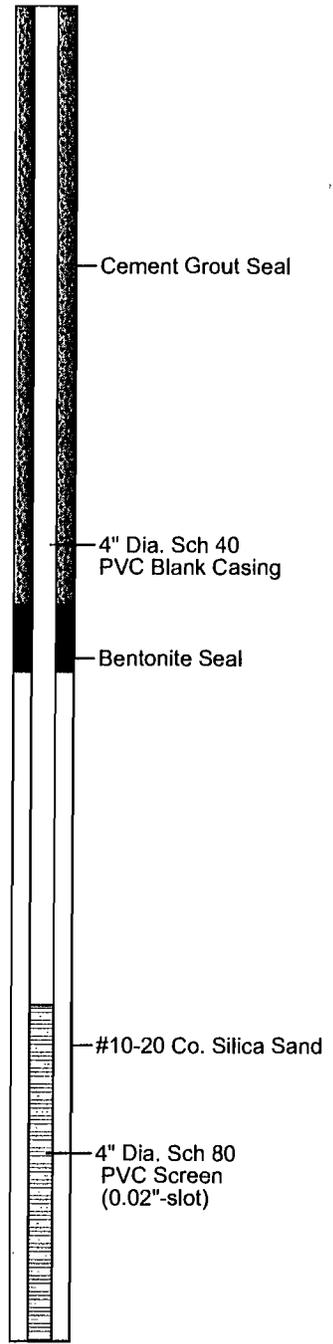


Lithologic Log for Monitor Well MW-18

Phase V Drilling September 2009	Start Date : August 27, 2009	Drill Rig : Air Rotary
	Finish Date : September 23, 2009	Driller & Helper : Chad, Tom, and Dan
	Location : UPCO	Latitude : 33 42' 48"
	Logged By : Matt/Adrian	Longitude : 112 04' 13"
	Drilling Subcontractor : Yellow Jacket Drilling	

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS			Date/Time
				% Gravel	% Sand	% Fines	
100			Well graded GRAVEL, dark gray to reddish brown.	55	45	T	15:00
110			Well graded GRAVEL, dark gray.	55	40	5	15:16
120				60	35	5	15:26
130			Well graded GRAVEL with Sand, dark gray to reddish brown. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	55	40	5	15:36
140				55	40	5	15:55
150	GW		Well graded GRAVEL with Sand, dark gray to reddish brown. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	65	30	5	16:10
160				60	35	5	16:25
170			Well graded GRAVEL, dark gray to reddish brown.	55	40	5	16:45
180				60	35	5	17:00
190			Well graded GRAVEL with Sand, dark gray to reddish brown. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	35	5	17:20 9/01/09 12:00
200				50	40	10	9/3/09 12:25

Well Name: MW-18
Borehole Dia: Nom. 10"



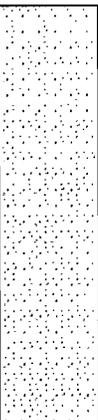
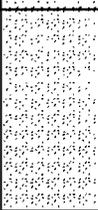
03-31-2010 M:\9994003\300 Monitor Well Install\Borehole_Logs\Lithologic Logs\MW-18.bor

Lithologic Log for Monitor Well MW-18

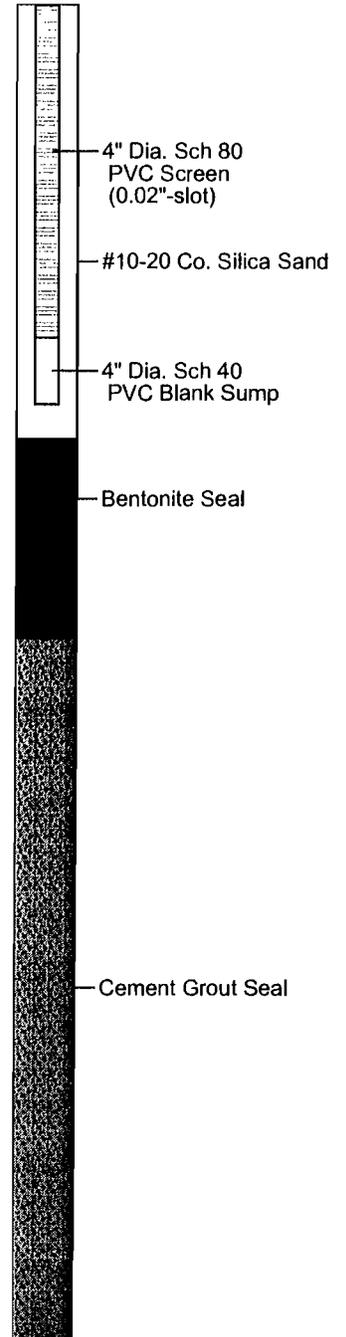
Phase V Drilling
September 2009

Start Date : August 27, 2009
 Finish Date : September 23, 2009
 Location : UPCO
 Logged By : Matt/Adrian
 Drilling Subcontractor : Yellow Jacket Drilling

Drill Rig : Air Rotary
 Driller & Helper : Chad, Tom, and Dan
 Latitude : 33 42' 48"
 Longitude : 112 04' 13"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS			Date/Time
				% Gravel	% Sand	% Fines	
200							15:50
210							
220							16:10
230	GW						
240							16:50
250							11:00
260							
270	BR		DIORITE Bedrock, few Granodiorite cuttings, greenish gray, texture is fine grained, cuttings are subangular to subrounded.				11:30
280							
290	BR		DIORITE Bedrock, reddish brown, cuttings are subrounded to rounded.				
300							9/14/09

Well Name: MW-18
 Borehole Dia: Nom. 10"





Lithologic Log for Monitor Well MW-18

(Page 4 of 4)

Phase V Drilling
September 2009

Start Date : August 27, 2009
Finish Date : September 23, 2009
Location : UPCO
Logged By : Matt/Adrian
Drilling Subcontractor : Yellow Jacket Drilling

Drill Rig : Air Rotary
Driller & Helper : Chad, Tom, and Dan
Latitude : 33 42' 48"
Longitude : 112 04' 13"

Well Name: MW-18
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS			Date/Time
				% Gravel	% Sand	% Fines	
300							11:50
310							
320			DIORITE Bedrock, reddish brown, cuttings are subrounded to rounded.				12:10
330							
340							12:30
350	BR						
360			DIORITE Bedrock, reddish brown, cuttings are subrounded to rounded.				12:50
370							14:00
380							14:30
390							15:05
400			Total Depth.				



03-31-2010 M:\3994003\300 Monitor Well Install\Borehole_logs\Lithologic_Logs\MW-18.bor

NOT TO SCALE

SURFACE

DEPTH
(FT BGS)

- 2
- 22
- 27
- 30
- 40
- 42
- 43
- 47
- 83
- 87
- 90
- 100
- 102
- 103
- 109
- 132
- 137
- 140
- 138
- 150
- 152
- 153
- 158
- 182
- 187
- 188
- 190
- 200
- 202
- 203
- 218
- 241

12-INCH DIAMETER
LOCKING STEEL MONUMENT

2-FOOT SQUARE CONCRETE PAD

2-INCH DIAMETER SCH 80 PVC
(0.040" SLOT) WITH END CAP

10-INCH DIAMETER STEEL
CONDUCTOR CASING

NOMINAL 10.75-INCH BOREHOLE

3/8-INCH WASHED PEA GRAVEL

CEMENT-BENTONITE GROUT

BENTONITE SEAL

Notes:

Vapor ports sealed with Swagelok caps.
Converted to monument surface completion
in August 2009.

#8-12 SILICA SAND

3/8" WASHED PEA GRAVEL

1/2-INCH DIAMETER SCH 80 PVC
(0.040" SLOT) WITH ENDCAP

TOTAL DEPTH
OF BOREHOLE

**MALCOLM
PIRNIE**

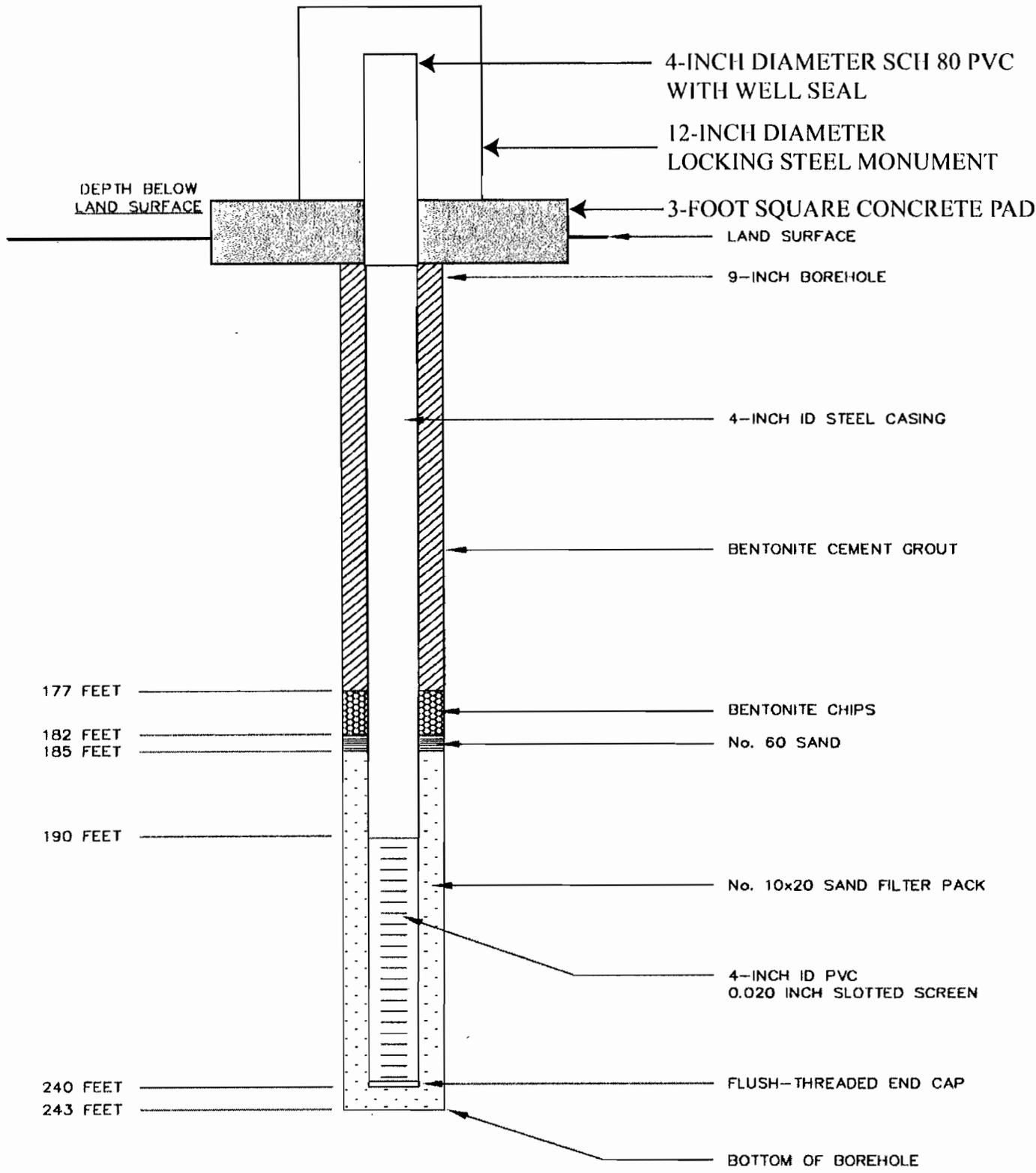
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

SVMW-1 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010

Appendix A



NOT TO SCALE

**From Hargis + Associates, Inc.
Monitor Well Construction
Summary Report, July 2004**

Note: MW-1 conversion to monument surface completion in September 2009

**MALCOLM
PIRNIE**

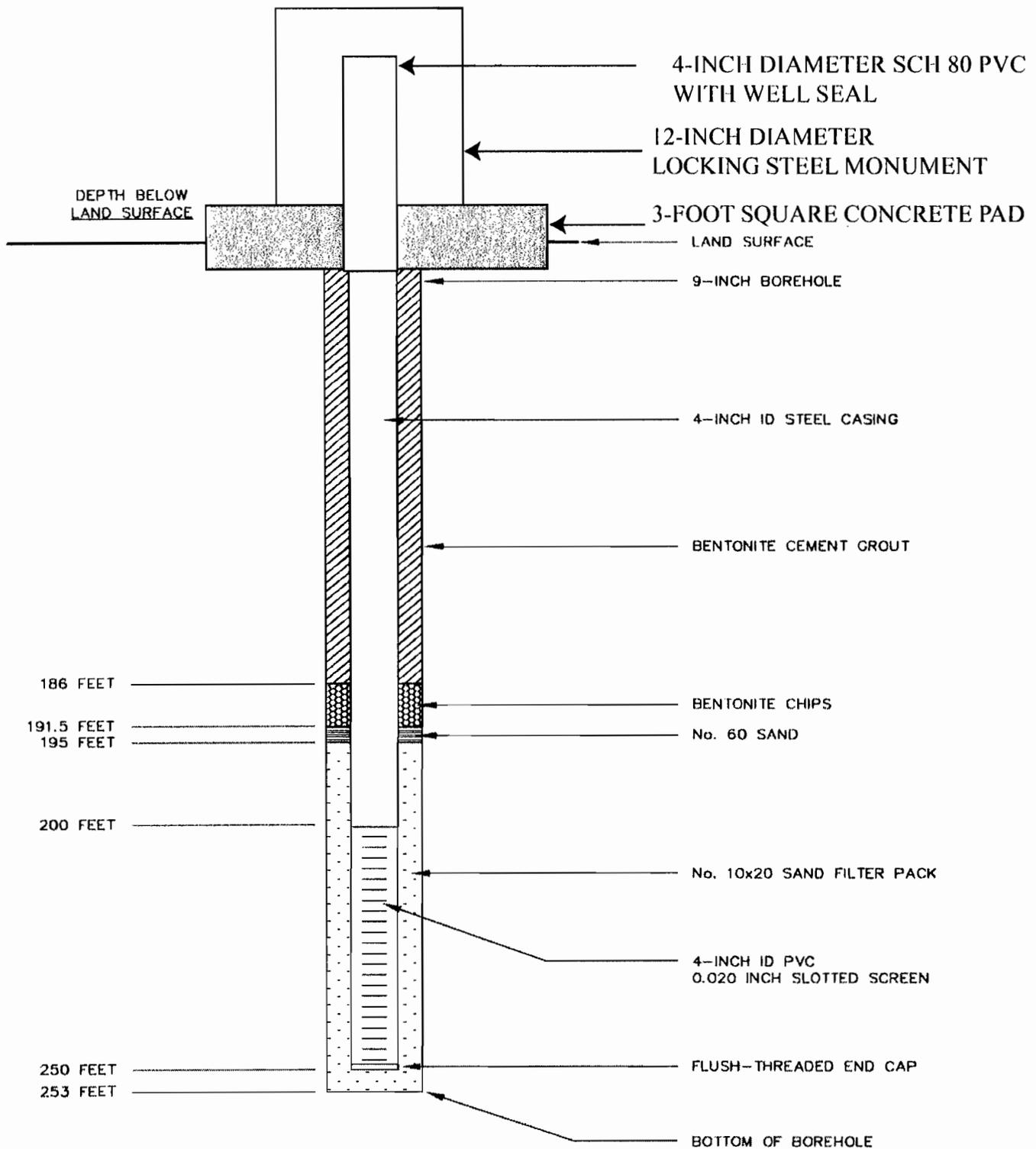
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-1 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010

Appendix A



NOT TO SCALE

**From Hargis + Associates, Inc.
Monitor Well Construction
Summary Report, July 2004**

Note: MW-2 conversion to monument surface
completion in September 2009

**MALCOLM
PIRNIE**

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-2 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010

Appendix A

DEPTH
(FT BGS)

SURFACE

20

215

220

225

230

277

280

285

4-INCH DIAMETER WELL SEAL

12-INCH DIAMETER
LOCKING STEEL MONUMENT

3-FOOT SQUARE CONCRETE PAD

9-INCH STEEL CONDUCTOR
CASING

NOMINAL 8-INCH BOREHOLE

CEMENT GROUT SEAL

4-INCH DIAMETER SCH 40
PVC BLANK CASING

BENTONITE SEAL

#60 COLORADO SILICA SAND

4-INCH DIAMETER SCH 40 PVC
SLOTTED CASING (0.02" SLOT)
WITH SUMP AND END CAP

#10-20 COLORADO SILICA SAND

SCH 80 PVC SOUNDING TUBE
SUBMERSIBLE PUMP ON
SCH 80 PVC DROP PIPE

TOTAL DEPTH
OF BOREHOLE

NOT TO SCALE

Note: Converted to monument surface completion in September 2009

**MALCOLM
PIRNIÉ**

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-5 Revised
As-Built Construction Diagram
2009 Annual Monitoring Report

December 2010

Appendix A

DEPTH
(FT BGS)

SURFACE

20

140

145

150

155

202

205

210

215

220

4-INCH DIAMETER WELL SEAL

12-INCH DIAMETER
LOCKING STEEL MONUMENT

3-FOOT SQUARE CONCRETE PAD

9-INCH STEEL CONDUCTOR
CASING

NOMINAL 8-INCH BOREHOLE

CEMENT GROUT SEAL

4-INCH DIAMETER SCH 40
PVC BLANK CASING

BENTONITE SEAL

#60 COLORADO SILICA SAND

4-INCH DIAMETER SCH 40 PVC
SLOTTED CASING (0.02" SLOT)
WITH SUMP AND END CAP

#10-20 COLORADO SILICA SAND

SCH 80 PVC SOUNDING TUBE

SUBMERSIBLE PUMP ON
SCH 80 PVC DROP PIPE

BENTONITE SEAL

TOTAL DEPTH OF BOREHOLE

NOT TO SCALE

Note: Converted to monument surface completion in September 2009

**MALCOLM
PIRNIE**

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-6 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010

Appendix A

DEPTH
(FT BGS)

SURFACE

20

430

440

445

450

480

5-INCH DIAMETER WELL SEAL

12-INCH DIAMETER
LOCKING STEEL MONUMENT

3-FOOT SQUARE CONCRETE PAD

10-INCH STEEL CONDUCTOR
CASING

NOMINAL 10-INCH BOREHOLE
CEMENT GROUT SEAL

5-INCH DIAMETER SCH 80
PVC BLANK CASING

BENTONITE SEAL

#60 COLORADO SILICA SAND

5-INCH DIAMETER SCH 80 PVC
SLOTTED CASING (0.02" SLOT)
WITH SUMP AND END CAP

#8-12 COLORADO SILICA SAND

SCH 80 PVC SOUNDING TUBE
SUBMERSIBLE PUMP ON
SCH 80 PVC DROP PIPE

TOTAL DEPTH OF BOREHOLE

NOT TO SCALE

Note: Converted to monument surface completion in September 2009

**MALCOLM
PIRNIE**

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-12 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010

Appendix A

DEPTH
(FT BGS)

SURFACE

20

426

432

435.5

440

486

490

490.5

491

550

5-INCH DIAMETER WELL SEAL

13-INCH DIAMETER
LOCKING STEEL MONUMENT

3-FOOT SQUARE CONCRETE PAD

13-INCH STEEL CONDUCTOR
CASING

NOMINAL 10-INCH BOREHOLE

CEMENT GROUT SEAL

5-INCH DIAMETER SCH 80
PVC BLANK CASING

BENTONITE SEAL

#60 COLORADO SILICA SAND

5-INCH DIAMETER SCH 80 PVC
SLOTTED CASING (0.02" SLOT)
WITH SUMP AND END CAP

#10-20 COLORADO SILICA SAND

SCH 80 PVC SOUNDING TUBE

SUBMERSIBLE PUMP ON
SCH 120 PVC DROP PIPE

CAVE IN ROCK MATERIAL
TOTAL DEPTH OF BOREHOLE

**MALCOLM
PIRNIE**

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-13 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010

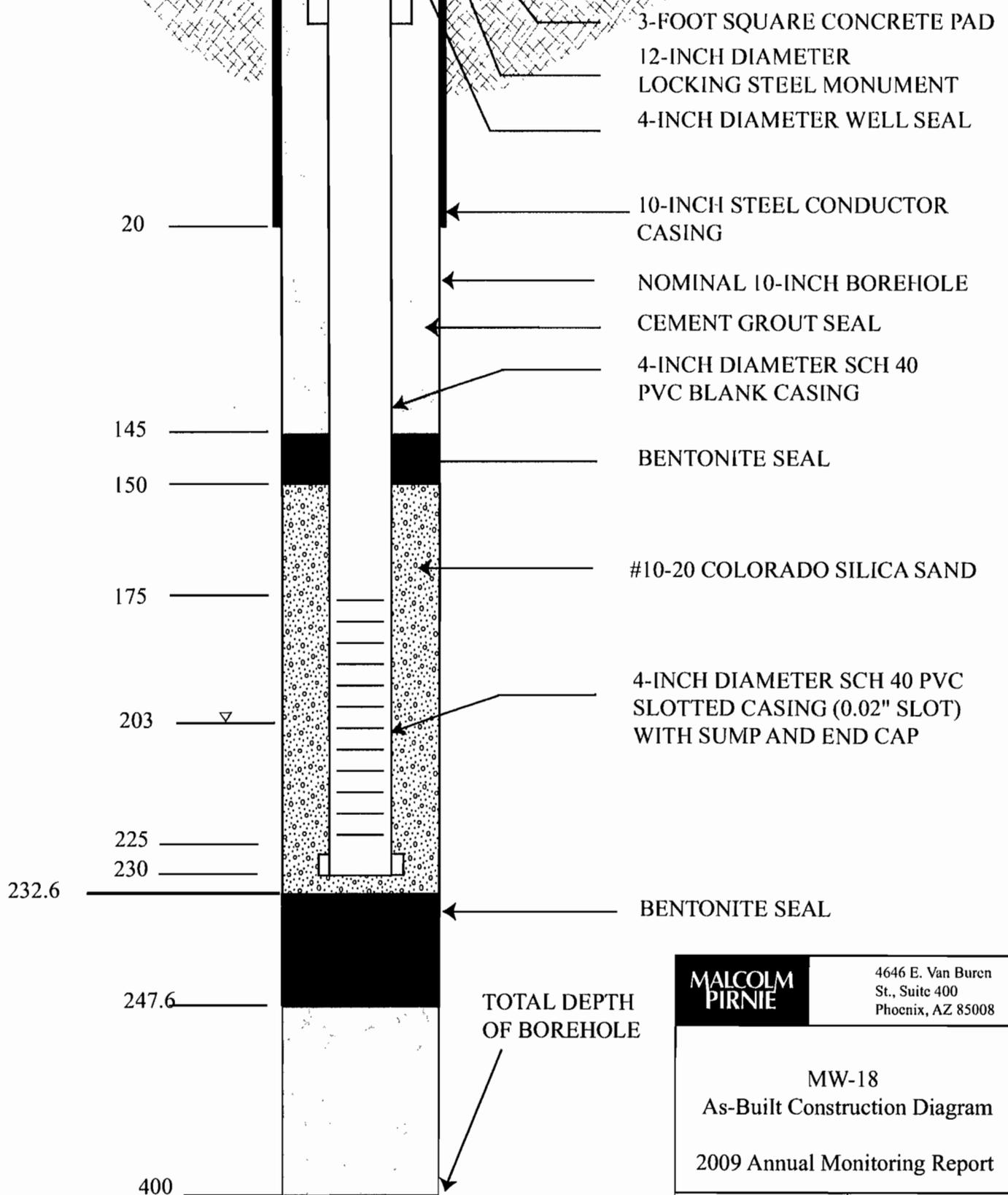
Appendix A

NOT TO SCALE

Note: Converted to monument surface completion in September 2009

DEPTH
(FT BGS)

SURFACE



**MALCOLM
PIRNIE**

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-18
As-Built Construction Diagram
2009 Annual Monitoring Report

December 2010

Appendix A

NOT TO SCALE

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

B

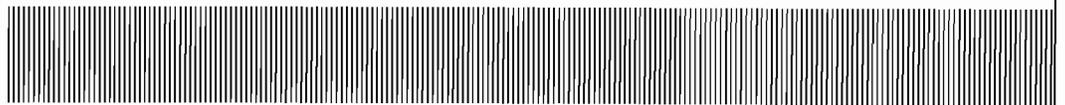
APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix B

IDW Documentation





LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

49105

195099

Profile Number
XXXXXXXXXX

Generator Name	Name: <u>Jerry L. McPherson</u>	Generator Address	Address: <u>4101 N. 19th Ave</u>
	Phone: ()		City: <u>Phoenix</u> State: <u>AZ</u> Zip: <u></u>

Check with your state and local regulatory agencies for manifest retention requirements. NOTE: Many regulatory agencies require records to be kept on-site and available to review for up to 3 years.

Waste Type	<input type="checkbox"/> Grease Trap <input type="checkbox"/> Grit Trap <input type="checkbox"/> Septic/Chemical Toilet <input checked="" type="checkbox"/> Non-Industrial <input type="checkbox"/> Industrial <input type="checkbox"/> Special
------------	---

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pursuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	<u>JERRY L. McPHERSON</u>	Generator Rep. Signature	
------------------------------------	---------------------------	--------------------------	--

Transporter Name	Name: <u>M.F. Environmental</u>	Transporter Address	Address: <u>345 S 51st Ave</u>
	Phone: <u>(602) 508-6835</u>		City: <u>Phoenix</u> State: <u>AZ</u> Zip: <u>85015</u>

Waste Removed (Gallons)	<u>4000</u>	Date	Time
		<u>01/08/2009</u>	<u>11:35</u>

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	<u>KEVIN BRANDT</u>	Driver Signature	
----------------------------	---------------------	------------------	--

Disposal Facility	Liquid Environmental Solutions of Arizona	Address	5159 West Van Buren Street Phoenix, AZ 85043
-------------------	---	---------	---

Waste Received (Gallons)	<u>4000</u>	Date	Time
		<u>1-8-09</u>	

Facility Rep. Name (please print)	<u>Kevin Brandt</u>	Facility Rep. Signature	
-----------------------------------	---------------------	-------------------------	--

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy



LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

50001

Profile Number
195699

Generator Name	Name: <u>UPCO</u>	Generator Address	Address: <u>25401 N. Central Ave</u>	
	Phone: <u>(602) 516-3340</u>		City: <u>Phoenix</u> State: <u>AZ</u> Zip: <u>85027</u>	

Check with your state and local regulatory agencies for manifest retention requirements. NOTE: Many regulatory agencies require records to be kept on-site and available for review for up to 3 years.

Waste Type	<input type="checkbox"/> Grease Trap <input type="checkbox"/> Grit Trap <input type="checkbox"/> Septic/Chemical Toilet <input checked="" type="checkbox"/> Non-Industrial <input type="checkbox"/> Industrial <input type="checkbox"/> Special
------------	---

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pursuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	<u>Jerry L. McPherson</u>	Generator Rep. Signature	
------------------------------------	---------------------------	--------------------------	--

Transporter Name	Name: <u>MPE</u>	Transporter Address	Address: <u>3845 S. 51st. Ave.</u>	
	Phone: <u>(602) 275-6233</u>		City: <u>Phoenix</u> State: <u>AZ</u> Zip: <u>85043</u>	

Waste Removed (Gallons)	<u>4000</u>	Date	Time
		<u>2-23-09</u>	

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	<u>JD</u>	Driver Signature	
----------------------------	-----------	------------------	--

Disposal Facility	Liquid Environmental Solutions of Arizona	Address	5159 West Van Buren Street Phoenix, AZ 85043
-------------------	---	---------	---

Waste Received (Gallons)	<u>4000</u>	Date	Time
		<u>02-23-09</u>	<u>0851h</u>

Facility Rep. Name (please print)	<u>Pat Generoso</u>	Facility Rep. Signature	
-----------------------------------	---------------------	-------------------------	--

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy



LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

140477
30177

195699

Generator Name	Name: <u>UNIVERSAL PROVISION</u>	Generator Address	Address: <u>25401 Central Ave</u>
	Phone: <u>(602) 916-3340</u>		City: <u>PHX</u> State: <u>AZ</u> Zip: <u>85027</u>



Waste Type

Grease Trap
 Grit Trap
 Septic/Chemical Toilet
 Non-Industrial
 Industrial
 Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pursuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	<u>X GREGORY CARPENTER</u>	Generator Rep. Signature	<u>X Gregory Carpenter</u>
------------------------------------	----------------------------	--------------------------	----------------------------

Transporter Name	Name: <u>MPC</u>	Transporter Address	Address: <u>50419 S. 51ST AVE</u>
	Phone: <u>(602) 278-6233</u>		City: <u>PHX</u> State: <u>AZ</u> Zip: <u>85043</u>

Waste Removed (Gallons)	<u>5000</u>	Date	Time
		<u>4/23/09</u>	

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	<u>JAVAD CHAIK</u>	Driver Signature	<u>JAVAD</u>
----------------------------	--------------------	------------------	--------------

Disposal Facility	Liquid Environmental Solutions of Arizona	Address	5159 West Van Buren Street Phoenix, AZ 85043
-------------------	---	---------	---

Waste Received (Gallons)		Date	Time

Facility Rep. Name (please print)		Facility Rep. Signature	
-----------------------------------	--	-------------------------	--

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy



LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

17097

67147
14110
195699

Generator Name	Name: <u>UNIVERSAL Props</u>	Generator Address	Address: <u>5577 Valley Rd</u>
	Phone: ()		City: <u>Phoenix</u> State: <u>AZ</u> Zip: <u>85043</u>



Waste Type	<input type="checkbox"/> Grease Trap	<input type="checkbox"/> Grit Trap	<input type="checkbox"/> Septic/Chemical Toilet	<input checked="" type="checkbox"/> Non-Industrial	<input type="checkbox"/> Industrial	<input type="checkbox"/> Special
------------	--------------------------------------	------------------------------------	---	--	-------------------------------------	----------------------------------

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pursuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	<u>UPCO</u>	Generator Rep. Signature	<u>[Signature]</u>
------------------------------------	-------------	--------------------------	--------------------

Transporter Name	Name: <u>MPE</u>	Transporter Address	Address: <u>3045 S. 4th</u>
	Phone: ()		City: <u>Phoenix</u> State: <u>AZ</u> Zip: <u>85043</u>

Waste Removed (Gallons)	<u>1000</u>	Date	Time
		<u>9-23-09</u>	

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	<u>[Signature]</u>	Driver Signature	<u>[Signature]</u>
----------------------------	--------------------	------------------	--------------------

Disposal Facility	Liquid Environmental Solutions of Arizona	Address	5159 West Van Buren Street Phoenix, AZ 85043
-------------------	---	---------	---

Waste Received (Gallons)	<u>1000</u>	Date	Time
		<u>9-23-09</u>	

Facility Rep. Name (please print)	<u>Kevin Brandt</u>	Facility Rep. Signature	<u>[Signature]</u>
-----------------------------------	---------------------	-------------------------	--------------------

WHITE - Transporter YELLOW - Second Generator GOLDENROD - Disposal Facility PINK - Generator





LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

49114

Profile Number:
195679

Generator Name	Name: <u>MALCOLM TORNE, P.E.</u>	Generator Address	Address: <u>25401 N. CENTRAL AVE</u> City: <u>PHOENIX</u> State: <u>AZ</u> Zip: <u>85025</u>
	Phone: <u>(602) 516-5540 x 2266</u>		



Waste Type

Grease Trap
 Grit Trap
 Septic/Chemical Toilet
 Non-Industrial
 Industrial
 Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pursuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	<u>Kevin Pittman</u>
Generator Rep. Signature	

Transporter Name	Name: <u>M.P.E.</u>
Phone: <u>(800) 833-7602</u>	Address: <u>3045 S 51st AVE</u> City: <u>PHX</u> State: <u>AZ</u> Zip: <u>85323</u>

Waste Removed (Gallons)	Date	Time
<u>1,750</u>	<u>12/18/09</u>	<u>12:45 PM</u>

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	<u>Rafael Perez</u>
Driver Signature	

Disposal Facility	Liquid Environmental Solutions of Arizona	Address	5159 West Van Buren Street Phoenix, AZ 85043
--------------------------	---	----------------	---

Waste Received (Gallons)	Date	Time
<u>1750</u>	<u>12-18-09</u>	

Facility Rep. Name (please print)	<u>Kevin Brandt</u>
Facility Rep. Signature	

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy



PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM-187871

Name P. P. P.

Generating Location 1240

Address 1240

1240

1240

1240

Phone No. 602-744-34

I.D. No. _____

AWR	1240	1240	A2	1240	1240

- UNIT
- D - DRUM
- B - BAG
- C - CARTON
- T - TONS
- Y - YARDS
- O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

GREG CARPENTER 9/25/09 Greg Carpenter
 AUTHORIZED AGENT'S NAME (PRINT) DATE SIGNATURE

CONTRACTOR

Name _____ Phone No. _____

Address _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

 AUTHORIZED AGENT'S NAME (PRINT) DATE SIGNATURE

TRANSPORTER

Name WIP - unident Phone No. 602-744-033

Address Phoenix, AZ 85043 Driver's Name _____

Vehicle's No. 881 Bin # 5933

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

9-25-09 [Signature] 9-25-09 [Signature]
 SHIPMENT DATE DRIVER'S SIGNATURE DELIVERY DATE DRIVER'S SIGNATURE

DISPOSAL FACILITY

- BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6068
- PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3808
- GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

12/09 [Signature]
 NAME (PRINT) DATE SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD



Northwest Regional Landfill
 12401 Deer Valley Road
 Surprise, AZ, 85387
 Ph: 62350446055

Original
 Ticket# 647332

Customer Name: MP Enviro MP Environmental Carrier: MP Environmental
 Ticket Date: 09/25/2009 Vehicle#: 381 Value:
 Payment Type: Credit Account Container: 20
 Manual Ticket#: Driver: 4472
 Hauling Ticket#: Check#: 0000036
 Route: Billing #: Gen EPA ID:
 State Waste Code: Gen EPA ID:
 Manifest: 187871 Grid:
 Destination:
 Profile: 101432AZ (Universal Propulsion Co Inc)
 Generator: 180-UNIVERSAL PROPULSION Universal Propulsion CO

Time	Scale	Operator	Inbound	Gen	Weight
In 09/25/2009 11:49:37	Inbound	LMGarcia		Gen	9500 lb
Out 09/25/2009 12:41:15	Outbound	LMGarcia		Net	2600 lb
				Tare	1800 lb
				Tare	9.14

Comments

Product	LB%	Qty	UOM	Rate	Tax	Amount	Origin
1 Non Reg Soil -Tons	100	9.14	Tons				
2 FUEL-Fuel Surcharg	100		%				
3 SENV-Environmental	100		%				
4 ADE-ADED Fee	100	9.14	Tons				

Total Tax
 Total Ticket

103VMM Driver's Signature





PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No.

Ticket No.

GENERATOR

WM-187872

Name

Generating Location

Address

Phone No.

I.D. No.

WWR 121432 AZ 11/14/09

- UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

GREG CARPENTER AUTHORIZED AGENT'S NAME (PRINT)

9/25/09 DATE

Greg Carpenter SIGNATURE

CONTRACTOR

Name

Phone No.

Address

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT)

DATE

SIGNATURE

TRANSPORTER

Name

Phone No.

Address

Driver's Name

Vehicle's No.

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

09-25 SHIPMENT DATE

Brian Connell DRIVER'S SIGNATURE

9-25-09 DELIVERY DATE

Brian Connell DRIVER'S SIGNATURE

DISPOSAL FACILITY

- BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85397 • (623) 584-6065
PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3608
GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 888-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT)

DATE

SIGNATURE

ORIGINAL - WHITE

DISPOSAL FACILITY - YELLOW

TRANSPORTER - PINK

GENERATOR - GOLDENROD



Northwest Regional Landfill
 19401 Deer Valley Road
 Surprise, AZ, 85387
 Ph: 6235846065

Original
 Ticket# 647307

Customer Name	MPEnviro MP Environmental	Carrier	MP Environmental	Volume
Ticket Date	09/25/2009	Vehicle#	583	
Payment Type	Credit Account	Container	20	
Manual Ticket#		Driver		
Hauling Ticket#		Check#		
Route		Billing #	0000086	
State Waste Code		Gen EPA ID		
Manifest	187872			
Destination		Grid		
PO				
Profile	101432AZ (Universal Propulsion Co Inc)			
Generator	160-UNIVERSALPROPULSION Universal Propulsion CO			

	Time	Scale	Operator	Inbound	Gross	41480 lb
In	09/25/2009 15:30:59	Inbound	LMGarcia		Tare	26480 lb*
Out	09/25/2009 15:31:23	Inbound	LMGarcia		Net	15000 lb
			* Manual Weight		Tons	7.50

Comments

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Non Reg Soil	100	7.50	Tons				
2 FUEL-Fuel Surcharg	100		%				
3 PGENV-Environmenta	100		%				
4 ADE-ADEQ Fee	100	7.50	Tons				

Bin Gamm

Total Tax
 Total Ticket



PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No.

Ticket No.

GENERATOR

WM-187873

Name

Generating Location

Address

254 N. N. ... Phoenix, AZ 85027

Phone No.

I.D. No.

Material description grid with handwritten entries: UWR, 101432, AZ, etc.

- UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

GREG CARPENTER AUTHORIZED AGENT'S NAME (PRINT)

9/25/09 DATE

Greg Carpenter SIGNATURE

CONTRACTOR

Name

Phone No.

Address

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT)

DATE

SIGNATURE

TRANSPORTER

Name

Phone No.

Address

Driver's Name

Vehicle's No.

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

9-25-09 SHIPMENT DATE

DRIVER'S SIGNATURE

9-25-09 DELIVERY DATE

DRIVER'S SIGNATURE

DISPOSAL FACILITY

- BUTTERFIELD STATION FACILITY • 40404 South 99th Avenue • Mobile, Arizona 85239 • (802) 256-0630
NORTHWEST REGIONAL LANDFILL • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
PAINTED DESERT LANDFILL • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3608
GRAY WOLF LANDFILL • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
LONE CACTUS LANDFILL • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
IRONWOOD LANDFILL • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT)

DATE

SIGNATURE

ORIGINAL - WHITE

DISPOSAL FACILITY - YELLOW

TRANSPORTER - PINK

GENERATOR - GOLDENROD



Northwest Regional Landfill
 19401 Deer Valley Road
 Surprise, AZ, 85387
 Ph: 6235846065

Original
 Ticket# 647233

Customer Name MPEnviro MP Environmental Carrier MP Environmental
 Ticket Date 09/25/2009 Vehicle# 583
 Payment Type Credit Account Container 20
 Manual Ticket# Driver
 Hauling Ticket# Check#
 Route Billing # 0000086
 State Waste Code Gen EPA ID
 Manifest 187873 Grid
 Destination
 PO
 Profile 101432AZ (Universal Propulsion Co Inc)
 Generator 160-UNIVERSAL PROPULSION Universal Propulsion CO

Volume 11

	Time	Scale	Operator	Inbound	Gross	43260 lb
In	09/25/2009 11:51:08	Inbound	LMGarcia		Tare	26480 lb
Out	09/25/2009 12:42:36	Outbound	LMGarcia		Net	16780 lb
					Tons	8.39

Comments:

Product	LD%	Qty	UDM	Rate	Tax	Amount	Origin
1 Non Reg Soil	-Tons	100	8.39	Tons			
2 FUEL-Fuel Surcharg	100		%				
3 P6ENV-Environmenta	100		%				
4 ADE-ADEQ Fee	100	8.39	Tons				

Total Tax
 Total Ticket

Driver's Signature
 403WM



**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

C

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix C
Water Level Data



Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-1	1/6/2004	1557.19	206.64	1350.55
	3/19/2004	1557.22	206.70	1350.57
	4/16/2004	1557.22	206.66	1350.61
	9/7/2004	1557.22	207.79	1349.43
	10/22/2004	1557.22	207.42	1349.80
	11/22/2004	1557.22	207.71	1349.51
	12/7/2004	1557.22	207.80	1349.42
	1/17/2005	1557.22	207.62	1349.60
	2/14/2005	1557.22	207.52	1349.70
	3/15/2005	1557.22	207.36	1349.86
	4/25/2005	1557.22	207.47	1349.75
	5/20/2005	1557.22	207.69	1349.53
	6/27/2005	1557.22	207.82	1349.40
	7/18/2005	1557.22	208.13	1349.09
	8/22/2005	1557.22	208.04	1349.18
	9/22/2005	1557.22	208.03	1349.19
	10/24/2005	1557.22	208.03	1349.19
	12/2/2005	1557.22	207.97	1349.25
	12/22/2005	1557.22	208.15	1349.07
	3/20/2006	1557.22	207.98	1349.24
	5/22/2006	1557.22	208.08	1349.14
	8/28/2006	1557.22	208.04	1349.18
	11/13/2006	1557.22	208.04	1349.18
	2/12/2007	1557.22	208.08	1349.14
	4/9/2007	1557.22	208.03	1349.19
	7/30/2007	1557.22	207.84	1349.38
	10/15/2007	1557.22	208.16	1349.06
	1/14/2008	1557.22	208.37	1348.85
	3/31/2008	1557.22	208.24	1348.98
	4/29/2008	1557.22	208.27	1348.95
	5/27/2008	1557.22	208.37	1348.85
	6/27/2008	1557.22	208.53	1348.69
	7/28/2008	1557.22	208.50	1348.72
8/29/2008	1557.22	208.55	1348.67	
9/20/2008	1557.22	208.44	1348.78	
10/14/2008	1557.22	208.37	1348.85	
11/21/2008	1557.22	208.36	1348.86	
12/15/2008	1557.22	208.44	1348.78	
1/12/2009	1557.22	208.41	1348.81	
2/16/2009	1557.22	208.47	1348.75	
3/17/2009	1557.22	208.42	1348.80	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-1	4/13/2009	1557.22	208.38	1348.84
	5/20/2009	1557.22	208.71	1348.51
	6/15/2009	1557.22	208.58	1348.64
	7/6/2009	1557.22	208.58	1348.64
	8/13/2009	1557.22	208.68	1348.54
	9/28/2009	1560.43	211.92	1348.51
	10/27/2009	1560.43	211.98	1348.45
	11/25/2009	1560.43	212.29	1348.14
	12/18/2009	1560.43	212.35	1348.08
MW-2	1/6/2004	1567.51	216.90	1350.61
	3/19/2004	1567.67	217.40	1350.27
	4/16/2004	1567.67	217.06	1350.61
	9/7/2004	1567.62	218.06	1349.56
	10/22/2004	1567.62	217.62	1350.00
	11/22/2004	1567.62	218.10	1349.52
	12/7/2004	1567.62	218.15	1349.47
	1/17/2005	1567.62	218.02	1349.60
	2/14/2005	1567.62	217.93	1349.69
	3/15/2005	1567.62	217.83	1349.79
	4/25/2005	1567.62	217.88	1349.74
	5/20/2005	1567.62	218.06	1349.56
	6/27/2005	1567.62	218.20	1349.42
	7/18/2005	1567.62	218.53	1349.09
	8/22/2005	1567.62	218.43	1349.19
	9/22/2005	1567.62	218.44	1349.18
	10/24/2005	1567.62	218.44	1349.18
	12/2/2005	1567.62	218.34	1349.28
	12/22/2005	1567.62	218.48	1349.14
	3/20/2006	1567.62	218.33	1349.29
	5/22/2006	1567.62	218.43	1349.19
	8/28/2006	1567.62	218.35	1349.27
	11/13/2006	1567.62	218.38	1349.24
	2/12/2007	1567.62	218.48	1349.14
	4/9/2007	1567.62	218.41	1349.21
	7/30/2007	1567.62	218.19	1349.43
	10/15/2007	1567.62	218.45	1349.17
	1/14/2008	1567.62	218.70	1348.92
	3/31/2008	1567.62	218.55	1349.07
	4/29/2008	1567.62	218.54	1349.08
5/27/2008	1567.62	218.69	1348.93	
6/27/2008	1567.62	218.89	1348.73	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-2	7/28/2008	1567.62	218.81	1348.81
	8/29/2008	1567.62	218.83	1348.79
	9/20/2008	1567.62	218.75	1348.87
	10/14/2008	1567.62	218.69	1348.93
	11/21/2008	1567.62	218.69	1348.93
	12/15/2008	1567.62	218.77	1348.85
	1/12/2009	1567.62	218.81	1348.81
	2/16/2009	1567.62	218.85	1348.77
	3/17/2009	1567.62	218.48	1349.14
	4/13/2009	1567.62	218.73	1348.89
	5/20/2009	1567.62	219.05	1348.57
	6/15/2009	1567.62	218.95	1348.67
	7/6/2009	1567.62	218.95	1348.67
	8/13/2009	1567.62	219.03	1348.59
	9/28/2009	1571.22	222.74	1348.48
	10/27/2009	1571.22	222.71	1348.51
	11/25/2009	1571.22	223.06	1348.16
	12/18/2009	1571.22	223.08	1348.14
MW-3	9/7/2004	1583.59	229.10	1354.50
	10/22/2004	1583.59	227.92	1355.67
	11/22/2004	1583.59	228.91	1354.68
	12/7/2004	1583.59	229.03	1354.56
	1/17/2005	1583.59	229.35	1354.24
	2/14/2005	1583.59	229.73	1353.86
	3/15/2005	1583.59	229.86	1353.73
	4/25/2005	1583.59	229.94	1353.65
	5/20/2005	1583.59	230.21	1353.38
	6/27/2005	1583.59	230.30	1353.29
	7/18/2005	1583.59	230.61	1352.98
	8/22/2005	1583.59	230.63	1352.96
	9/22/2005	1583.59	231.67	1351.92
	10/24/2005	1583.59	230.94	1352.65
	11/30/2005	1583.59	231.12	1352.47
	12/22/2005	1583.59	231.15	1352.44
	3/21/2006	1583.59	231.59	1352.00
	5/22/2006	1583.59	231.91	1351.68
	8/28/2006	1583.59	232.24	1351.35
	11/13/2006	1583.59	232.82	1350.77
2/12/2007	1583.59	232.76	1350.83	
4/9/2007	1583.59	233.11	1350.48	
7/30/2007	1583.59	233.52	1350.07	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-3	10/15/2007	1583.59	234.45	1349.14
	1/14/2008	1583.59	234.93	1348.66
	3/31/2008	1583.59	235.42	1348.17
	4/29/2008	1583.59	235.21	1348.38
	5/27/2008	1583.59	235.48	1348.11
	6/27/2008	1583.59	235.66	1347.93
	7/28/2008	1583.59	235.79	1347.80
	8/29/2008	1583.59	236.07	1347.52
	9/20/2008	1583.59	236.10	1347.49
	10/14/2008	1583.59	236.30	1347.29
	11/21/2008	1583.59	236.45	1347.14
	12/15/2008	1583.59	236.59	1347.00
	1/12/2009	1583.59	236.60	1346.99
	2/16/2009	1583.59	236.86	1346.73
	3/17/2009	1583.59	237.00	1346.59
	4/13/2009	1583.59	237.07	1346.52
	5/20/2009	1583.59	237.24	1346.35
	6/15/2009	1583.59	237.31	1346.28
	7/6/2009	1583.59	237.35	1346.24
	8/12/2009	1583.59	237.47	1346.12
9/28/2009	1583.59	237.81	1345.78	
10/27/2009	1583.59	237.82	1345.77	
11/25/2009	1583.59	238.13	1345.46	
12/18/2009	1583.59	238.13	1345.46	
MW-4	9/7/2004	1620.34	269.13	1351.21
	10/22/2004	1620.34	268.92	1351.42
	11/22/2004	1620.34	269.58	1350.76
	12/7/2004	1620.34	269.83	1350.51
	1/17/2005	1620.34	269.84	1350.50
	2/14/2005	1620.34	270.04	1350.30
	3/15/2005	1620.34	270.15	1350.19
	4/25/2005	1620.34	270.12	1350.22
	5/20/2005	1620.34	270.22	1350.12
	6/27/2005	1620.34	270.26	1350.08
	7/18/2005	1620.34	270.56	1349.78
	8/22/2005	1620.34	270.40	1349.94
	9/22/2005	1620.34	270.44	1349.90
	10/24/2005	1620.34	270.78	1349.56
	11/30/2005	1620.34	270.82	1349.52
	12/22/2005	1620.34	270.80	1349.54
3/20/2006	1620.34	271.28	1349.06	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-4	5/22/2006	1620.34	271.43	1348.91
	8/28/2006	1620.34	271.82	1348.52
	11/13/2006	1620.34	271.33	1349.01
	2/12/2007	1620.34	271.51	1348.83
	4/9/2007	1620.34	271.66	1348.68
	7/30/2007	1620.34	272.63	1347.71
	10/15/2007	1620.34	273.35	1346.99
	1/14/2008	1620.34	273.81	1346.53
	3/31/2008	1620.34	274.00	1346.34
	4/29/2008	1620.34	273.76	1346.58
	5/27/2008	1620.34	274.05	1346.29
	6/27/2008	1620.34	274.18	1346.16
	7/28/2008	1620.34	274.22	1346.12
	8/29/2008	1620.34	274.40	1345.94
	9/20/2008	1620.34	274.48	1345.86
	10/14/2008	1620.34	274.68	1345.66
	11/21/2008	1620.34	274.70	1345.64
	12/15/2008	1620.34	274.90	1345.44
	1/12/2009	1620.34	274.93	1345.41
	2/16/2009	1620.34	274.78	1345.56
	3/17/2009	1620.34	275.07	1345.27
	4/13/2009	1620.34	275.04	1345.30
	5/20/2009	1620.34	275.19	1345.15
	6/15/2009	1620.34	275.23	1345.11
7/6/2009	1620.34	275.26	1345.08	
8/12/2009	1620.34	275.39	1344.95	
9/28/2009	1620.34	275.50	1344.84	
10/27/2009	1620.34	275.50	1344.84	
11/25/2009	1620.34	275.86	1344.48	
12/18/2009	1620.34	275.82	1344.52	
MW-5	9/7/2004	1590.45	240.17	1350.28
	10/22/2004	1590.45	239.67	1350.78
	11/22/2004	1590.45	240.40	1350.05
	12/7/2004	1590.45	240.49	1349.96
	1/17/2005	1590.45	240.47	1349.98
	2/14/2005	1590.45	240.44	1350.01

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-5	3/15/2005	1590.45	240.36	1350.09
	4/25/2005	1590.45	240.38	1350.07
	5/20/2005	1590.45	240.48	1349.97
	6/27/2005	1590.45	240.58	1349.87
	7/18/2005	1590.45	240.90	1349.55
	8/22/2005	1590.45	240.81	1349.64
	9/22/2005	1590.45	240.81	1349.64
	10/24/2005	1590.45	240.85	1349.60
	11/30/2005	1590.45	240.81	1349.64
	12/22/2005	1590.45	240.90	1349.55
	3/20/2006	1590.45	240.92	1349.53
	5/22/2006	1590.45	241.07	1349.38
	8/28/2006	1590.45	240.97	1349.48
	11/13/2006	1590.45	241.04	1349.41
	2/12/2007	1590.45	241.09	1349.36
	4/9/2007	1590.45	241.10	1349.35
	7/30/2007	1590.45	240.81	1349.64
	10/15/2007	1590.45	241.12	1349.33
	1/14/2008	1590.45	241.28	1349.17
	3/31/2008	1590.45	241.31	1349.14
	4/29/2008	1590.45	241.28	1349.17
	5/27/2008	1590.45	241.33	1349.12
	6/27/2008	1590.45	241.48	1348.97
	7/28/2008	1590.45	241.44	1349.01
	8/29/2008	1590.45	241.45	1349.00
	9/20/2008	1590.45	241.48	1348.97
	10/14/2008	1590.45	241.43	1349.02
	11/21/2008	1590.45	241.45	1349.00
	12/15/2008	1590.45	241.43	1349.02
	1/12/2009	1590.45	241.42	1349.03
	2/16/2009	1590.45	241.45	1349.00
	3/17/2009	1590.45	241.43	1349.02
	4/13/2009	1590.45	241.43	1349.02
	5/20/2009	1590.45	241.53	1348.92
	6/15/2009	1590.45	241.57	1348.88
	7/6/2009	1590.45	241.54	1348.91
8/12/2009	1590.45	241.58	1348.87	
9/28/2009	1594.08	245.32	1348.76	
10/27/2009	1594.08	245.38	1348.70	
11/25/2009	1594.08	245.54	1348.54	
12/18/2009	1594.08	245.59	1348.49	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-6	9/7/2004	1548.22	162.22	1386.00
	10/22/2004	1548.22	161.27	1386.95
	11/22/2004	1548.22	161.77	1386.45
	12/7/2004	1548.22	161.99	1386.23
	1/17/2005	1548.22	162.32	1385.90
	2/14/2005	1548.22	162.50	1385.72
	3/15/2005	1548.22	160.38	1387.84
	4/25/2005	1548.22	149.74	1398.48
	5/20/2005	1548.22	148.31	1399.91
	6/27/2005	1548.22	148.82	1399.40
	7/18/2005	1548.22	149.61	1398.61
	8/22/2005	1548.22	150.88	1397.34
	9/22/2005	1548.22	151.89	1396.33
	10/24/2005	1548.22	153.11	1395.11
	11/30/2005	1548.22	154.16	1394.06
	12/22/2005	1548.22	154.68	1393.54
	3/20/2006	1548.22	156.61	1391.61
	5/22/2006	1548.22	157.80	1390.42
	8/28/2006	1548.22	159.64	1388.58
	11/13/2006	1548.22	161.11	1387.11
	2/12/2007	1548.22	161.95	1386.27
	4/9/2007	1548.22	161.63	1386.59
	7/30/2007	1548.22	162.92	1385.30
	10/15/2007	1548.22	163.95	1384.27
	1/14/2008	1548.22	164.94	1383.28
	3/31/2008	1548.22	165.42	1382.80
	4/29/2008	1548.22	164.28	1383.94
	5/27/2008	1548.22	163.05	1385.17
	6/27/2008	1548.22	162.08	1386.14
	7/28/2008	1548.22	161.50	1386.72
	8/29/2008	1548.22	161.30	1386.92
	9/20/2008	1548.22	161.33	1386.89
	10/14/2008	1548.22	161.48	1386.74
	11/21/2008	1548.22	161.71	1386.51
12/15/2008	1548.22	161.89	1386.33	
1/12/2009	1548.22	162.28	1385.94	
2/16/2009	1548.22	162.43	1385.79	
3/17/2009	1548.22	162.81	1385.41	
4/13/2009	1548.22	162.83	1385.39	
5/20/2009	1548.22	162.78	1385.44	
6/15/2009	1548.22	162.57	1385.65	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-6	7/6/2009	1548.22	162.50	1385.72
	8/12/2009	1548.22	162.64	1385.58
	9/28/2009	1551.65	166.25	1385.40
	10/27/2009	1551.65	166.33	1385.32
	11/25/2009	1551.65	167.02	1384.63
	12/18/2009	1551.65	167.10	1384.55
MW-7	10/22/2004	1541.35	157.21	1384.14
	11/22/2004	1541.35	154.14	1387.21
	12/7/2004	1541.35	154.55	1386.80
	1/17/2005	1541.35	155.02	1386.33
	2/14/2005	1541.35	155.20	1386.15
	3/15/2005	1541.35	155.48	1385.87
	4/25/2005	1541.35	155.56	1385.79
	5/20/2005	1541.35	155.56	1385.79
	6/27/2005	1541.35	155.60	1385.75
	7/18/2005	1541.35	155.94	1385.41
	8/22/2005	1541.35	156.09	1385.26
	9/22/2005	1541.35	156.37	1384.98
	10/24/2005	1541.35	157.01	1384.34
	11/30/2005	1541.35	157.41	1383.94
	12/22/2005	1541.35	157.73	1383.62
	3/20/2006	1541.35	158.83	1382.52
	5/22/2006	1541.35	159.39	1381.96
	8/28/2006	1541.35	159.54	1381.81
	11/13/2006	1541.35	159.48	1381.87
	2/12/2007	1541.35	159.37	1381.98
	4/9/2007	1541.35	159.30	1382.05
	7/30/2007	1541.35	159.48	1381.87
	10/15/2007	1541.35	160.12	1381.23
	1/14/2008	1541.35	160.61	1380.74
	3/31/2008	1541.35	160.53	1380.82
	4/29/2008	1541.35	160.46	1380.89
	5/27/2008	1541.35	160.63	1380.72
	6/27/2008	1541.35	160.83	1380.52
	7/28/2008	1541.35	160.92	1380.43
	8/29/2008	1541.35	160.85	1380.50
9/20/2008	1541.35	160.98	1380.37	
10/14/2008	1541.35	161.21	1380.14	
11/21/2008	1541.35	161.22	1380.13	
12/15/2008	1541.35	161.19	1380.16	
1/12/2009	1541.35	161.39	1379.96	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-7	2/16/2009	1541.35	161.17	1380.18
	3/17/2009	1541.35	161.42	1379.93
	4/13/2009	1541.35	161.39	1379.96
	5/20/2009	1541.35	161.49	1379.86
	6/15/2009	1541.35	161.57	1379.78
	7/6/2009	1541.35	161.58	1379.77
	8/12/2009	1541.35	161.71	1379.64
	9/28/2009	1541.35	161.71	1379.64
	10/27/2009	1541.35	161.70	1379.65
	11/25/2009	1541.35	162.06	1379.29
	12/18/2009	1541.35	162.07	1379.28
MW-8	10/22/2004	1542.18	193.21	1348.97
	11/22/2004	1542.18	192.27	1349.91
	12/7/2004	1542.18	192.29	1349.89
	1/17/2005	1542.18	192.27	1349.91
	2/14/2005	1542.18	192.29	1349.89
	3/15/2005	1542.18	192.27	1349.91
	4/25/2005	1542.18	192.29	1349.89
	5/20/2005	1542.18	192.50	1349.68
	6/27/2005	1542.18	192.57	1349.61
	7/18/2005	1542.18	192.88	1349.30
	8/22/2005	1542.18	192.90	1349.28
	9/22/2005	1542.18	192.84	1349.34
	10/24/2005	1542.18	192.89	1349.29
	11/30/2005	1542.18	192.84	1349.34
	12/22/2005	1542.18	192.91	1349.27
	3/20/2006	1542.18	192.83	1349.35
	5/22/2006	1542.18	192.97	1349.21
	8/28/2006	1542.18	192.95	1349.23
	11/13/2006	1542.18	192.98	1349.20
	2/12/2007	1542.18	193.01	1349.17
	4/9/2007	1542.18	192.79	1349.39
	7/30/2007	1542.18	192.71	1349.47
	10/15/2007	1542.18	193.18	1349.00
	1/14/2008	1542.18	193.32	1348.86
	3/31/2008	1542.18	193.17	1349.01
	4/29/2008	1542.18	193.08	1349.10
5/27/2008	1542.18	193.25	1348.93	
6/27/2008	1542.18	193.39	1348.79	
7/28/2008	1542.18	193.36	1348.82	
8/29/2008	1542.18	193.37	1348.81	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-8	9/20/2008	1542.18	193.35	1348.83
	10/14/2008	1542.18	193.37	1348.81
	11/21/2008	1542.18	193.38	1348.80
	12/15/2008	1542.18	193.35	1348.83
	1/12/2009	1542.18	193.34	1348.84
	2/16/2009	1542.18	193.37	1348.81
	3/17/2009	1542.18	193.38	1348.80
	4/13/2009	1542.18	193.33	1348.85
	5/20/2009	1542.18	193.55	1348.63
	6/15/2009	1542.18	193.51	1348.67
	7/6/2009	1542.18	193.49	1348.69
	8/12/2009	1542.18	193.52	1348.66
	9/28/2009	1542.18	193.70	1348.48
	10/27/2009	1542.18	193.80	1348.38
	11/25/2009	1542.18	193.99	1348.19
12/18/2009	1542.18	194.08	1348.10	
MW-9	2/14/2005	1565.60	215.29	1350.31
	3/15/2005	1565.60	215.36	1350.24
	4/25/2005	1565.60	215.34	1350.26
	5/20/2005	1565.60	215.36	1350.24
	6/27/2005	1565.60	215.41	1350.19
	7/18/2005	1565.60	215.68	1349.92
	8/22/2005	1565.60	215.57	1350.03
	9/22/2005	1565.60	215.59	1350.01
	10/24/2005	1565.60	215.72	1349.88
	11/30/2005	1565.60	215.70	1349.90
	12/22/2005	1565.60	215.64	1349.96
	3/20/2006	1565.60	215.82	1349.78
	5/22/2006	1565.60	216.03	1349.57
	8/28/2006	1565.60	215.95	1349.65
	11/13/2006	1565.60	216.07	1349.53
	2/12/2007	1565.60	216.12	1349.48
	4/9/2007	1565.60	216.19	1349.41
	7/30/2007	1565.60	215.83	1349.77
	10/15/2007	1565.60	216.16	1349.44
	1/14/2008	1565.60	216.30	1349.30
	3/31/2008	1565.60	216.26	1349.34
	4/29/2008	1565.60	216.15	1349.45
5/27/2008	1565.60	216.24	1349.36	
6/27/2008	1565.60	216.37	1349.23	
7/28/2008	1565.60	216.34	1349.26	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-9	8/29/2008	1565.60	216.38	1349.22
	9/20/2008	1565.60	216.42	1349.18
	10/14/2008	1565.60	216.46	1349.14
	11/21/2008	1565.60	216.51	1349.09
	12/15/2008	1565.60	216.52	1349.08
	1/12/2009	1565.60	216.53	1349.07
	2/16/2009	1565.60	216.52	1349.08
	3/17/2009	1565.60	216.56	1349.04
	4/13/2009	1565.60	216.54	1349.06
	5/20/2009	1565.60	216.58	1349.02
	6/15/2009	1565.60	216.60	1349.00
	7/6/2009	1565.60	216.61	1348.99
	8/12/2009	1565.60	216.62	1348.98
	9/28/2009	1565.60	216.68	1348.92
	10/27/2009	1565.60	216.62	1348.98
	11/25/2009	1565.60	216.80	1348.80
12/18/2009	1565.60	216.85	1348.75	
MW-10	2/14/2005	1536.11	149.92	1386.19
	3/15/2005	1536.11	149.71	1386.40
	4/25/2005	1536.11	149.56	1386.55
	5/20/2005	1536.11	149.33	1386.78
	6/27/2005	1536.11	149.04	1387.07
	7/18/2005	1536.11	149.08	1387.03
	8/22/2005	1536.11	149.02	1387.09
	9/22/2005	1536.11	148.88	1387.23
	10/24/2005	1536.11	149.20	1386.91
	11/30/2005	1536.11	149.27	1386.84
	12/22/2005	1536.11	149.33	1386.78
	3/20/2006	1536.11	149.54	1386.57
	5/22/2006	1536.11	149.66	1386.45
	8/28/2006	1536.11	150.05	1386.06
	11/13/2006	1536.11	150.45	1385.66
	2/12/2007	1536.11	150.63	1385.48
	4/9/2007	1536.11	150.75	1385.36
	7/30/2007	1536.11	150.88	1385.23
	10/15/2007	1536.11	151.45	1384.66
	1/14/2008	1536.11	151.93	1384.18
3/31/2008	1536.11	152.04	1384.07	
4/29/2008	1536.11	151.98	1384.13	
5/27/2008	1536.11	152.20	1383.91	
6/27/2008	1536.11	152.37	1383.74	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-10	7/28/2008	1536.11	152.48	1383.63
	8/29/2008	1536.11	152.41	1383.70
	9/20/2008	1536.11	152.58	1383.53
	10/14/2008	1536.11	152.83	1383.28
	11/21/2008	1536.11	152.88	1383.23
	12/15/2008	1536.11	152.87	1383.24
	1/12/2009	1536.11	153.14	1382.97
	2/16/2009	1536.11	152.95	1383.16
	3/17/2009	1536.11	153.23	1382.88
	4/13/2009	1536.11	153.24	1382.87
	5/20/2009	1536.11	153.28	1382.83
	6/15/2009	1536.11	153.35	1382.76
	7/6/2009	1536.11	153.42	1382.69
	8/12/2009	1536.11	153.61	1382.50
	9/28/2009	1536.11	153.62	1382.49
	10/27/2009	1536.11	153.64	1382.47
	11/25/2009	1536.11	153.98	1382.13
	12/18/2009	1536.11	154.00	1382.11
MW-11	12/22/2005	1603.35	253.68	1349.67
	3/20/2006	1603.35	253.71	1349.64
	5/22/2006	1603.35	253.83	1349.52
	8/28/2006	1603.35	253.78	1349.57
	11/13/2006	1603.35	253.80	1349.55
	2/12/2007	1603.35	253.86	1349.49
	4/9/2007	1603.35	253.87	1349.48
	7/30/2007	1603.35	253.51	1349.84
	10/15/2007	1603.35	253.90	1349.45
	1/14/2008	1603.35	254.07	1349.28
	4/29/2008	1603.35	254.13	1349.22
	5/27/2008	1603.35	254.12	1349.23
	6/27/2008	1603.35	254.20	1349.15
	7/28/2008	1603.35	254.26	1349.09
	8/29/2008	1603.35	254.28	1349.07
	9/20/2008	1603.35	254.25	1349.10
	10/14/2008	1603.35	254.23	1349.12
	11/21/2008	1603.35	254.23	1349.12
	12/15/2008	1603.35	254.20	1349.15
	1/12/2009	1603.35	254.22	1349.13
2/16/2009	1603.35	254.20	1349.15	
3/17/2009	1603.35	254.25	1349.10	
4/13/2009	1603.35	254.24	1349.11	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-11	5/20/2009	1603.35	254.32	1349.03
	6/15/2009	1603.35	254.35	1349.00
	7/6/2009	1603.35	254.35	1349.00
	8/12/2009	1603.35	254.38	1348.97
	9/28/2009	1603.35	254.52	1348.83
	10/27/2009	1603.35	254.61	1348.74
	11/25/2009	1603.35	254.73	1348.62
	12/18/2009	1603.35	254.80	1348.55
MW-12	12/22/2005	1557.46	209.16	1348.30
	3/20/2006	1557.46	209.09	1348.37
	5/22/2006	1557.46	209.17	1348.29
	8/28/2006	1557.46	209.12	1348.34
	11/13/2006	1557.46	209.14	1348.32
	2/12/2007	1557.46	209.23	1348.23
	4/9/2007	1557.46	209.16	1348.30
	7/30/2007	1557.46	208.85	1348.61
	10/15/2007	1557.46	209.23	1348.23
	1/14/2008	1557.46	209.46	1348.00
	3/31/2008	1557.46	209.31	1348.15
	4/29/2008	1557.46	209.31	1348.15
	5/27/2008	1557.46	209.42	1348.04
	6/27/2008	1557.46	209.63	1347.83
	7/28/2008	1557.46	209.58	1347.88
	8/29/2008	1557.46	209.58	1347.88
	9/20/2008	1557.46	209.50	1347.96
	10/14/2008	1557.46	209.40	1348.06
	11/21/2008	1557.46	209.41	1348.05
	12/15/2008	1557.46	209.50	1347.96
	1/12/2009	1557.46	209.46	1348.00
	2/16/2009	1557.46	209.52	1347.94
	3/17/2009	1557.46	209.48	1347.98
	4/13/2009	1557.46	209.45	1348.01
	5/20/2009	1557.46	209.79	1347.67
	6/15/2009	1557.46	209.64	1347.82
	7/6/2009	1557.46	209.66	1347.80
	8/13/2009	1557.46	209.75	1347.71
9/28/2009	1560.91	213.59	1347.32	
10/27/2009	1560.91	213.61	1347.30	
11/25/2009	1560.91	213.94	1346.97	
12/18/2009	1560.91	213.99	1346.92	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-13	8/29/2008	1595.77	246.82	1348.95
	9/20/2008	1595.77	246.75	1349.02
	10/14/2008	1595.77	246.75	1349.02
	11/21/2008	1595.77	246.78	1348.99
	12/15/2008	1595.77	246.83	1348.94
	1/12/2009	1595.77	246.79	1348.98
	2/16/2009	1595.77	246.81	1348.96
	3/17/2009	1595.77	246.80	1348.97
	4/13/2009	1595.77	246.80	1348.97
	5/20/2009	1595.77	246.90	1348.87
	6/15/2009	1595.77	246.95	1348.82
	7/6/2009	1595.77	246.89	1348.88
	8/12/2009	1595.77	246.98	1348.79
	9/28/2009	1599.52	250.74	1348.78
	10/27/2009	1599.52	250.71	1348.81
	11/25/2009	1599.52	250.98	1348.54
12/18/2009	1599.52	251.00	1348.52	
MW-14	8/29/2008	1602.48	263.25	1339.23
	9/20/2008	1602.48	263.38	1339.10
	10/14/2008	1602.48	263.69	1338.79
	11/21/2008	1602.48	264.15	1338.33
	12/15/2008	1602.48	264.02	1338.46
	1/12/2009	1602.48	263.57	1338.91
	2/16/2009	1602.48	263.66	1338.82
	3/17/2009	1602.48	264.03	1338.45
	4/13/2009	1602.48	264.08	1338.40
	5/20/2009	1602.48	264.55	1337.93
	6/15/2009	1602.48	264.65	1337.83
	7/6/2009	1602.48	264.89	1337.59
	8/12/2009	1602.48	265.10	1337.38
	9/28/2009	1602.48	265.59	1336.89
	10/27/2009	1602.48	265.78	1336.70
	11/25/2009	1602.48	266.72	1335.76
12/18/2009	1602.48	265.98	1336.50	
MW-15	8/29/2008	1600.48	261.95	1338.53
	9/20/2008	1600.48	262.09	1338.39
	10/14/2008	1600.48	262.18	1338.30
	11/21/2008	1600.48	262.45	1338.03
	12/15/2008	1600.48	262.58	1337.90
	1/12/2009	1600.48	262.51	1337.97
	2/16/2009	1600.48	262.53	1337.95

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-15	3/17/2009	1600.48	262.60	1337.88
	4/13/2009	1600.48	262.72	1337.76
	5/20/2009	1600.48	262.96	1337.52
	6/15/2009	1600.48	263.03	1337.45
	7/6/2009	1600.48	263.19	1337.29
	8/12/2009	1600.48	263.36	1337.12
	9/28/2009	1600.48	263.69	1336.79
	10/27/2009	1600.48	263.80	1336.68
	11/25/2009	1600.48	264.20	1336.28
	12/18/2009	1600.48	264.28	1336.20
MW-18	9/28/2009	1533.53	181.20	1352.33
	10/7/2009	1533.53	137.39	1396.14
	10/27/2009	1533.53	132.18	1401.35
	11/25/2009	1533.53	131.17	1402.36
	12/18/2009	1533.53	130.11	1403.42

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
18 East Yearling	3/30/07	1596.79	NA	NA
	5/25/07	1596.79	NA	NA
	6/4/07	1596.79	NA	NA
	6/20/2007	1596.79	NA	NA
	7/30/2007	1596.79	NA	NA
	8/2/2007	1596.79	351.13	1245.66
	8/30/2007	1596.79	346.66	1250.13
	9/12/2007	1596.79	365.49	1231.30
	9/24/2007	1596.79	358.82	1237.97
	9/27/2007	1596.79	365.22	1231.57
	10/15/2007	1596.79	362.45	1234.34
	11/19/2007	1596.79	363.82	1232.97
	12/11/2007	1596.79	360.47	1236.32
	1/14/2008	1596.79	354.74	1242.05
	3/13/2008	1596.79	358.96	1237.83
	5/16/2008	1596.79	350.67	1246.12
	7/28/2008	1596.79	below transducer	NM
	8/29/2008	1596.79	258.19	1338.60
	10/14/2008	1596.79	362.65	1234.14
	12/3/2008	1596.79	358.64	1238.15
	12/15/2008	1596.79	358.88	1237.91
	1/12/2009	1596.79	357.04	1239.75
	2/16/2009	1596.79	355.66	1241.13
	3/17/2009	1596.79	358.48	1238.31
	4/13/2009	1596.79	369.10	1227.69
	5/20/2009	1596.79	399.30	1197.49
	6/15/2009	1596.79	372.35	1224.44
	7/6/2009	1596.79	377.89	1218.90
8/12/2009	1596.79	399.60	1197.19	
9/28/2009	1596.79	dry	dry	
10/27/2009	1596.79	dry	dry	
11/25/2009	1596.79	dry	dry	
12/18/2009	1596.79	392.78	1204.01	
218 East Yearling	3/30/2007	1617.01	325.20	1291.81
	5/25/07	1617.01	313.19	1303.82
	6/4/07	1617.01	325.92	1291.09
	6/20/2007	1617.01	317.50	1299.51
	7/30/2007	1617.01	NA	NA
	8/2/2007	1617.01	NA	NA
	8/30/2007	1617.01	313.80	1303.21
	9/12/2007	1617.01	334.26	1282.75

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
218 East Yearling	9/24/2007	1617.01	NA	NA
	9/27/2007	1617.01	317.38	1299.63
	10/15/2007	1617.01	323.81	1293.20
	11/19/2007	1617.01	322.32	1294.69
	12/11/2007	1617.01	315.75	1301.26
	1/14/2008	1617.01	313.32	1303.69
	3/13/2008	1617.01	obstruction	NM
	5/16/2008	1617.01	344.85	1272.16
	7/28/2008	1617.01	316.35	1300.66
	8/29/2008	1617.01	329.46	1287.55
	10/14/2008	1617.01	340.00	1277.01
	12/3/2008	1617.01	317.34	1299.67
	12/15/2008	1617.01	313.89	1303.12
	1/12/2009	1617.01	310.40	1306.61
	2/16/2009	1617.01	314.42	1302.59
	3/17/2009	1617.01	311.95	1305.06
	4/13/2009	1617.01	311.63	1305.38
	5/20/2009	1617.01	332.30	1284.71
	6/15/2009	1617.01	321.86	1295.15
	7/6/2009	1617.01	325.00	1292.01
	8/12/2009	1617.01	325.93	1291.08
	9/28/2009	1617.01	323.18	1293.83
	10/27/2009	1617.01	324.80	1292.21
11/25/2009	1617.01	322.86	1294.15	
12/18/2009	1617.01	320.08	1296.93	
520 East Yearling	3/30/07	1635.71	293.60	1342.11
	5/25/07	1635.71	293.68	1342.03
	6/4/07	1635.71	292.33	1343.38
	6/20/2007	1635.71	292.54	1343.17
	7/30/2007	1635.71	293.69	1342.02
	8/2/2007	1635.71	NA	NA
	8/30/2007	1635.71	292.04	1343.67
	9/12/2007	1635.71	294.56	1341.15
	9/24/2007	1635.71	294.59	1341.12
	9/27/2007	1635.71	295.18	1340.53
	10/15/2007	1635.71	294.94	1340.77
	11/19/2007	1635.71	295.66	1340.05
	12/11/2007	1635.71	295.41	1340.30
	1/14/2008	1635.71	295.30	1340.41
	3/13/2008	1635.71	294.71	1341.00
5/16/2008	1635.71	295.80	1339.91	

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
520 East Yearling	7/28/2008	1635.71	296.54	1339.17
	8/29/2008	1635.71	305.50	1330.21
	10/14/2008	1635.71	297.20	1338.51
	12/3/2008	1635.71	297.37	1338.34
	12/15/2008	1635.71	297.42	1338.29
	1/12/2009	1635.71	296.90	1338.81
	2/16/2009	1635.71	296.90	1338.81
	3/17/2009	1635.71	297.42	1338.29
	4/13/2009	1635.71	299.90	1335.81
	5/20/2009	1635.71	298.10	1337.61
	6/15/2009	1635.71	298.18	1337.53
	7/6/2009	1635.71	311.26	1324.45
	8/12/2009	1635.71	311.69	1324.02
	9/28/2009	1635.71	312.45	1323.26
	10/27/2009	1635.71	290.65	1345.06
	11/25/2009	1635.71	299.85	1335.86
12/18/2009	1635.71	299.38	1336.33	

Note:

Measured depth to water and calculated groundwater elevations at private wells may not represent actual static water levels because these are active pumping wells, subject to frequent water level fluctuations.

NM = Not measured

NA = No access

dry = Sounder did not detect water

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

D

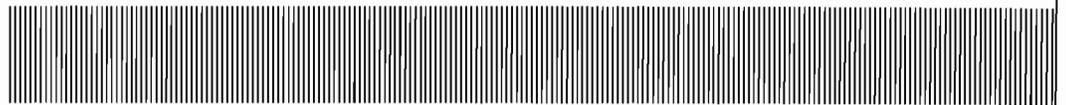
APPENDIX



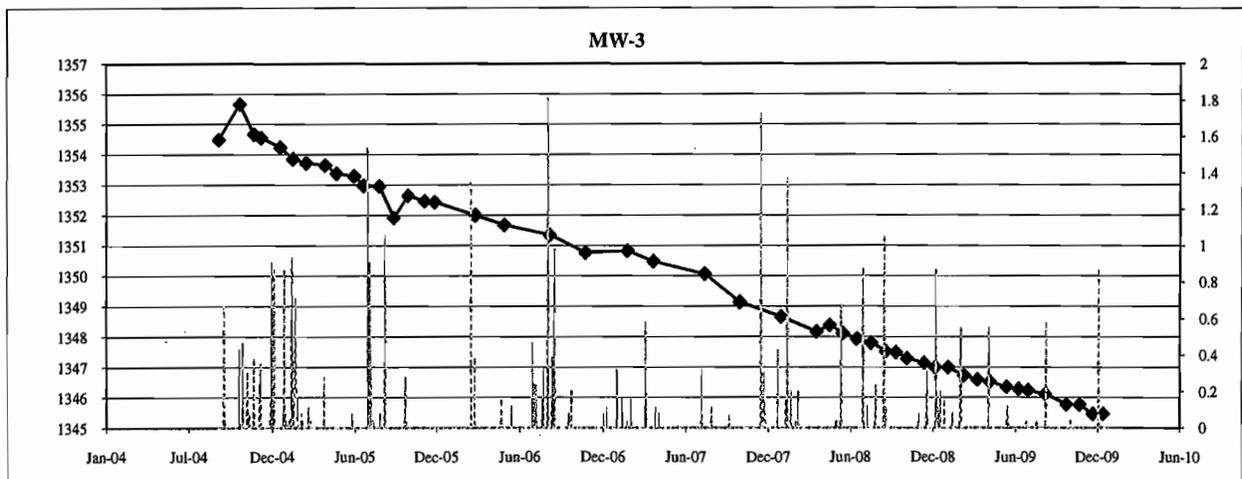
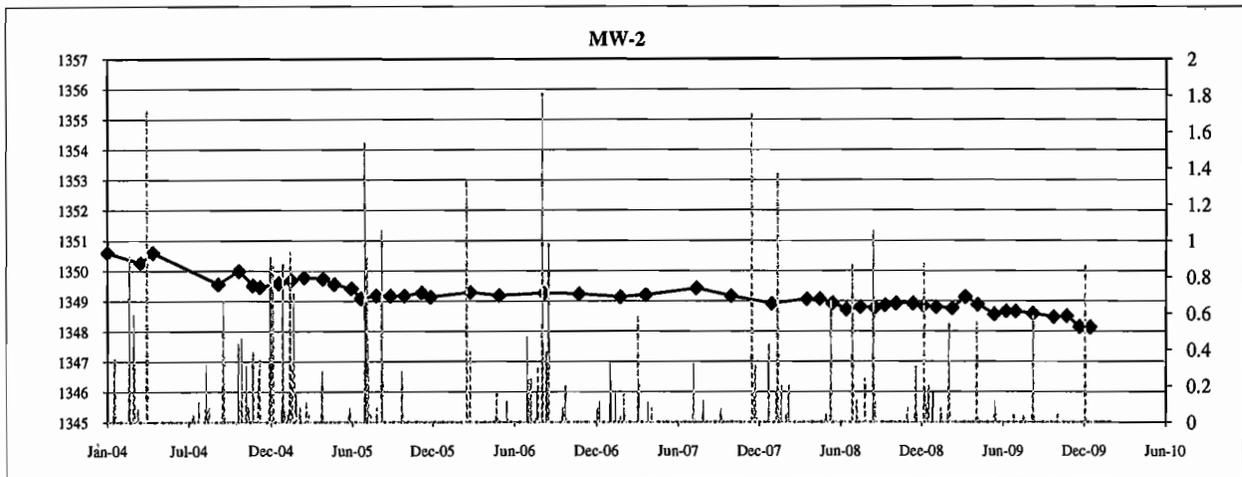
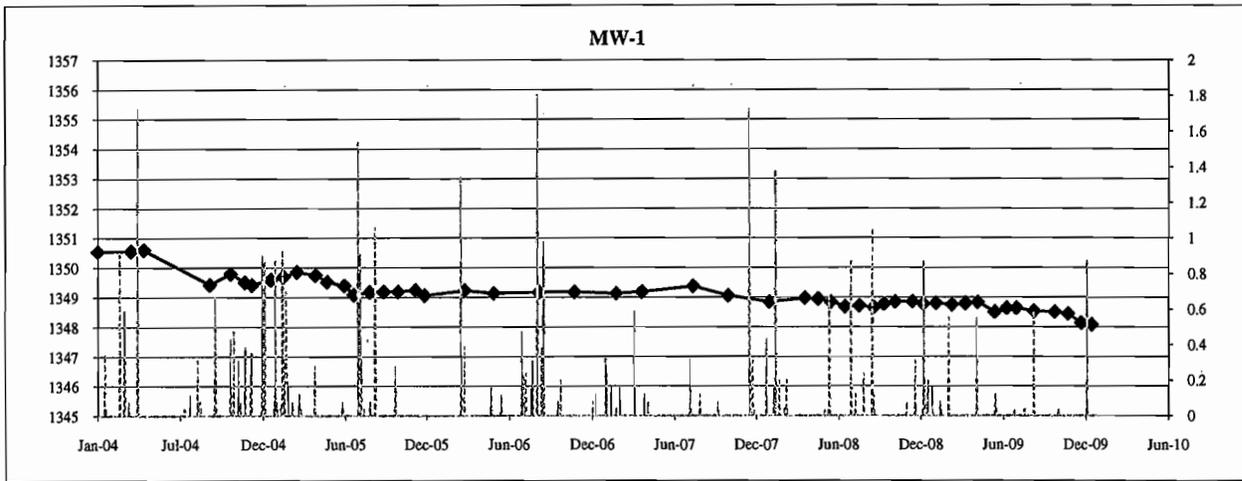
Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix D

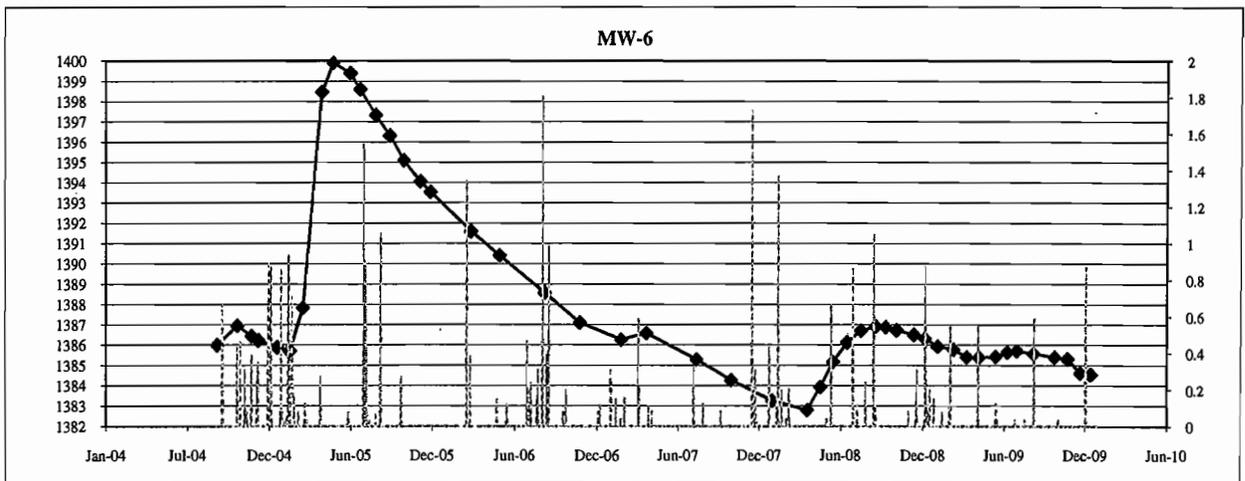
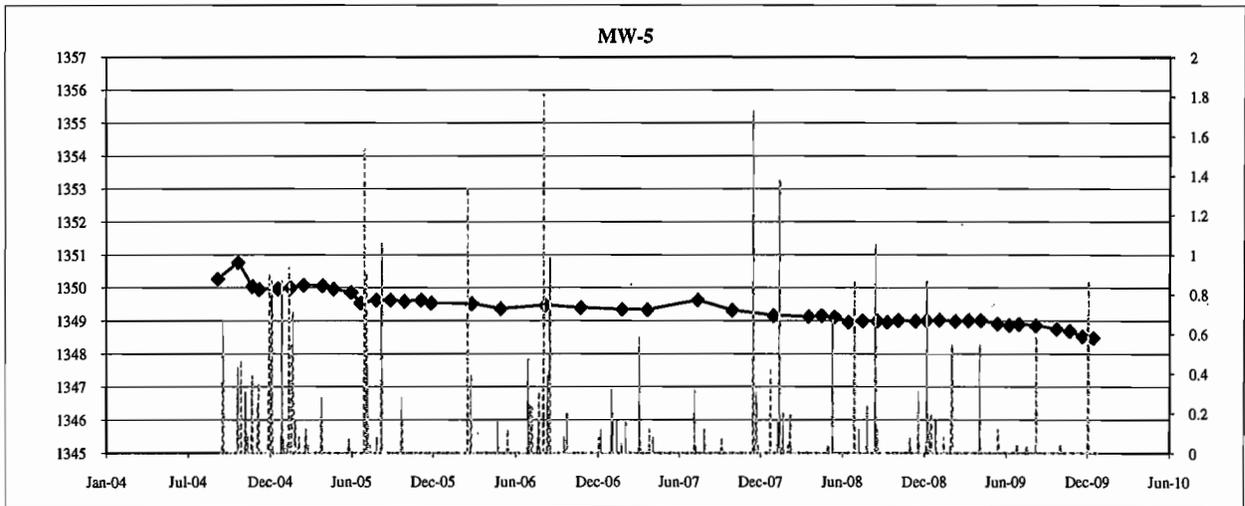
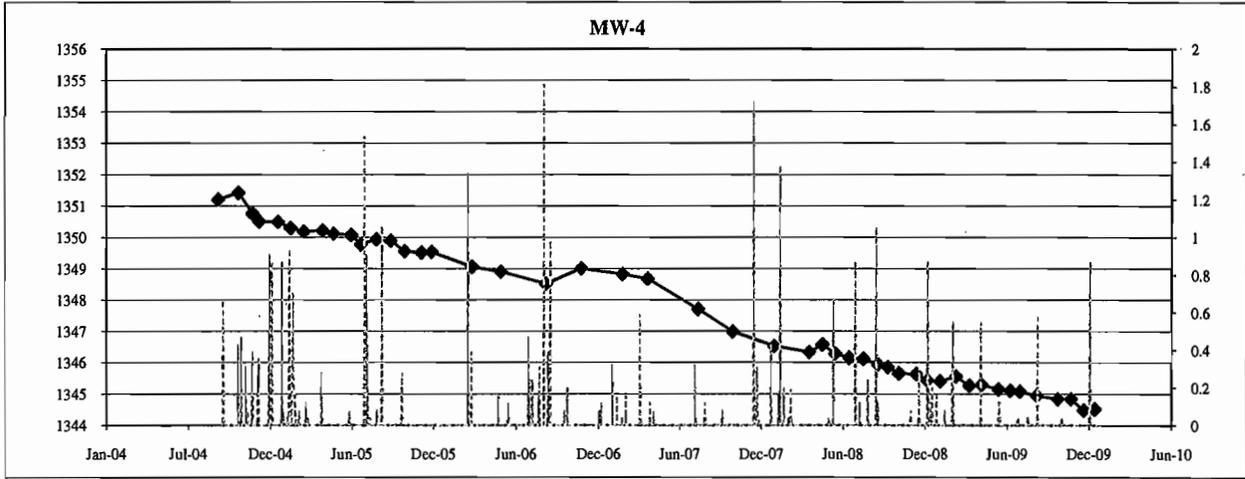
Monitor Well Hydrographs



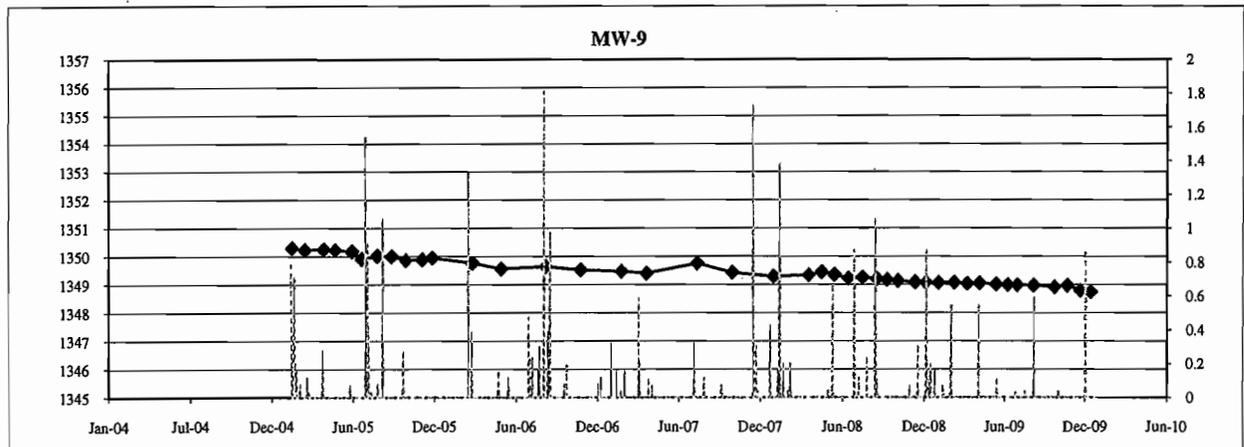
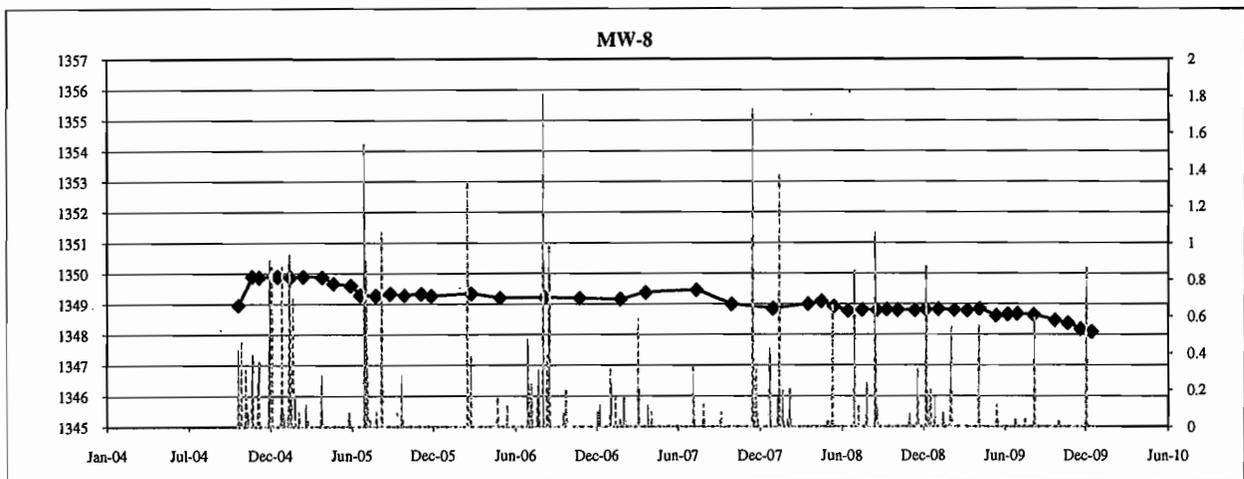
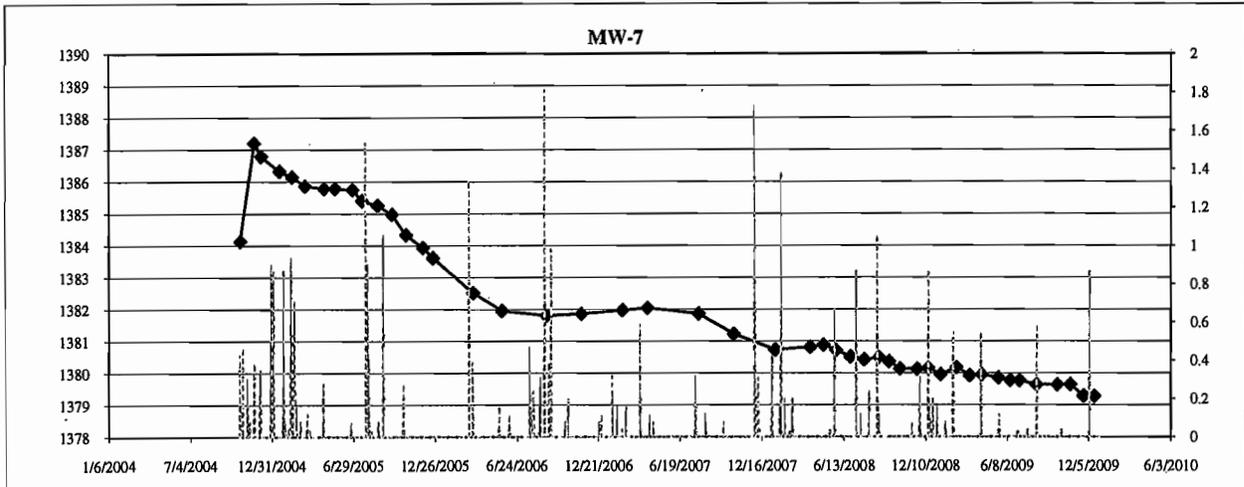
Appendix D Well Hydrographs (feet amsl) with Precipitation (in/day)



Appendix D Well Hydrographs (feet amsl) with Precipitation (in/day)

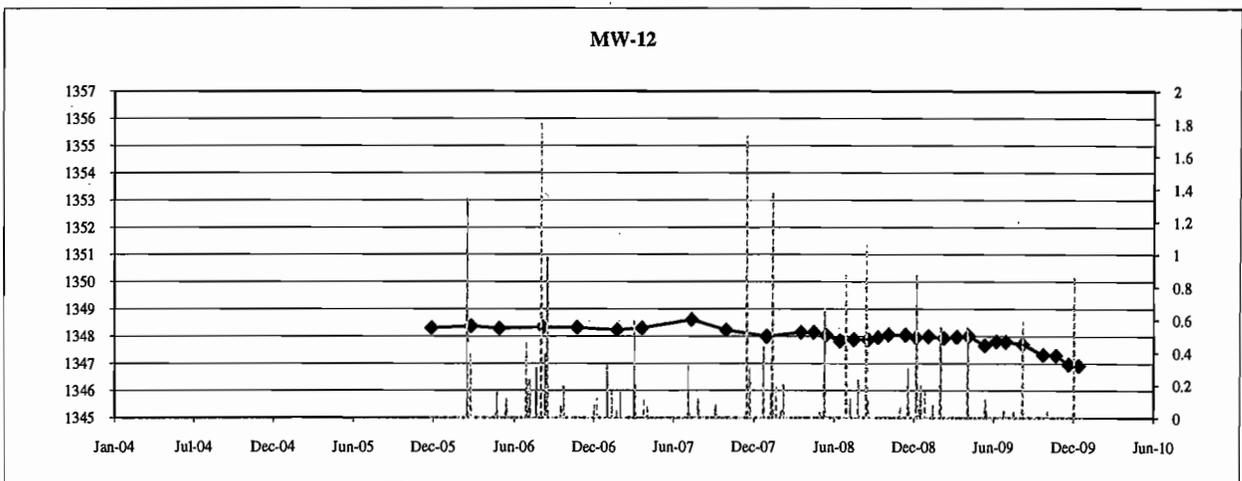
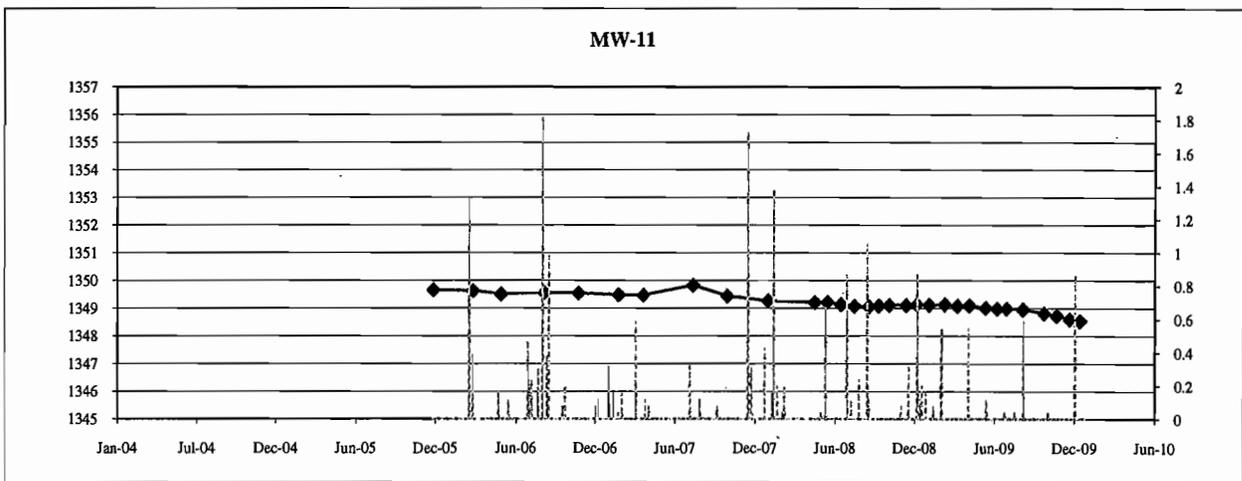
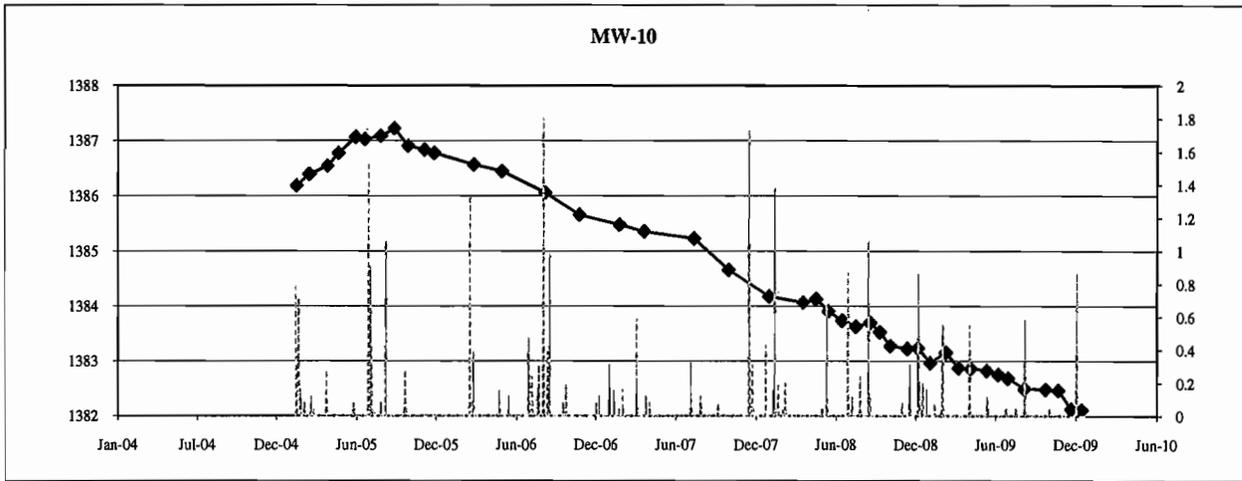


Appendix D Well Hydrographs (feet amsl) with Precipitation (in/day)

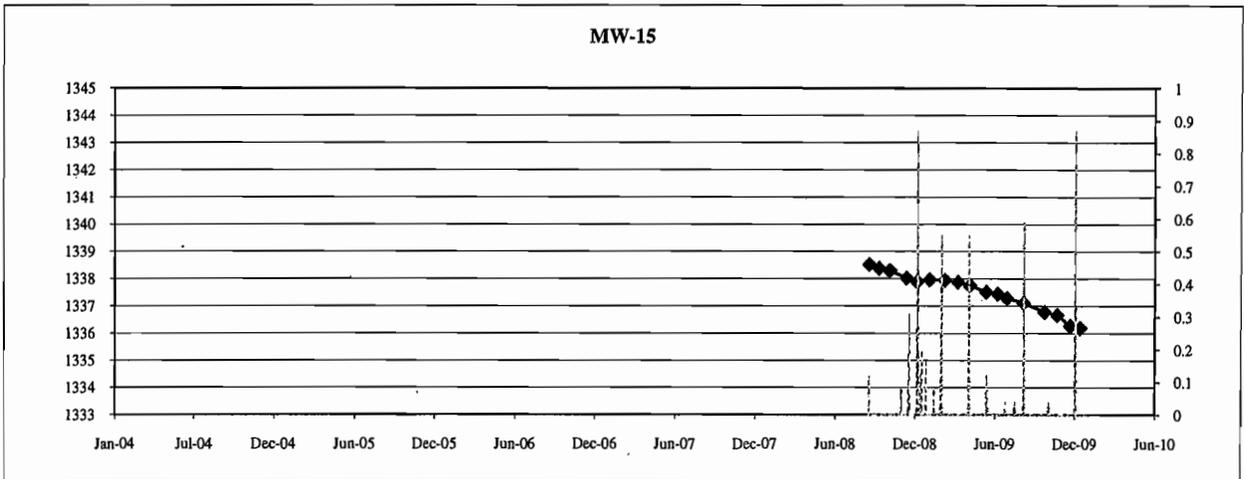
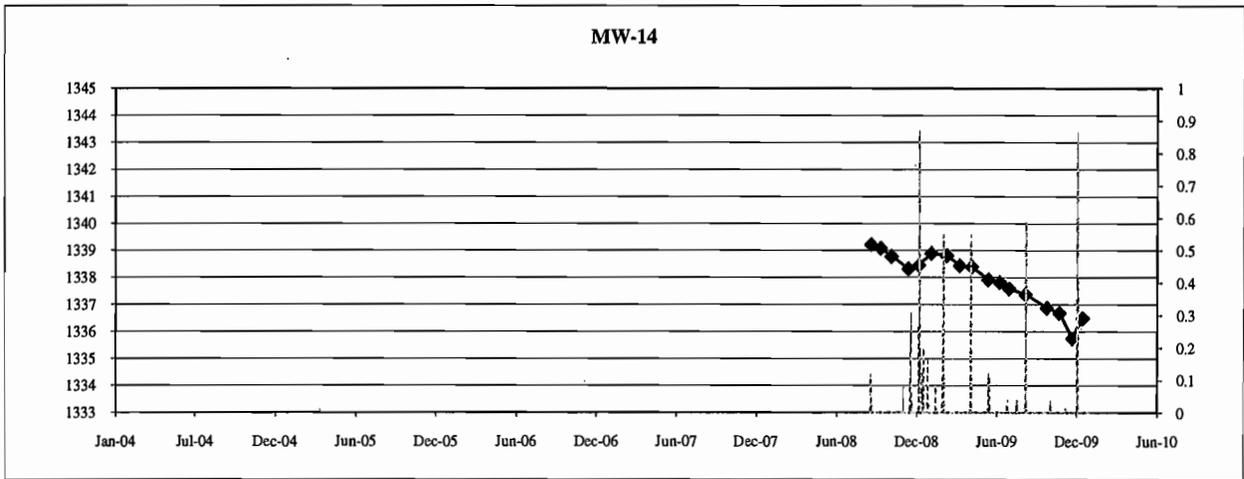
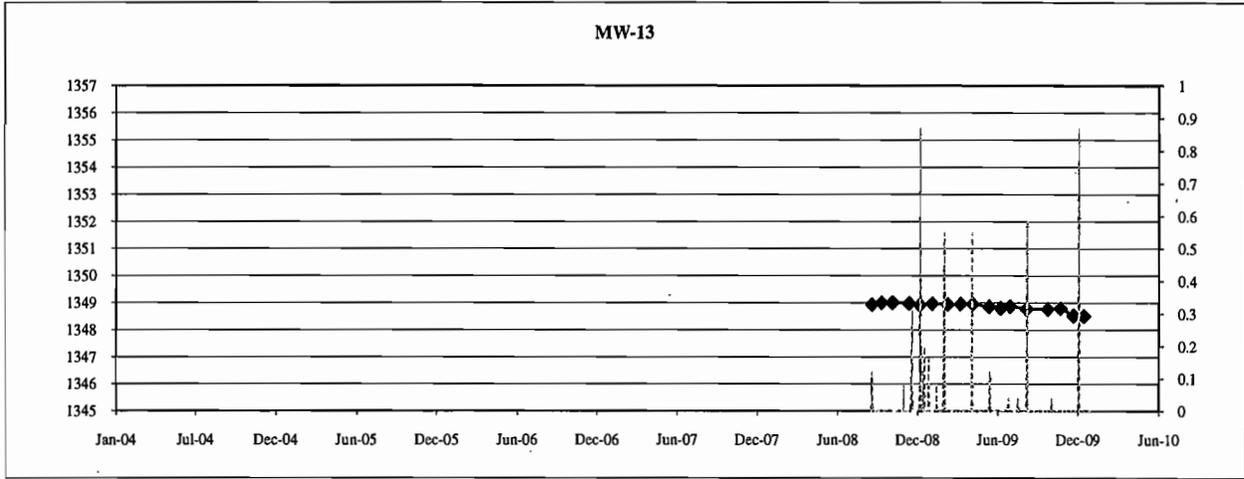


Appendix D

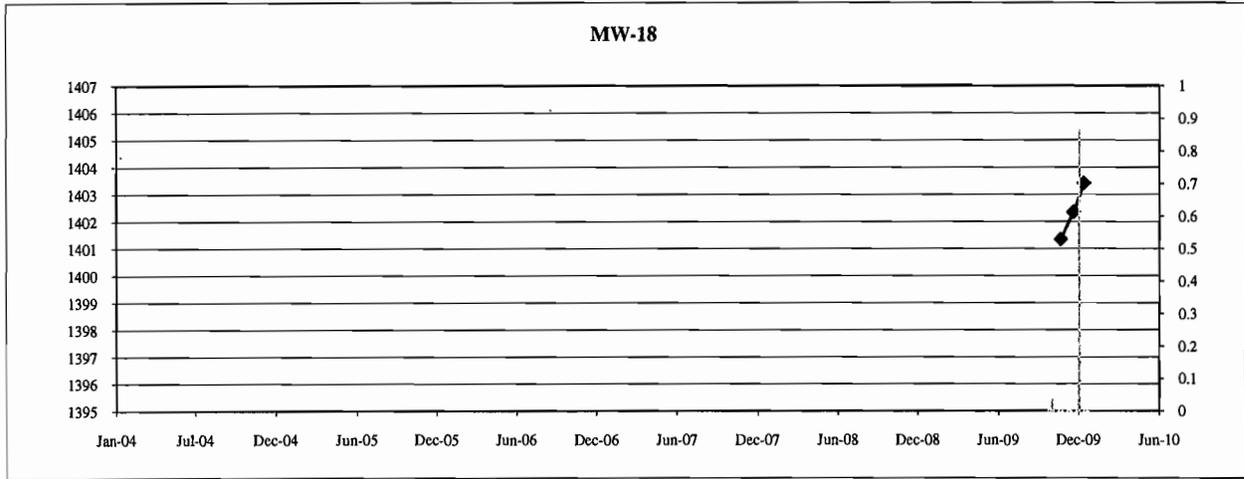
Well Hydrographs (feet amsl) with Precipitation (in/day)



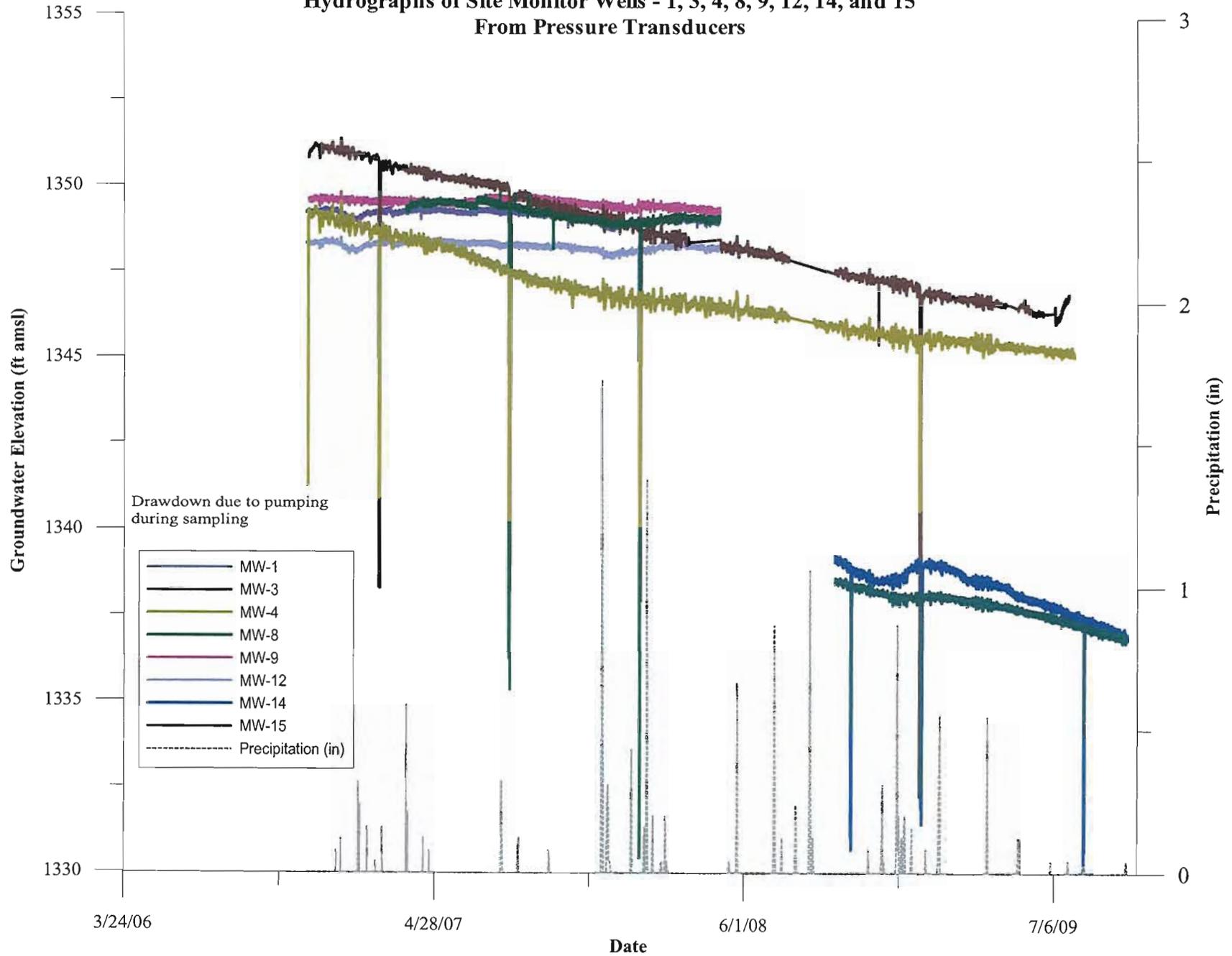
Appendix D Well Hydrographs (feet amsl) with Precipitation (in/day)



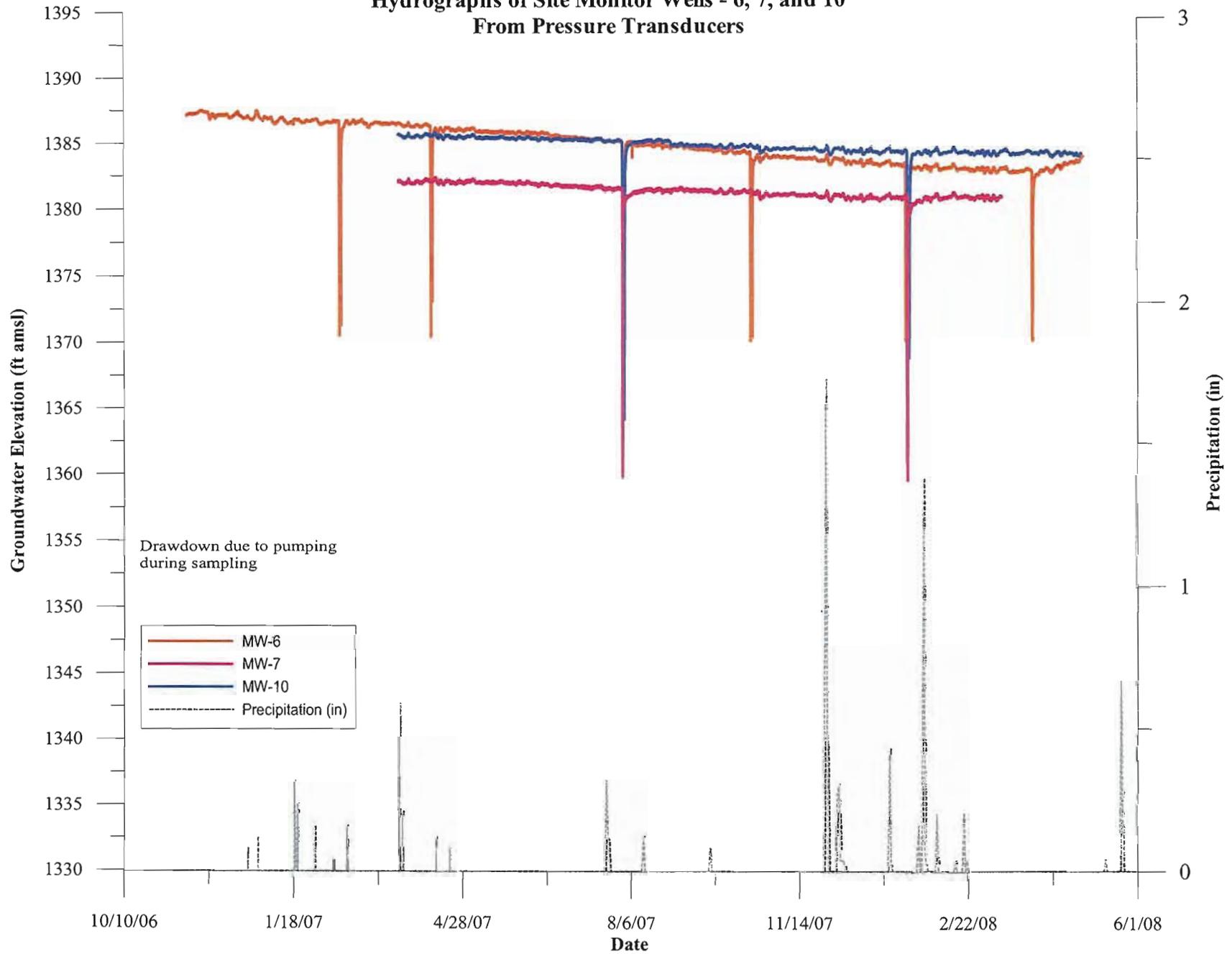
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)



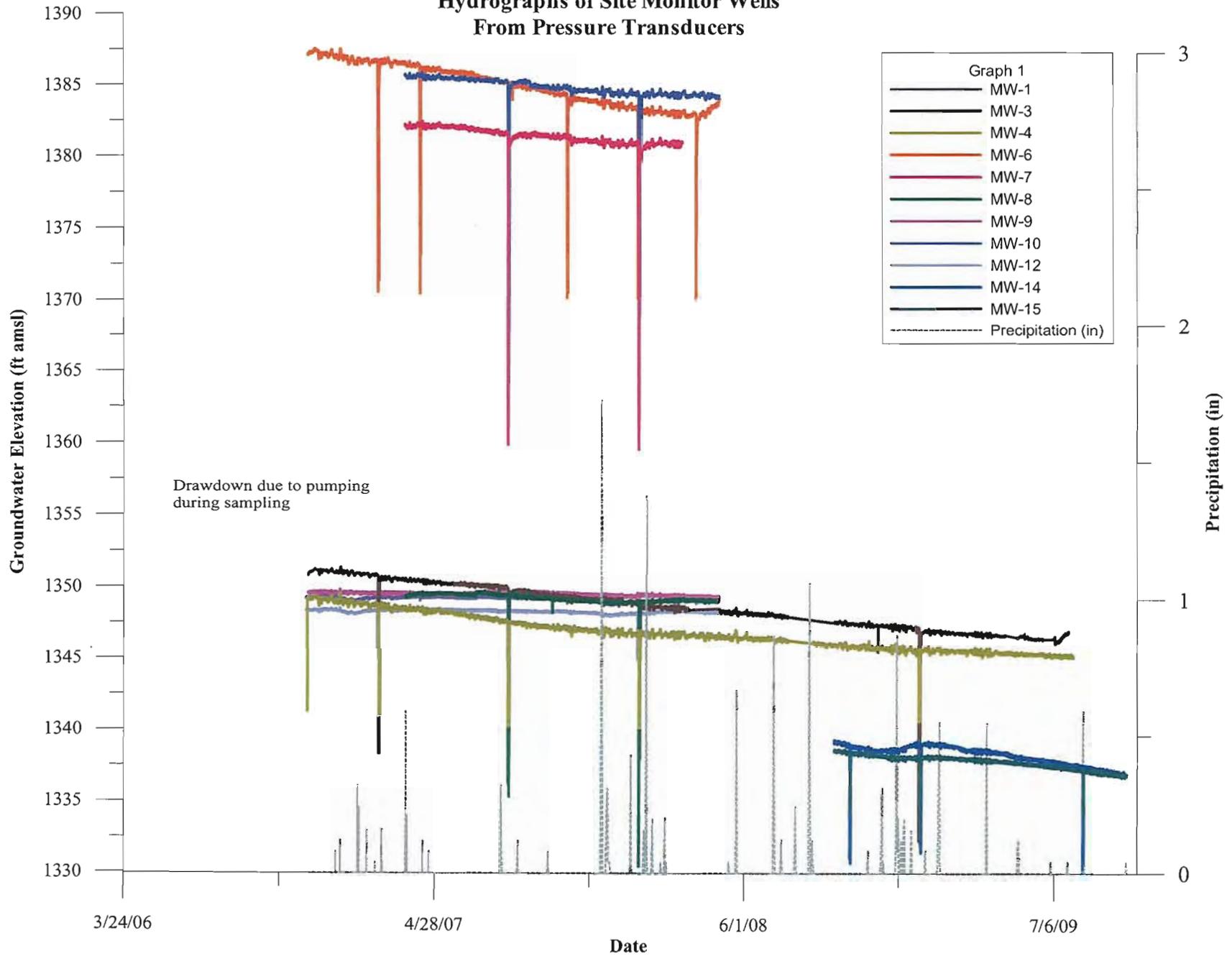
Appendix D
Hydrographs of Site Monitor Wells - 1, 3, 4, 8, 9, 12, 14, and 15
From Pressure Transducers



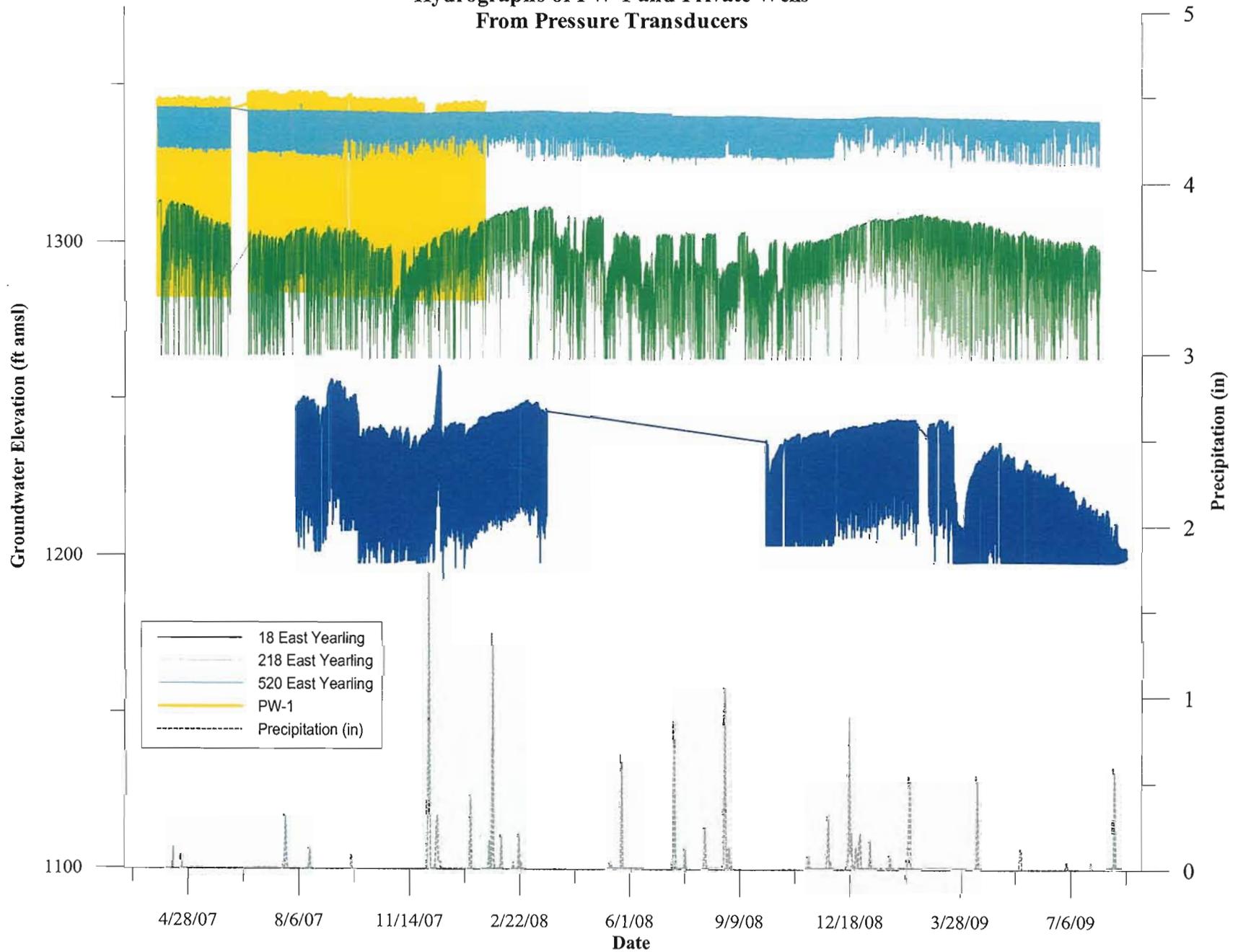
**Appendix D
Hydrographs of Site Monitor Wells - 6, 7, and 10
From Pressure Transducers**



Appendix D Hydrographs of Site Monitor Wells From Pressure Transducers



Appendix D
Hydrographs of PW-1 and Private Wells
From Pressure Transducers



**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

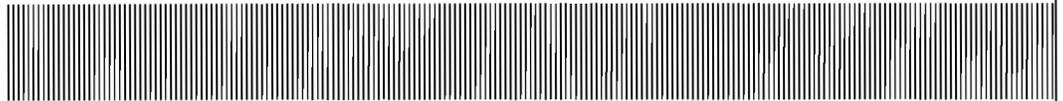
E

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix E
2009 Monitor Well Quality



**Appendix E
Monitor Well Groundwater Quality Summary**

Parameter	MW-1 1/23/2009	MW-1 4/15/2009	MW-1 8/14/2009	MW-1 11/2/2009	MW-2 1/23/2009	MW-2 4/15/2009	MW-2 8/14/2009	MW-2 11/2/2009	MW-3 1/14/2009	MW-3 8/18/2009	MW-4 1/14/2009	MW-4 8/18/2009
Inorganics (mg/L)												
Arsenic	0.010	NA	NA	NA	0.0084	NA	NA	NA	0.0060	NA	0.0026	NA
Barium	0.045	NA	NA	NA	0.074	NA	NA	NA	0.020	NA	0.092	NA
Cadmium	<0.0010	NA	NA	NA	<0.0010	NA	NA	NA	<0.0010	NA	<0.0010	NA
Calcium	NA											
Chromium	0.0028	NA	NA	NA	0.015	NA	NA	NA	<0.0010	NA	<0.0010	NA
Lead	0.0011	NA	NA	NA	0.0010	NA	NA	NA	0.0020	NA	0.0042	NA
Magnesium	NA											
Mercury	<0.00020	NA	NA	NA	<0.00020	NA	NA	NA	<0.00020	NA	<0.00020	NA
Potassium	NA											
Selenium	<0.0020	NA	NA	NA	<0.0020	NA	NA	NA	<0.0020	NA	<0.0020	NA
Silver	<0.0010	NA	NA	NA	<0.0010	NA	NA	NA	<0.0010	NA	<0.0010 UJ	NA
Sodium	NA											
Perchlorate (EPA 314.0; ug/L)	76	76	83	70	92	88	96	83	<2.0	<2.0	<2.0	<2.0
Perchlorate (EPA 332.0; ug/L)	NA	0.73	0.64 J	0.72	0.71 J							
Volatile Organic Compounds (ug/L)												
1,1,1,2-Tetrachloroethane	<0.50	NA										
1,1,1-Trichloroethane	<0.50	NA										
1,1,2,2-Tetrachloroethane	<0.50	NA										
1,1,2-Trichloroethane	<0.50	NA										
1,1-Dichloroethane	<0.50	NA										
1,1-Dichloroethene	<0.50	NA										
1,1-Dichloropropene	<0.50	NA										
1,2,3-Trichlorobenzene	<1.0	NA										
1,2,3-Trichloropropane	<1.0	NA										
1,2,4-Trichlorobenzene	<1.0	NA										
1,2,4-Trimethylbenzene	<0.50	NA										
1,2-Dibromo-3-chloropropane	<2.5	NA										
1,2-Dibromoethane (EDB)	<0.50	NA										
1,2-Dichlorobenzene	<0.50	NA										
1,2-Dichloroethane	<0.50	NA										
1,2-Dichloropropane	<0.50	NA										
1,3,5-Trimethylbenzene	<0.50	NA										
1,3-Dichlorobenzene	<0.50	NA										
1,3-Dichloropropane	<0.50	NA										
1,4-Dichlorobenzene	<0.50	NA										
1,4-Dioxane	<2.0	NA	<2.0	NA	2.4	NA	2.8	NA	<2.0	NA	<2.0	NA
2,2-Dichloropropane	<1.0	NA										
2-Butanone (MEK)	<2.5	NA										
2-Chlorotoluene	<0.50	NA										
2-Hexanone	<2.5	NA										
4-Chlorotoluene	<0.50	NA										
4-Methyl-2-pentanone (MIBK)	<2.5	NA										
Acetone	<10	NA										
Benzene	<0.50	NA										
Bromobenzene	<0.50	NA										
Bromochloromethane	<0.50	NA										
Bromodichloromethane	<0.50	NA										

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW-1 1/23/2009	MW-1 4/15/2009	MW-1 8/14/2009	MW-1 11/2/2009	MW-2 1/23/2009	MW-2 4/15/2009	MW-2 8/14/2009	MW-2 11/2/2009	MW-3 1/14/2009	MW-3 8/18/2009	MW-4 1/14/2009	MW-4 8/18/2009
Volatile Organic Compounds (ug/L)												
Bromoform	<1.0	NA										
Bromomethane	<1.0	NA										
Carbon disulfide	<0.50	NA										
Carbon tetrachloride	<0.50	NA										
Chlorobenzene	<0.50	NA										
Chloroethane	<1.0	NA										
Chloroform	<0.50	NA										
Chloromethane	<1.0	NA										
cis-1,2-Dichloroethene	<0.50	NA										
cis-1,3-Dichloropropene	<0.50	NA										
Dibromochloromethane	<0.50	NA										
Dibromomethane	<0.50	NA										
Dichlorodifluoromethane	<0.50	NA										
Ethylbenzene	<0.50	NA										
Hexachlorobutadiene	<1.0	NA										
Iodomethane	<2.5	NA										
Isopropylbenzene	<0.50	NA										
Methylene Chloride	<1.0	NA										
Methyl-tert-butyl Ether (MTBE)	<0.50	NA										
Naphthalene	<2.5	NA										
n-Butylbenzene	<0.50	NA										
n-Propylbenzene	<0.50	NA										
p-Isopropyltoluene	<0.50	NA										
sec-Butylbenzene	<0.50	NA										
Styrene	<0.50	NA										
tert-Butylbenzene	<0.50	NA										
Tetrachloroethene	<0.50	NA										
Toluene	<0.50	NA										
trans-1,2-Dichloroethene	<0.50	NA										
trans-1,3-Dichloropropene	<0.50	NA										
Trichloroethene	<0.50	NA										
Trichlorofluoromethane	<0.50	NA										
Vinyl Acetate	<0.50	NA										
Vinyl chloride	<0.50	NA										
Xylenes, Total	<1.0	NA										

**Appendix E
Monitor Well Groundwater Quality Summary**

Parameter	MW - 5 1/16/2009	MW-5 4/15/2009	MW-5 8/17/2009	MW-5 10/28/2009	MW-6 1/14/2009	MW-6 4/15/2009	MW-6 8/18/2009	MW-6 10/30/2009	MW-7 1/15/2009	MW-7 8/18/2009	MW-8 1/14/2009	MW-8 8/18/2009
Inorganics (mg/L)												
Arsenic	0.010	NA	NA	NA	0.0077	NA	NA	NA	0.026	NA	0.049	0.048
Barium	0.056	NA	NA	NA	0.016	NA	NA	NA	0.0067	NA	0.018	0.0026
Cadmium	<0.0010	NA	NA	NA	<0.0010	NA	NA	NA	<0.0010	NA	<0.0010	<0.0010
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	0.029	NA	NA	NA	<0.0010	NA	NA	NA	0.0029	NA	0.023	0.024
Lead	<0.0010	NA	NA	NA	0.0024	NA	NA	NA	0.0010	NA	0.0023	<0.0010
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	<0.00020	NA	NA	NA	<0.00020	NA	NA	NA	<0.00020	NA	<0.00020	<0.00020
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	<0.0020	NA	NA	NA	0.0024	NA	NA	NA	<0.0020	NA	<0.0020	<0.0020
Silver	<0.0010 UJ	NA	NA	NA	<0.0010 UJ	NA	NA	NA	<0.0010	NA	<0.0010 UJ	<0.0010
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perchlorate (EPA 314.0; ug/L)	24	23	27	26	18	17	19	15	<2.0	<2.0	<2.0	<2.0
Perchlorate (EPA 332.0; ug/L)	NA	NA	NA	NA	NA	NA	NA	NA	0.62	0.70 J	1.1	1.0 J
Volatile Organic Compounds (ug/L)												
1,1,1,2-Tetrachloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1,1-Trichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1,2,2-Tetrachloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1,2-Trichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1-Dichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1-Dichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1-Dichloropropene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2,3-Trichlorobenzene	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
1,2,3-Trichloropropane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
1,2,4-Trichlorobenzene	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
1,2,4-Trimethylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dibromo-3-chloropropane	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
1,2-Dibromoethane (EDB)	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dichlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dichloropropane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,3,5-Trimethylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,3-Dichlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,3-Dichloropropane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,4-Dichlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,4-Dioxane	<2.0	NA	NA	NA	<2.0	NA	NA	NA	<2.0	NA	<2.0	NA
2,2-Dichloropropane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
2-Butanone (MEK)	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
2-Chlorotoluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
2-Hexanone	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
4-Chlorotoluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
4-Methyl-2-pentanone (MIBK)	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
Acetone	<10	NA	NA	NA	<10	NA	NA	NA	<10	NA	<10	NA
Benzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Bromobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Bromochloromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Bromodichloromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW - 5 1/16/2009	MW-5 4/15/2009	MW-5 8/17/2009	MW-5 10/28/2009	MW-6 1/14/2009	MW-6 4/15/2009	MW-6 8/18/2009	MW-6 10/30/2009	MW-7 1/15/2009	MW-7 8/18/2009	MW-8 1/14/2009	MW-8 8/18/2009
Volatile Organic Compounds (ug/L)												
Bromoform	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Bromomethane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Carbon disulfide	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Carbon tetrachloride	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Chlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Chloroethane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Chloroform	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Chloromethane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
cis-1,2-Dichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
cis-1,3-Dichloropropene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Dibromochloromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Dibromomethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Dichlorodifluoromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Ethylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Hexachlorobutadiene	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Iodomethane	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
Isopropylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Methylene Chloride	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Naphthalene	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
n-Butylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
n-Propylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
p-Isopropyltoluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
sec-Butylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Styrene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
tert-Butylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Tetrachloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Toluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
trans-1,2-Dichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
trans-1,3-Dichloropropene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Trichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Trichlorofluoromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Vinyl Acetate	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Vinyl chloride	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Xylenes, Total	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA

**Appendix E
Monitor Well Groundwater Quality Summary**

Parameter	MW-9 1/14/2009	MW-9 8/18/2009	MW-10 1/14/2009	MW-10 8/18/2009	MW-11 1/15/2009	MW-11 8/18/2009	MW-12 1/23/2009	MW-12 8/14/2009	MW - 13 1/16/2009	MW-13 4/16/2009	MW-13 8/13/2009	MW-13 10/29/2009
Inorganics (mg/L)												
Arsenic	0.0084	NA	0.018	NA	0.0076	NA	0.0072	NA	0.0042	NA	NA	NA
Barium	0.061	NA	0.0085	NA	0.14	NA	0.026	NA	0.070	NA	NA	NA
Cadmium	<0.0010	NA	<0.0010	NA	<0.0010	NA	<0.0010	NA	<0.0010	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	33 J	NA	NA	NA
Chromium	<0.0010	NA	0.0021	NA	0.0035	NA	0.0069	NA	0.0012	NA	NA	NA
Lead	0.0014	NA	0.0016	NA	<0.0010	NA	<0.0010	NA	<0.0010	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	15	NA	NA	NA
Mercury	<0.00020	NA	<0.00020	NA	<0.00020	NA	<0.00020	NA	<0.00020	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	2.7	NA	NA	NA
Selenium	<0.0020	NA	<0.0020	NA	0.0042	NA	<0.0020	NA	<0.0020	NA	NA	NA
Silver	<0.0010 UJ	NA	<0.0010 UJ	NA	<0.0010	NA	<0.0010	NA	<0.0010 UJ	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	51 J	NA	NA	NA
Perchlorate (EPA 314.0; ug/L)	<2.0	<2.0	<2.0	<2.0	2.0	2.3	<2.0	<2.0	190	81	40	30
Perchlorate (EPA 332.0; ug/L)	0.84	0.78 J	0.96	0.93 J	2.0	2.1 J	1.2	0.78 J	NA	NA	NA	NA
Volatile Organic Compounds (ug/L)												
1,1,1,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1,1-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1,2,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1,2-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2,3-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
1,2,3-Trichloropropane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
1,2,4-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
1,2,4-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dibromo-3-chloropropane	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
1,2-Dibromoethane (EDB)	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,3,5-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,3-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,3-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,4-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,4-Dioxane	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA
2,2-Dichloropropane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
2-Butanone (MEK)	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
2-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
2-Hexanone	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
4-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
Acetone	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	NA	NA
Benzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Bromobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Bromochloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Bromodichloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW-9 1/14/2009	MW-9 8/18/2009	MW-10 1/14/2009	MW-10 8/18/2009	MW-11 1/15/2009	MW-11 8/18/2009	MW-12 1/23/2009	MW-12 8/14/2009	MW - 13 1/16/2009	MW-13 4/16/2009	MW-13 8/13/2009	MW-13 10/29/2009
Volatile Organic Compounds (ug/L)												
Bromoform	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Bromomethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Carbon disulfide	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Carbon tetrachloride	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Chlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Chloroethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Chloroform	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Chloromethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
cis-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
cis-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Dibromochloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Dibromomethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Dichlorodifluoromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Ethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Hexachlorobutadiene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Iodomethane	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
Isopropylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Methylene Chloride	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Naphthalene	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
n-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
n-Propylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
p-Isopropyltoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
sec-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Styrene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
tert-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Tetrachloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Toluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
trans-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
trans-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Trichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Trichlorofluoromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Vinyl Acetate	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Vinyl chloride	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Xylenes, Total	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA

**Appendix E
Monitor Well Groundwater Quality Summary**

Parameter	MW - 14 1/16/2009	MW-14 8/13/2009	MW-15 1/15/2009	MW-15 8/13/2009	MW-18 10/30/2009	PW-1 1/12/2009	PW-1 4/15/2009	PW-1 7/6/2009	PW-1 10/30/2009
Inorganics (mg/L)									
Arsenic	0.0020	NA	0.0029	NA	0.062	0.011	0.0093	0.010	0.010
Barium	0.27	NA	0.25	NA	0.022	0.0047	0.0044	0.0045	0.0049
Cadmium	<0.0010	NA	<0.0010	NA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	63 J	NA	45	NA	25 J	22	23	24	26
Chromium	<0.0010	NA	<0.0010	NA	0.022	0.0025	0.0024	0.0022	0.0022
Lead	0.0019	NA	0.0016	NA	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
Magnesium	17	NA	11	NA	12 J	10	10	10	12
Mercury	<0.00020	NA	<0.00020	NA	<0.00020	<0.00020	<0.00020	0.00083	<0.00020
Potassium	3.0	NA	2.3	NA	3.8	3.5	3.9	3.5	3.9
Selenium	<0.0020	NA	<0.0020	NA	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver	<0.0010 UJ	NA	<0.0010	NA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Sodium	51 J	NA	42	NA	61	59	56	54	61
Perchlorate (EPA 314.0; ug/L)	<2.0	<2.0	<2.0	<2.0	<2.0	4.8	2.6	2.4	<2.0
Perchlorate (EPA 332.0; ug/L)	1.1	1.1 J	0.82	0.83 J	1.5	NA	NA	NA	NA
Volatile Organic Compounds (ug/L)									
1,1,1,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1,1-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1,2,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1,2-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	0.62	<0.50 UJ
1,1-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	3.6	6.0	<0.50 UJ
1,1-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2,3-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
1,2,3-Trichloropropane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
1,2,4-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
1,2,4-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dibromo-3-chloropropane	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
1,2-Dibromoethane (EDB)	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,3,5-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,3-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,3-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,4-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,4-Dioxane	<2.0	NA	<2.0	NA	<1.0	<2.0	2.5	2.9	2.4 J
2,2-Dichloropropane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
2-Butanone (MEK)	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
2-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
2-Hexanone	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
4-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
4-Methyl-2-pentanone (MIBK)	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
Acetone	<10	NA	<10	NA	<10	<10	<10	<10	<10
Benzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Bromobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Bromochloromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Bromodichloromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW - 14 1/16/2009	MW-14 8/13/2009	MW-15 1/15/2009	MW-15 8/13/2009	MW-18 10/30/2009	PW-1 1/12/2009	PW-1 4/15/2009	PW-1 7/6/2009	PW-1 10/30/2009
Volatile Organic Compounds (ug/L)									
Bromoform	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	1.2	1.3 J
Bromomethane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Carbon disulfide	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Carbon tetrachloride	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Chlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Chloroethane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Chloroform	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	0.71	<0.50 UJ
Chloromethane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
cis-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
cis-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Dibromochloromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Dibromomethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Dichlorodifluoromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Ethylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Hexachlorobutadiene	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Iodomethane	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
Isopropylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Methylene Chloride	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Naphthalene	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
n-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
n-Propylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
p-Isopropyltoluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
sec-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Styrene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
tert-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Tetrachloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Toluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
trans-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
trans-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Trichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Trichlorofluoromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Vinyl Acetate	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Vinyl chloride	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Xylenes, Total	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ

Notes:
 NA = Not analyzed
 < = Analyte not detected above the listed laboratory reporting limit
 J = Estimated value
 UJ = The reporting limit is considered an estimated value
 mg/L = Milligrams per liter
 ug/L = Micrograms per liter

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

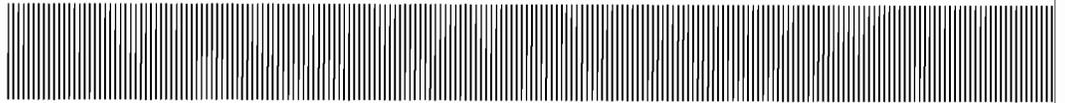
F

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix F
Historic Private Well
Water Quality Data



Appendix F
Historic Private Well Water Quality Data

Sample ID	Date Collected	Perchlorate	
		EPA Method 314.0 (ug/L)	EPA Method 332.0 (ug/L)
104 E. Yearling	11/15/2006	<2.0	2.0
	12/28/2007	<2.0	1.3
	4/1/2008	<2.0	1.1
	10/15/2008	<2.0	0.75
	4/16/2009	<2.0	0.65
122 W. Yearling	12/28/2007	<2.0	1.4
	4/1/2008	<2.0	1.2
	10/13/2008	<2.0	0.72
	4/16/2009	<2.0	0.67
	10/30/2009	<2.0	1.2
16 E Yearling	11/19/2004	<2.0	NA
	4/29/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/13/2006	<2.0	0.68
	10/16/2007	<2.0	0.64
	4/1/2008 *	<2.0	2.6
	4/1/2008	<2.0	2.9
	10/15/2008	<2.0	0.77
	4/17/2009	<2.0	0.63
	10/30/2009	<2.0	1.0
18 E. Yearling	10/27/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	0.94
	4/4/2007	<2.0	0.98
	10/16/2007	<2.0	0.77
	4/1/2008	<2.0	1.0
	10/15/2008	<2.0	1.1
	4/16/2009	<2.0	0.86
204 E. Yearling	10/30/2009	<2.0	1.1
	10/27/2005	<2.0	NA
	4/16/2009	<2.0	0.64
218 E Yearling	10/30/2009	<2.0	1.3
	11/19/2004	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	0.68
	4/4/2007	<2.0	0.67
	10/16/2007	<2.0	NA
	4/1/2008	<2.0	1.3
	10/15/2008	<2.0	0.80
	10/15/2008 **	<2.0	0.73
	4/16/2009	<2.0	0.68
10/30/2009	<2.0	1.2	

**Appendix F
Historic Private Well Water Quality Data**

Sample ID	Date Collected	Perchlorate	
		EPA Method 314.0 (ug/L)	EPA Method 332.0 (ug/L)
25825 N 1st Place	11/17/2004	<2.0	NA
	4/28/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	1.0
	4/4/2007	<2.0	0.93
	10/16/2007	<2.0	0.89
	4/1/2008	<2.0	1.1
	10/15/2008	<2.0	0.97
	4/16/2009	<2.0	0.89
25903 N 2nd St	10/30/2009	<2.0	1.2
	11/19/2004	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	0.78
	4/4/2007	<2.0	0.76
	4/1/2008	2.2	3.1
	10/15/2008	<2.0	0.84
	4/16/2009	<2.0	0.88
	10/30/2009	<2.0	1.3
412 E Yearling	11/19/2004	<2.0	NA
	4/29/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	4/1/2008	<2.0	2.1
	10/15/2008	<2.0	1.5
	4/16/2009	<2.0	1.1
424 E Yearling	10/30/2009	<2.0	1.5
	1/19/2008	<2.0	1.2
	4/1/2008	<2.0	2.2
	10/15/2008	<2.0	1.6
	4/16/2009	<2.0	1.2
520 E Yearling	10/30/2009	<2.0	1.8
	11/17/2004	<2.0	NA
	4/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	1.5
	4/4/2007	2.4	1.3
	10/16/2007	<2.0	1.4
	4/1/2008	<2.0	2.2
	10/15/2008	<2.0	1.3
4/16/2009	<2.0	1.3	
10/30/2009	<2.0	1.9	

Appendix F
Historic Private Well Water Quality Data

Sample ID	Date Collected	Perchlorate	
		EPA Method 314.0 (ug/L)	EPA Method 332.0 (ug/L)
604/616 E. Yearling	11/17/2004	<2.0	NA
	4/29/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	1.1
	4/6/2007	<2.0	1.2
	10/16/2007	<2.0	1.0
	4/1/2008	<2.0	1.5
	10/15/2008	<2.0	1.1
	4/16/2009	<2.0	0.98
	10/30/2009	<2.0	1.6
8 W. Yearling	12/28/2007	<2.0	1.2
	4/4/2008	<2.0	0.78
	10/15/2008	<2.0	1.1
	10/30/2009	<2.0	1.1

Notes:

ug/L = Micrograms per liter

< = Analyte not detected above the listed laboratory reporting limit

* = Well in front yard sampled for comparison purposes, labeled as 16 E. Yearling - N

** = Older well located in front yard of 218 E. Yearling that previously supplied both 204 E. Yearling and 218 E. Yearling residences before installation of new wells in back yards of both residences.

NA = Not analyzed

**MALCOLM
PIRNE**

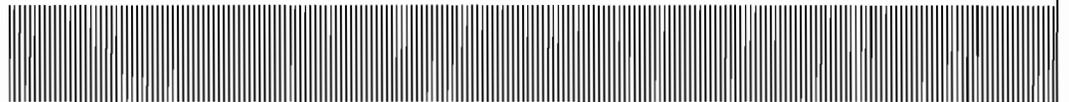
INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

G

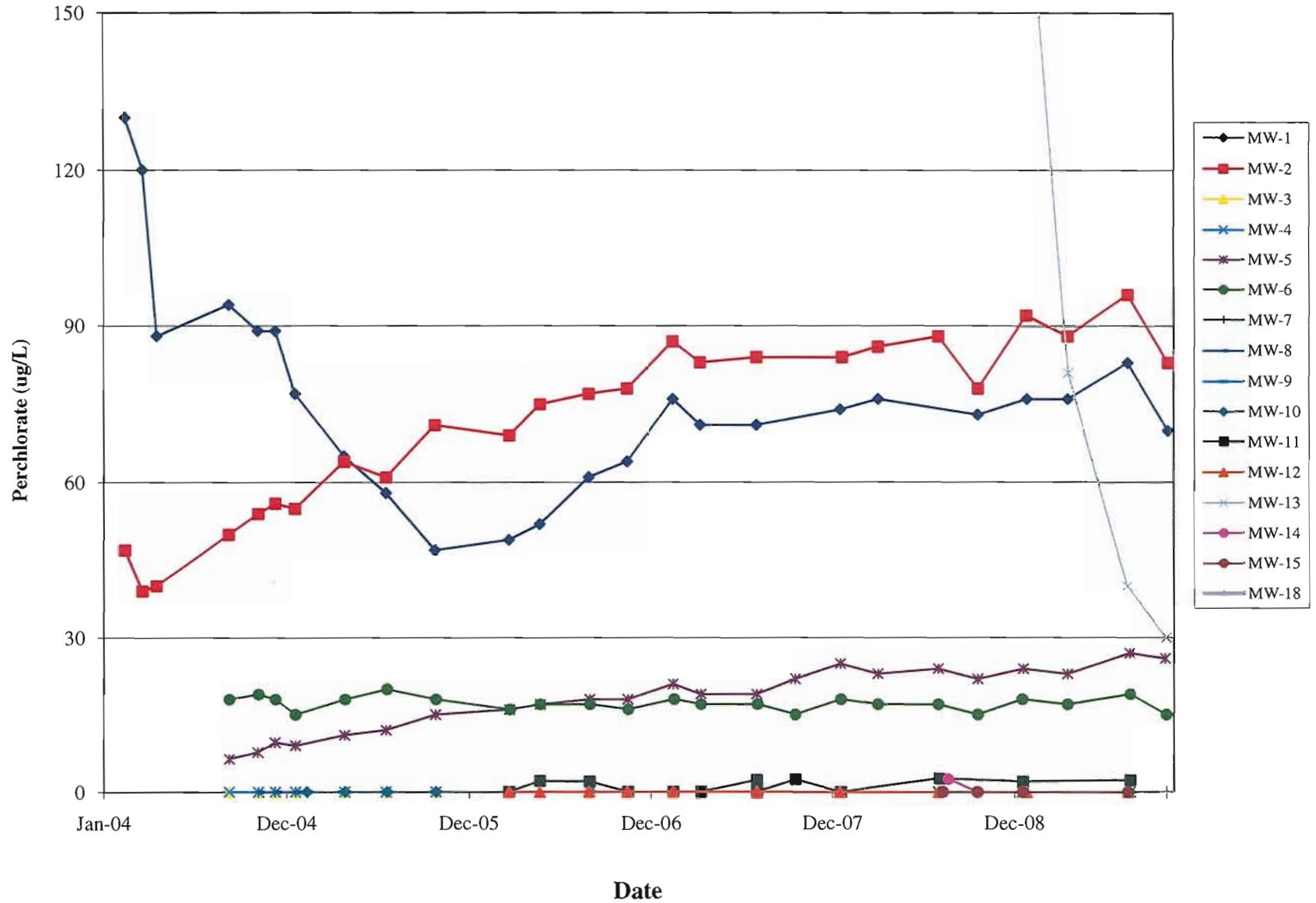
APPENDIX



Appendix G
Historic Perchlorate
Concentration Graph



Appendix G Historic Monitor Well Perchlorate Concentration Graph



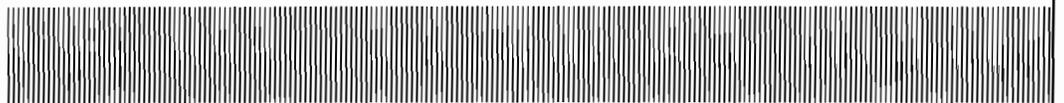
H

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix H
Summary of 2009 Field Data



Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
First Quarter 2009	MW-1	1/23/2009	14	8:46	27.67	487	7.01
	MW-1	1/23/2009	39	8:50	27.64	482	7.32
	MW-1	1/23/2009	64	8:54	27.75	483	7.35
	MW-1	1/23/2009	91	8:58	27.77	484	7.36
	MW-1	1/23/2009	149	9:07	purge end time		
	MW-2	1/23/2009	0	10:05	26.68	473	7.33
	MW-2	1/23/2009	41	10:09	26.83	471	7.47
	MW-2	1/23/2009	83	10:13	27.63	474	7.49
	MW-2	1/23/2009	123	10:17	27.69	472	7.51
	MW-2	1/23/2009	174	10:22	purge end time		
	MW-3	1/13/2009	10	12:52	27.63	330	7.04
	MW-3	1/13/2009	30	12:56	28.70	338	6.93
	MW-3	1/13/2009	50	13:00	29.09	340	6.97
	MW-3	1/13/2009	70	13:04	29.10	339	6.90
	MW-4	1/13/2009	10	11:48	27.45	474	6.94
	MW-4	1/13/2009	20	11:53	28.86	476	6.94
	MW-4	1/13/2009	22	11:54	purge end time		
	MW-5	1/16/2009	6	7:57	26.03	445	6.92
	MW-5	1/16/2009	35	8:02	27.57	434	6.98
	MW-5	1/16/2009	64	8:07	27.66	422	6.97
	MW-5	1/16/2009	93	8:12	27.70	418	7.00
	MW-5	1/16/2009	122	8:17	27.84	416	7.02
	MW-5	1/16/2009	151	8:22	27.99	411	7.03
	MW-5	1/16/2009	226	8:35	purge end time		
	MW-6	1/13/2009	16	14:09	27.82	476	6.77
	MW-6	1/13/2009	32	14:13	28.56	479	6.60
	MW-6	1/13/2009	48	14:17	28.78	481	6.64
	MW-6	1/13/2009	52	14:18	purge end time		
	MW-7	1/15/2009	20	7:43	26.15	367	7.27
	MW-7	1/15/2009	52	7:48	26.81	366	7.40
	MW-7	1/15/2009	84	7:53	26.02	367	7.34
	MW-7	1/15/2009	117	7:58	27.02	368	7.31
	MW-7	1/15/2009	150	8:03	27.30	367	7.33
	MW-7	1/15/2009	182	8:08	27.35	369	7.32
	MW-7	1/15/2009	260	8:20	purge end time		
	MW-8	1/13/2009	21	8:36	25.79	241	7.48
	MW-8	1/13/2009	32	8:39	27.74	230	7.82
	MW-8	1/13/2009	42	8:42	28.01	228	8.02
	MW-8	1/13/2009	52	8:45	28.06	229	8.02
	MW-8	1/13/2009	63	8:48	27.45	234	7.95
	MW-8	1/13/2009	73	8:51	28.12	223	7.96
	MW-8	1/13/2009	87	8:55	28.56	234	8.01
MW-8	1/13/2009	89	9:07	purge end time			
MW-9	1/14/2009	18	8:03	26.04	475	7.36	
MW-9	1/14/2009	48	8:08	27.24	478	7.32	
MW-9	1/14/2009	78	8:13	27.37	476	7.26	
MW-9	1/14/2009	108	8:18	27.34	476	7.21	
MW-9	1/14/2009	138	8:23	27.35	472	7.22	
MW-9	1/14/2009	168	8:28	27.47	468	7.18	
MW-9	1/14/2009	198	8:33	27.39	465	7.08	
MW-9	1/14/2009	270	8:45	purge end time			

**Appendix H
2009 Field Data Summary**

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
First Quarter 2009	MW-10	1/13/2009	10	10:14	27.36	405	7.03
	MW-10	1/13/2009	20	10:18	28.42	401	7.00
	MW-10	1/13/2009	32	10:23	28.55	401	6.95
	MW-10	1/13/2009	45	10:28	28.66	401	6.96
	MW-10	1/13/2009	58	10:33	purge end time		
	MW-11	1/15/2009	17	14:38	29.15	642	7.28
	MW-11	1/15/2009	52	14:44	28.86	644	6.92
	MW-11	1/15/2009	87	14:50	28.93	645	6.87
	MW-11	1/15/2009	122	14:56	29.02	646	6.87
	MW-11	1/15/2009	157	15:02	28.88	648	6.87
	MW-11	1/15/2009	191	15:08	28.69	649	6.86
	MW-11	1/15/2009	290	15:25	purge end time		
	MW-12	1/23/2009	25	8:45	28.10	506	7.35
	MW-12	1/23/2009	125	8:53	28.91	514	7.35
	MW-12	1/23/2009	250	9:03	29.34	509	7.37
	MW-12	1/23/2009	400	9:15	29.31	490	7.35
	MW-12	1/23/2009	525	9:25	29.37	483	7.35
	MW-12	1/23/2009	588	9:30	purge stop		
	MW-12	1/23/2009	0	10:13	purge start		
	MW-12	1/23/2009	132	10:15	28.56	475	7.50
	MW-12	1/23/2009	288	10:28	29.45	479	7.38
	MW-12	1/23/2009	408	10:38	29.54	481	7.37
	MW-12	1/23/2009	552	10:50	purge end time		
	MW-13	1/16/2009	36	12:13	29.58	590	7.14
	MW-13	1/16/2009	90	12:18	29.42	584	6.89
	MW-13	1/16/2009	167	12:25	29.47	583	6.87
	MW-13	1/16/2009	272	12:35	29.56	573	6.87
	MW-13	1/16/2009	376	12:45	29.64	565	6.90
	MW-13	1/16/2009	519	12:59	29.61	545	6.92
	MW-13	1/16/2009	549	13:02	purge stop		
	MW-13	1/16/2009	0	13:39	purge start		
	MW-13	1/16/2009	12	13:40	31.09	549	7.10
	MW-13	1/16/2009	128	13:51	28.83	524	6.73
	MW-13	1/16/2009	222	14:00	29.88	526	6.76
	MW-13	1/16/2009	285	14:06	29.62	529	6.75
	MW-13	1/16/2009	506	14:27	purge end time		
	MW-14	1/15/2009	24	10:02	28.79	748	7.16
	MW-14	1/15/2009	144	10:12	29.14	748	7.18
	MW-14	1/15/2009	214	10:22	29.21	746	7.11
	MW-14	1/15/2009	249	10:32	29.49	743	7.10
	MW-14	1/15/2009	274	10:42	29.82	744	7.10
	MW-14	1/15/2009	292	10:52	30.32	744	7.09
	MW-14	1/15/2009	307	11:02	30.70	743	7.10
	MW-14	1/15/2009	313	11:07	purge stop		
	MW-14	1/16/2009	0	9:51	purge start		
	MW-14	1/16/2009	12	9:52	27.07	734	7.01
	MW-14	1/16/2009	36	9:54	29.10	737	6.99
MW-14	1/16/2009	156	10:04	purge end time			

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
First Quarter 2009	MW-15	1/15/2009	12	12:42	28.48	525	7.22
	MW-15	1/15/2009	54	12:49	29.00	522	6.78
	MW-15	1/15/2009	96	12:56	28.91	519	6.78
	MW-15	1/15/2009	138	13:03	29.05	518	6.80
	MW-15	1/15/2009	180	13:10	29.14	517	6.82
	MW-15	1/15/2009	222	13:17	29.18	518	6.84
	MW-15	1/15/2009	324	13:34	purge end time		
Second Quarter 2009	MW-1	4/15/2009	1	10:20	27.88	486	7.20
	MW-1	4/15/2009	40	10:26	28.11	498	7.21
	MW-1	4/15/2009	73	10:31	28.18	500	7.21
	MW-1	4/15/2009	118	10:38	28.00	501	7.20
	MW-1	4/15/2009	164	10:45	purge end time		
	MW-2	4/15/2009	8	11:23	27.94	505	7.25
	MW-2	4/15/2009	44	11:27	28.01	501	7.24
	MW-2	4/15/2009	84	11:31	27.95	496	7.24
	MW-2	4/15/2009	194	11:42	purge end time		
	MW-5	4/15/2009	6	8:22	27.80	454	7.04
	MW-5	4/15/2009	32	8:27	28.55	451	7.19
	MW-5	4/15/2009	59	8:32	28.65	449	7.25
	MW-5	4/15/2009	97	8:39	28.60	444	7.30
	MW-5	4/15/2009	141	8:47	28.63	444	7.31
	MW-5	4/15/2009	168	8:52	28.66	442	7.31
	MW-5	4/15/2009	200	8:58	purge end time		
	MW-6	4/14/2009	8	7:54	26.24	436	7.05
	MW-6	4/14/2009	22	7:58	27.75	484	7.09
	MW-6	4/14/2009	39	8:03	28.39	474	7.15
	MW-6	4/14/2009	46	8:05	purge end time		
	MW-13	4/16/2009	12	7:44	28.73	638	7.05
	MW-13	4/16/2009	57	7:48	28.86	633	7.15
	MW-13	4/16/2009	90	7:51	29.27	636	7.21
	MW-13	4/16/2009	155	7:57	29.51	646	7.23
	MW-13	4/16/2009	220	8:03	29.55	641	7.25
	MW-13	4/16/2009	295	8:10	29.35	641	7.27
	MW-13	4/16/2009	403	8:20	29.41	642	7.27
	MW-13	4/16/2009	490	8:28	purge stop		
	MW-13	4/16/2009	0	9:09	purge start		
	MW-13	4/16/2009	0	9:09	29.30	624	7.24
	MW-13	4/16/2009	65	9:15	29.47	616	7.25
	MW-13	4/16/2009	119	9:20	29.52	610	7.27
	MW-13	4/16/2009	173	9:25	29.48	608	7.27
MW-13	4/16/2009	227	9:30	29.56	610	7.27	
MW-13	4/16/2009	346	9:41	29.54	600	7.27	
MW-13	4/16/2009	464	9:52	purge end time			
Third Quarter 2009	MW-1	8/14/2009	11	11:07	23.57	464	7.07
	MW-1	8/14/2009	38	11:12	23.67	478	7.03
	MW-1	8/14/2009	66	11:17	23.66	484	7.01
	MW-1	8/14/2009	94	11:22	23.66	487	7.02
	MW-1	8/14/2009	121	11:27	23.67	488	7.01
	MW-1	8/14/2009	138	11:30	purge end time		
	MW-2	8/14/2009	0	13:05	24.26	512	7.08
	MW-2	8/14/2009	49	13:10	25.15	520	6.77
MW-2	8/14/2009	88	13:14	25.59	521	6.79	

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Third Quarter 2009	MW-2	8/14/2009	107	13:16	23.87	500	6.88
	MW-2	8/14/2009	127	13:18	23.84	496	6.68
	MW-2	8/14/2009	146	13:20	23.99	496	6.64
	MW-2	8/14/2009	166	13:22	purge end time		
	MW-3	8/17/2009	10	9:29	23.70	366	7.00
	MW-3	8/17/2009	21	9:31	24.07	366	6.81
	MW-3	8/17/2009	32	9:33	24.19	367	6.82
	MW-3	8/17/2009	50	9:37	24.35	367	6.78
	MW-3	8/17/2009	70	9:41	24.36	373	dry
	MW-3	8/17/2009	75	9:42	purge end time		
	MW-4	8/17/2009	2	8:17	23.09	503	6.75
	MW-4	8/17/2009	9	8:21	22.61	493	6.63
	MW-4	8/17/2009	13	8:23	22.98	499	6.63
	MW-4	8/17/2009	17	8:25	23.44	510	6.68
	MW-4	8/17/2009	22	8:27	24.45	521	6.73
	MW-4	8/17/2009	27	8:30	25.23	529	6.78
	MW-4	8/17/2009	33	8:33	purge end time		
	MW-5	8/17/2009	29	15:26	24.05	452	7.50
	MW-5	8/17/2009	56	15:31	23.97	444	6.80
	MW-5	8/17/2009	85	15:36	23.99	441	6.76
	MW-5	8/17/2009	114	15:41	24.04	441	6.82
	MW-5	8/17/2009	143	15:46	24.03	439	6.84
	MW-5	8/17/2009	172	15:51	24.00	438	6.83
	MW-5	8/17/2009	195	15:55	purge end time		
	MW-6	8/17/2009	10	14:02	23.55	516	7.25
	MW-6	8/17/2009	18	14:04	23.55	514	6.60
	MW-6	8/17/2009	27	14:07	23.59	514	6.57
	MW-6	8/17/2009	41	14:10	23.67	503	6.51
	MW-6	8/17/2009	46	14:12	purge end time		
	MW-7	8/18/2009	11	11:13	23.25	397	7.11
	MW-7	8/18/2009	47	11:19	23.44	394	6.99
	MW-7	8/18/2009	80	11:24	23.46	395	7.09
	MW-7	8/18/2009	118	11:30	23.59	396	7.04
	MW-7	8/18/2009	151	11:35	23.55	396	7.09
	MW-7	8/18/2009	184	11:40	23.57	396	7.00
	MW-7	8/18/2009	217	11:45	purge end time		
	MW-8	8/17/2009	6	11:30	24.27	257	7.90
	MW-8	8/17/2009	15	11:33	24.58	254	7.26
	MW-8	8/17/2009	25	11:37	24.85	256	7.37
	MW-8	8/17/2009	42	11:44	25.06	257	7.65
	MW-8	8/17/2009	60	11:51	25.18	260	7.78
	MW-8	8/17/2009	74	11:56	25.33	263	7.89
	MW-8	8/17/2009	88	12:02	25.67	269	7.96
	MW-8	8/17/2009	135	12:20	purge end time		
	MW-9	8/18/2009	21	14:23	27.79	520	7.02
	MW-9	8/18/2009	45	14:27	23.79	514	6.81
	MW-9	8/18/2009	71	14:31	23.84	516	6.78
	MW-9	8/18/2009	94	14:35	23.89	513	6.73
	MW-9	8/18/2009	128	14:41	23.90	510	6.82
	MW-9	8/18/2009	153	14:45	23.83	506	6.81
MW-9	8/18/2009	192	14:52	purge end time			
MW-10	8/17/2009	7	10:25	23.66	428	7.16	

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Third Quarter 2009	MW-10	8/17/2009	12	10:27	23.83	430	6.47
	MW-10	8/17/2009	19	10:30	23.97	430	6.36
	MW-10	8/17/2009	30	10:35	24.19	435	6.52
	MW-10	8/17/2009	38	10:38	24.29	440	6.60
	MW-10	8/17/2009	45	10:41	24.40	434	6.70
	MW-10	8/17/2009	54	10:46	purge end time		
	MW-11	8/18/2009	22	9:28	24.00	687	7.11
	MW-11	8/18/2009	46	9:32	24.06	690	7.03
	MW-11	8/18/2009	77	9:37	24.17	694	7.00
	MW-11	8/18/2009	107	9:42	24.06	691	6.98
	MW-11	8/18/2009	159	9:50	24.12	692	6.95
	MW-11	8/18/2009	201	9:57	24.18	691	6.95
	MW-11	8/18/2009	267	10:08	purge end time		
	MW-12	8/14/2009	0	7:42	24.09	532	6.83
	MW-12	8/14/2009	112	7:52	24.66	539	6.86
	MW-12	8/14/2009	224	8:02	25.02	529	6.95
	MW-12	8/14/2009	336	8:12	25.10	514	6.99
	MW-12	8/14/2009	482	8:25	25.23	507	7.01
	MW-12	8/14/2009	549	8:31	purge stop		
	MW-12	8/14/2009	0	9:28	purge start		
	MW-12	8/14/2009	135	9:40	24.90	499	6.98
	MW-12	8/14/2009	248	9:50	25.04	500	7.00
	MW-12	8/14/2009	360	10:00	24.90	497	6.98
	MW-12	8/14/2009	450	10:08	purge end time		
	MW-13	8/13/2009	21	8:52	24.26	580	6.37
	MW-13	8/13/2009	73	8:57	24.15	576	6.86
	MW-13	8/13/2009	173	9:07	24.39	581	7.04
	MW-13	8/13/2009	272	9:17	24.46	584	7.10
	MW-13	8/13/2009	374	9:27	24.50	580	7.18
	MW-13	8/13/2009	474	9:37	24.50	573	7.17
	MW-13	8/13/2009	574	9:47	purge stop		
	MW-13	8/13/2009	0	10:36	purge start		
	MW-13	8/13/2009	116	10:47	24.54	559	7.21
	MW-13	8/13/2009	213	10:57	24.60	558	7.22
	MW-13	8/13/2009	312	11:07	24.62	558	7.22
	MW-13	8/13/2009	382	11:14	purge end time		
	MW-14	8/12/2009	10	15:19	25.17	825	6.47
	MW-14	8/12/2009	59	15:24	25.59	834	6.73
	MW-14	8/12/2009	100	15:29	25.60	831	6.86
	MW-14	8/12/2009	133	15:34	25.80	834	6.92
	MW-14	8/12/2009	158	15:39	26.06	843	6.98
	MW-14	8/12/2009	187	15:49	25.50	835	6.94
	MW-14	8/12/2009	206	15:59	25.87	838	7.00
	MW-14	8/12/2009	220	16:09	26.42	844	7.08
	MW-14	8/12/2009	238	16:24	27.10	850	7.13
	MW-14	8/12/2009	244	16:30	purge end time		
	MW-15	8/13/2009	10	13:18	23.32	550	7.32
	MW-15	8/13/2009	52	13:26	23.90	555	7.20
	MW-15	8/13/2009	94	13:34	23.98	558	7.16
	MW-15	8/13/2009	135	13:42	24.12	560	7.17
MW-15	8/13/2009	177	13:50	24.10	559	7.18	
MW-15	8/13/2009	218	13:58	24.03	559	7.16	
MW-15	8/13/2009	291	14:12	purge end time			

**Appendix H
2009 Field Data Summary**

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Fourth Quarter 2009	MW-1	11/2/2009	11	9:47	22.59	437	6.99
	MW-1	11/2/2009	33	9:51	22.97	440	7.07
	MW-1	11/2/2009	55	9:55	23.06	442	7.08
	MW-1	11/2/2009	77	9:59	23.07	444	7.08
	MW-1	11/2/2009	99	10:03	23.09	449	7.10
	MW-1	11/2/2009	121	10:07	23.09	446	7.11
	MW-1	11/2/2009	165	10:15	purge end time		
	MW-2	11/2/2009	19	10:57	22.95	474	7.04
	MW-2	11/2/2009	66	11:02	22.96	466	7.05
	MW-2	11/2/2009	100	11:05	22.86	463	7.03
	MW-2	11/2/2009	119	11:07	22.88	463	7.04
	MW-2	11/2/2009	133	11:09	22.88	463	7.05
	MW-2	11/2/2009	190	11:15	purge end time		
	MW-5	10/28/2009	22	15:17	18.43	372	6.80
	MW-5	10/28/2009	39	15:20	22.65	415	6.91
	MW-5	10/28/2009	66	15:25	22.82	412	6.93
	MW-5	10/28/2009	99	15:31	22.83	410	6.93
	MW-5	10/28/2009	132	15:37	22.83	410	6.93
	MW-5	10/28/2009	165	15:43	22.76	410	6.93
	MW-5	10/28/2009	204	15:50	purge end time		
	MW-6	10/28/2009	5	13:51	21.35	466	6.14
	MW-6	10/28/2009	16	13:55	21.72	477	6.35
	MW-6	10/28/2009	26	13:59	22.61	484	6.47
	MW-6	10/28/2009	36	14:03	22.68	492	6.55
	MW-6	10/28/2009	42	14:05	purge end time		
	MW-13	10/29/2009	33	13:43	23.40	532	7.27
	MW-13	10/29/2009	143	13:53	23.67	536	7.10
	MW-13	10/29/2009	253	14:03	23.61	533	7.10
	MW-13	10/29/2009	363	14:13	23.65	535	7.09
	MW-13	10/29/2009	528	14:28	purge stop		
	MW-13	10/29/2009	187	14:45	purge start		
	MW-13	10/29/2009	264	14:52	23.51	522	7.12
	MW-13	10/29/2009	418	15:06	23.79	534	7.09
	MW-13	10/29/2009	627	15:25	purge end time		
	MW-18	10/29/2009	4	8:15	27.30	419	10.04
	MW-18	10/29/2009	7	8:20	27.20	413	9.85
	MW-18	10/29/2009	8	8:23	26.20	412	9.81
	MW-18	10/29/2009	10	8:26	25.80	412	9.80
	MW-18	10/29/2009	13	8:30	25.00	413	9.79
	MW-18	10/29/2009	19	8:41	26.80	410	9.75
	MW-18	10/29/2009	25	8:50	NM	NM	NM
	MW-18	10/29/2009	34	9:06	29.20	399	9.73
MW-18	10/29/2009	40	9:16	27.70	407	9.67	
MW-18	10/29/2009	46	9:26	27.30	406	9.66	
MW-18	10/29/2009	53	9:38	27.70	407	9.63	
MW-18	10/29/2009	59	9:47	28.30	407	9.63	
MW-18	10/29/2009	65	9:57	29.30	416	9.67	
MW-18	10/29/2009	72	10:09	28.40	408	9.62	
MW-18	10/29/2009	77	10:18	29.80	407	9.58	
MW-18	10/29/2009	83	10:28	29.80	409	9.58	
MW-18	10/29/2009	89	10:38	29.20	412	9.60	
MW-18	10/29/2009	96	10:49	29.80	424	9.66	
MW-18	10/29/2009	102	10:59	29.90	428	9.64	

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Fourth Quarter 2009	MW-18	10/29/2009	108	11:09	29.30	415	9.37
	MW-18	10/29/2009	114	11:19	29.20	429	9.15
	MW-18	10/29/2009	120	11:29	28.80	423	9.15
	MW-18	10/29/2009	126	11:39	28.70	401	9.20
	MW-18	10/29/2009	132	11:49	30.70	383	9.20
	MW-18	10/29/2009	138	11:59	29.80	366	9.14
	MW-18	10/29/2009	142	12:05	purge end time		

Notes:

HH:MM = Hour : Minute

°C = Degrees Celcius

us/cm - Microsiemen per centimeter

SU = Standard unit

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

I

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix I
2009 Data Verification Summaries



GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – JANUARY 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the January 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of seventeen groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- alkalinity by Standard Method M 2320 B;
- anions (chloride, nitrate, nitrite, and sulfate) by Standard Method E300.0;
- total dissolved solids by Standard Method M 2540 C;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B and 524.2.

Additionally, six field quality assurance samples (i.e., field duplicate and trip blanks) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 DATA QUALITY ASSESMENT

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- Sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);

- surrogate recovery (organic parameters);
- laboratory control samples (LCS) Recover and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicates (MS/MSD) Recovery and RPD;
- field duplicate; and
- other applicable QC parameters.

Results that required qualification based on the data verification are summarized in Table A-2.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature ($4 \pm 2^\circ$ Celsius) at the project laboratory except for the following:

- The samples collected on January 14, 15, and 16, 2009, were received intact at 1° Celsius, 1.8° Celsius, and 0.2° Celsius, respectively. These temperature outliers did not significantly impact sample results, so data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified by the project laboratory. Target compounds were not detected in the blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency. Target compounds were not detected in the trip blanks.

2.5 SURROGATES

Surrogates for all organic parameters were recovered within acceptance limits.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits except for the following:

- For the analytical batch P9A1419, the LCS duplicate percent recovery exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P9A1540, the LCS duplicate percent recovery exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P9A2132, the RPD between the LCS and LCS duplicate recoveries exceeded the control limits for mercury. Data qualification was not required because the associated samples were not

detected for this analyte and the LCS and LCS duplicate percent recoveries were within acceptance limits.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits except for the following:

- The MS/MSD percent recoveries associated with the analytical batch P9A1419 were outside of acceptance limits for vinyl acetate. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1344 were outside of acceptance limits for calcium and sodium. Data qualification was not required because the spiked samples were not project-specific (i.e., batch QC).
- The MS/MSD percent recoveries and RPD between MS and MSD percent recoveries associated with the analytical batch P9A1347 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1545 were outside acceptance limits for silver. Samples MW-9, MW-8, MW-10, MW-4, and MW-6 were qualified "UJ" to indicate a potential low bias. MW-3 was spiked separately for this batch and the MS/MSD recoveries for this sample were within acceptance limits.

- The MS/MSD percent recoveries associated with the analytical batch P9A1634 were outside acceptance limits for calcium and sodium. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1636 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1932 were outside acceptance limits for calcium and sodium. Calcium and sodium results for samples MW-14 and MW-13 were qualified “J” to indicate a potential bias.
- The MS/MSD percent recoveries associated with the analytical batch P9A1934 were outside acceptance limits for silver. Samples MW-5, MW-14, and MW-13 were qualified “UJ” to indicate a potential low bias.
- The MS prevent recovery associated with the analytical batch P9A2634 was outside acceptance limits for isopropylbenzene. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A2323 were outside acceptance limits for silver. Data qualification was not required because the spiked sample was non project-specific (i.e., batch QC).

2.8 DUPLICATES

2.8.1 Field Duplicates

One field duplicate was collected during this monitoring event and submitted for analysis. The RPD between the field duplicate and its associated samples were calculated and presented in Table A-3. Field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

$$\begin{aligned} \% \text{ Contract Completeness} = \\ & (\text{Number of contract compliant results}/ \\ & \text{Number of reported results}) \\ & \quad \times 100 \end{aligned}$$

$$\begin{aligned} \% \text{ Technical Completeness} = \\ & (\text{Number of usable results}/\text{Number of reported results}) \\ & \quad \times 100 \end{aligned}$$

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 99 percent (out of 1,332 total results, 12 required data qualification). The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table A-4. All of the results were considered usable for the intended purposes and the project DQOs have been met.

**Table A-1
Sampling and Analysis Schedule**

Sample ID	Lab ID	Collected	Sample Type	Parameters
TB011209	PSA0574-01	1/12/2009	TB	VOCs, 1,4-Dioxane
POE	PSA0574-02	1/12/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
PW-1	PSA0574-03	1/12/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB011409	PSA0670-01	1/14/2009	TB	VOCs, 1,4-Dioxane
MW-9	PSA0670-02	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-8	PSA0670-03	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-10	PSA0670-04	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-4	PSA0670-05	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-3	PSA0670-06	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-6	PSA0670-07	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB011509	PSA0776-01	1/15/2009	TB	VOCs, 1,4-Dioxane
MW-7	PSA0776-02	1/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-15	PSA0776-03	1/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
MW-11	PSA0776-04	1/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB011609	PSA0837-01	1/16/2009	TB	VOCs, 1,4-Dioxane
MW-5	PSA0837-02	1/16/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-14	PSA0837-03	1/16/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
FD011609	PSA0837-04	1/16/2009	FD of MW-13	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
MW-13	PSA0837-05	1/16/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
MW-1	PSA1171-01	1/23/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-2	PSA1171-02	1/23/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-12	PSA1171-03	1/23/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB012309	PSA1171-04	1/23/2009	TB	VOCs

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

POE, PW-1, MW-13, MW-14, MW-15 and FD011609 were also analyzed for calcium, magnesium, potassium, and sodium.

VOCs = volatile organic compounds analyzed by USEPA Method 8260B; POE was analyzed by USEPA Method 524.2; TB011209 was analyzed by both methods.

Perchlorate = USEPA Method 314.0.

General Chemistry = alkalinity, chloride, nitrate, nitrite, sulfate, total dissolved solids

N = normal field sample

FD = field duplicate

TB = trip blank

**Table A-2
Qualified Results**

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-9	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-8	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-10	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-4	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-6	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-14	Calcium	63	mg/l	J	Qualified due to low MS/MSD recoveries
MW-14	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-14	Sodium	51	mg/l	J	Qualified due to low MS/MSD recoveries
MW-13	Calcium	33	mg/l	J	Qualified due to low MS/MSD recoveries
MW-13	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-13	Sodium	51	mg/l	J	Qualified due to low MS/MSD recoveries
MW-5	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries

Notes:

mg/L - milligrams per liter

J = estimated result

UJ = estimated reporting limit

MS/MSD = matrix spike / matrix spike duplicate

ND = analyte not detected

**Table A-3
Field Duplicate Summary**

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-13/ FD011609	Metals (mg/l)			
	Arsenic	0.0042	0.0043	2.4
	Barium	0.070	0.071	1.4
	Cadmium	<0.0010	<0.0010	NC
	Calcium	33	33	<1.0
	Chromium	0.0012	0.0012	<1.0
	Lead	<0.0010	<0.0010	NC
	Magnesium	15	15	<1.0
	Mercury	<0.00020	<0.00020	NC
	Potassium	2.7	2.7	<1.0
	Selenium	<0.0020	<0.0020	NC
	Silver	<0.0010	<0.0010	NC
	Sodium	51	50	2.0
	Other Inorganics (ug/l)			
	Perchlorate	190	180	5.4
	Volatile Organic Compounds (ug/l)			
	1,4-Dioxane	<2.0	<2.0	NC
	All Other Analytes	ND	ND	NC
	General Chemistry (mg/l)			
	Alkalinity as CaCO ₃	230	220	4.4
	Bicarbonate Alkalinity as CaCO ₃	230	220	4.4
	Carbonate Alkalinity as CaCO ₃	<6.0	<6.0	NC
	Chloride	15	15	<1.0
	Hydroxide Alkalinity as CaCO ₃	<6.0	<6.0	NC
	Nitrate-N	1.2	1.2	<1.0
	Nitrite-N	<0.20	<0.20	NC
	Sulfate	20	20	<1.0
Total Dissolved Solids	260	260	<1.0	

Notes:

RPD = Relative percent difference; [(difference)/(average)]*100

ND = No analytes detected

NC = Not calculated

Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

**Table A-4
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds (8260)					
All Analytes	16	16	100	16	100
1,4-Dioxane	17	17	100	17	100
Volatile Organic Compounds (524.2)					
All Analytes	1	1	100	1	100
Metals					
Arsenic	17	17	100	17	100
Barium	17	17	100	17	100
Cadmium	17	17	100	17	100
Calcium	5	3 ^a	60	5	100
Chromium	17	17	100	17	100
Lead	17	17	100	17	100
Magnesium	5	5	100	5	100
Mercury	17	17	100	17	100
Potassium	5	5	100	5	100
Selenium	17	17	100	17	100
Silver	17	9 ^a	53	17	100
Sodium	5	3 ^a	60	5	100
General Chemistry					
Alkalinity as CaCO ₃	3	3	100	3	100
Bicarbonate Alkalinity as CaCO ₃	3	3	100	3	100
Carbonate Alkalinity as CaCO ₃	3	3	100	3	100
Chloride	3	3	100	3	100
Hydroxide Alkalinity as CaCO ₃	3	3	100	3	100
Nitrate-N	3	3	100	3	100
Nitrite-N	3	3	100	3	100
Sulfate	3	3	100	3	100
Total Dissolved Solids	3	3	100	3	100
Other Inorganics					
Perchlorate	17	17	100	17	100

Notes:

Number of samples used in completeness calculations includes field samples but not field duplicates or trip blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to matrix spike/matrix spike duplicate outlier.

DATA VERIFICATION SUMMARY FOR PERCHLORATE COMPARISON GROUNDWATER MONITORING SAMPLES – JANUARY 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the January 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of ten groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody;
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Samples (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicates (MS/MSD) Recovery and RPD; and
- field duplicate.

Results did not require qualification based on the data verification.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature ($4\pm 2^{\circ}$ Celsius) at the project laboratory except for the following:

- Two of the three coolers delivered to the laboratory on January 14, 2009 were received intact at 0.8° Celsius and 1.2° Celsius. These temperature outliers did not significantly impact sample results, so data qualification was not required.
- The cooler delivered to the laboratory on January 16, 2009 was received intact at 0.2° Celsius. This temperature outlier did not significantly impact sample results, so data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified by the project laboratory. Target compounds were not detected in the blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified “J”.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified “J”.
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =

$$\left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table B-2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table B-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-9	PSA0671-01	1/14/2008	N	Perchlorate by USEPA Method 332.0
MW-8	PSA0672-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-10	PSA0673-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-4	PSA0674-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-3	PSA0675-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-7	PSA0777-01	1/15/2009	N	Perchlorate by USEPA Method 332.0
MW-15	PSA0778-01	1/15/2009	N	Perchlorate by USEPA Method 332.0
MW-11	PSA0779-01	1/15/2009	N	Perchlorate by USEPA Method 332.0
MW-14	PSA0843-01	1/16/2009	N	Perchlorate by USEPA Method 332.0
MW-12	PSA1174-01	1/23/2009	N	Perchlorate by USEPA Method 332.0

Notes:

N = normal field sample

**Table B-2
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	10	10	100	10	100

Notes:

Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – APRIL 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the April 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of six groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B.

Additionally, two field quality assurance samples (i.e., field duplicate and trip blank) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature ($4\pm 2^{\circ}$ Celsius) at the project laboratory.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency. Target compounds were not detected in the trip blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified “J”.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- For the analytical batch P9D2415, the LCS and LCS duplicate percent recoveries exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified “J”.
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- The MS and MS duplicate percent recoveries associated with the analytical batch P9D2415 were outside of acceptance limits for vinyl acetate. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS duplicate percent recoveries associated with the analytical batch P9D0776 were outside of acceptance limits for mercury. Data qualification was not required because the spiked samples were not project-specific (i.e., batch QC).
- The MS and MS duplicate percent recoveries associated with the analytical batch P9D1645 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS and MS duplicate percent recoveries associated with the analytical batch P9D1603 were outside acceptance limits for calcium and sodium. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table A-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

**Table A-1
Sampling and Analysis Schedule**

Sample ID	Lab ID	Collected	Sample Type	Parameters
TB041509	PSD0912-01	4/15/2009	TB	VOCs, 1,4-Dioxane
FD041509	PSD0912-02	4/15/2009	FD of MW-1	Perchlorate
MW-6	PSD0912-03	4/15/2009	N	Perchlorate
MW-5	PSD0912-04	4/15/2009	N	Perchlorate
MW-1	PSD0912-05	4/15/2009	N	Perchlorate
MW-2	PSD0912-06	4/15/2009	N	Perchlorate
PW-1	PSD0912-07	4/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-13	PSDI030-01	4/16/2009	N	Perchlorate

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, calcium, magnesium, potassium, and sodium.

VOCs = volatile organic compounds analyzed by USEPA Method 8260B

Perchlorate = USEPA Method 314.0.

N = normal field sample

FD = field duplicate

TB = trip blank

**Table A-2
Field Duplicate Summary**

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-1/ FD041509	Inorganics (ug/l)			
	Perchlorate	76	75	1.3

Notes:

RPD = Relative percent difference; [(difference)/(average)]*100

ND = No analytes detected

NC = Not calculated

Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

**Table A-3
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds (8260)					
All Analytes	1	1	100	1	100
1,4-Dioxane	1	1	100	1	100
Metals					
Arsenic	1	1	100	1	100
Barium	1	1	100	1	100
Cadmium	1	1	100	1	100
Calcium	1	1	100	1	100
Chromium	1	1	100	1	100
Lead	1	1	100	1	100
Magnesium	1	1	100	1	100
Mercury	1	1	100	1	100
Potassium	1	1	100	1	100
Selenium	1	1	100	1	100
Silver	1	1	100	1	100
Sodium	1	1	100	1	100
Other Inorganics					
Perchlorate	6	6	100	6	100

Notes:

Number of samples used in completeness calculations includes field samples but not field duplicates or trip blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – JULY/AUGUST 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the July and August 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 20 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B.

Additionally, four field quality assurance samples (i.e., field duplicates and trip blanks) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);
- surrogate recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD; and
- field duplicate.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable.

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature ($4\pm 2^{\circ}$ Celsius) at the project laboratory with the following exceptions:

- Samples collected on August 14, 17, and 18, 2009, were received at 1.1, 1.6, and 0.9 degrees Celsius, respectively. These temperature outliers did not significantly impact the sample results; therefore, data qualification was not required.
- Samples collected on September 14, 2009 were received at 12.4 degrees Celsius. Samples were delivered less than two hours after collection; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency as specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004). Target compounds were not detected in the trip blanks.

2.5 SURROGATE RECOVERY

Surrogate recoveries for the organic analyses were within laboratory acceptance limits.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- For the analytical batch P9G1704, the LCS and LCS duplicate percent recoveries exceeded the control limits for iodomethane. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P9G2041, the LCS and LCS duplicate percent recoveries exceeded the control limits for acetone, and the LCS percent recovery exceeded the control limit for 2-butanone. Data qualification was

not required because the associated samples were not detected for these analytes.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- The MS and MS duplicate percent recoveries associated with the analytical batch P9G1704 were outside of acceptance limits for several analytes. Data qualification was not required because the only associated sample was a trip blank.
- The MS and MS duplicate percent recoveries associated with the analytical batch P9G0639 were outside acceptance limits for sodium. Data qualification was not required because the spiked sample was non project-specific (i.e., batch QC).
- The MS and MS duplicate percent recoveries associated with the analytical batch P9G0732 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).

2.8 DUPLICATES

2.8.1 Field Duplicates

One field duplicate was collected during this monitoring event and submitted for analysis. The RPD between the field duplicate and its associated sample was calculated and presented in Table A-2. The field duplicate was evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table A-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

**Table A-1
Sampling and Analysis Schedule**

Sample ID	Lab ID	Collected	Sample Type	Parameters
PW-1	PSG0211-01	7/6/2009	N	Perchlorate, VOCs, 1,4-Dioxane, Metals
TB070609-A	PSG0211-02	7/6/2009	TB	VOCs
TB070609-B	PSG0211-03	7/6/2009	TB	1,4-Dioxane
MW-13	PSH0759-01	8/13/2009	N	Perchlorate
MW-15	PSH0759-02	8/13/2009	N	Perchlorate
MW-14	PSH0759-03	8/13/2009	N	Perchlorate
TB081409	PSH0843-01	8/14/2009	TB	VOCs, 1,4-Dioxane
FD081409	PSH0843-02	8/14/2009	FD of MW-2	Perchlorate, VOCs, 1,4-Dioxane
MW-12	PSH0843-03	8/14/2009	N	Perchlorate
MW-1	PSH0843-04	8/14/2009	N	Perchlorate, VOCs, 1,4-Dioxane
MW-2	PSH0843-05	8/14/2009	N	Perchlorate, VOCs, 1,4-Dioxane
MW-5	PSH0903-01	8/17/2009	N	Perchlorate
MW-4	PSH0987-01	8/18/2009	N	Perchlorate
MW-3	PSH0987-02	8/18/2009	N	Perchlorate
MW-10	PSH0987-03	8/18/2009	N	Perchlorate
MW-11	PSH0987-04	8/18/2009	N	Perchlorate
MW-7	PSH0987-05	8/18/2009	N	Perchlorate
MW-8	PSH0987-06	8/18/2009	N	Perchlorate, Metals
MW-6	PSH0987-07	8/18/2009	N	Perchlorate
MW-9	PSH0987-08	8/18/2009	N	Perchlorate
MW-18-195	PSI0277-01	9/3/2009	N	Perchlorate
MW-18-PT	PSI0716-01	9/14/2009	N	Perchlorate
MW-18-295	PSI0717-01	9/14/2009	N	Perchlorate
MW-18-390	PSI0888-01	9/16/2009	N	Perchlorate

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. In addition, calcium, magnesium, potassium, and sodium were analyzed for PW-1.

VOCs = volatile organic compounds analyzed by USEPA Method 8260B; Sample POE was analyzed by USEPA Method 524.2.

N = normal field sample

TB = trip blank

**Table A-2
Field Duplicate Summary**

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-2/ FD081409	Volatile Organic Compounds (ug/l)			
	1,4-Dioxane	2.7	2.8	3.6
	All Other Analytes	ND	ND	NC
	Other Inorganics (ug/l)			
	Perchlorate	95	96	1.0

Notes:

RPD = Relative percent difference; $[(\text{difference})/(\text{average})]*100$

ND = No analytes detected

NC = Not calculated

Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

**Table A-3
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 314.0	20	20	100	20	100
Volatile Organic Compounds (8260)					
All analytes	3	3	100	3	100
1,4-Dioxane	3	3	100	3	100
Metals					
Arsenic	2	2	100	2	100
Barium	2	2	100	2	100
Cadmium	2	2	100	2	100
Calcium	1	1	100	1	100
Chromium	2	2	100	2	100
Lead	2	2	100	2	100
Magnesium	1	1	100	1	100
Mercury	2	2	100	2	100
Potassium	1	1	100	1	100
Selenium	2	2	100	2	100
Silver	2	2	100	2	100
Sodium	1	1	100	1	100

Notes:

Number of samples used in completeness calculations includes field samples, but not field duplicates or blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR PERCHLORATE COMPARISON GROUNDWATER MONITORING SAMPLES – AUGUST 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the August 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 10 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0.

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody
- sample preservation and Temperature Upon Laboratory Receipt;
- holding Times;
- method blanks;
- Laboratory Control Sample (LCS) Recovery;
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD; and
- other applicable QC parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.

- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event that required data qualification are provided in Table B-2.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature ($4\pm 2^\circ$ Celsius) at the project laboratory except the following:

- Samples collected on August 18, 2009 were received at 0.1 degrees Celsius. The temperature outlier did not significantly impact the sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limit set by the respective USEPA method.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.5 LCS RECOVERY AND RPD

LCS percent recoveries were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified “J”.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

LCS percent recoveries were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified “J”.
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits.

2.7 OTHER APPLICABLE QC PARAMETERS

2.7.1 Internal Standard Recovery

The Internal Standard recovery was outside of method limits for the analytical batch PH24075, and matrix interference was confirmed. Associated samples were qualified “UJ” and “J” to indicate a potential bias.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 0 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table B-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table B-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-14	PSH0760-01	8/13/2009	N	Perchlorate by USEPA Method 332.0
MW-15	PSH0761-01	8/13/2009	N	Perchlorate by USEPA Method 332.0
MW-12	PSH0845-01	8/14/2009	N	Perchlorate by USEPA Method 332.0
MW-9	PSH0988-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-8	PSH0989-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-7	PSH0990-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-3	PSH0991-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-4	PSH0992-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-10	PSH0993-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-11	PSH0994-01	8/18/2009	N	Perchlorate by USEPA Method 332.0

Notes:

N = normal field sample

**Table B-2
Qualified Results**

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-14	Perchlorate	1.1	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-15	Perchlorate	0.83	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-12	Perchlorate	0.78	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-9	Perchlorate	0.78	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-8	Perchlorate	1.0	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-7	Perchlorate	0.70	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-3	Perchlorate	0.64	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-4	Perchlorate	0.71	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-10	Perchlorate	0.93	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.
MW-11	Perchlorate	2.1	ug/l	J	Qualified due to Internal Standard recovery outside the method limits.

Notes:

ug/L - micrograms per liter

J = estimated result

**Table B-3
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	11	0	0	11	100

Notes:

Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – OCTOBER/NOVEMBER 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the October and November 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 7 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Methods 314.0 and 332.0;
- metals by USEPA Methods 200.7, 200.8, and 245.1;
- volatile organic compounds (VOCs) by USEPA Method 8260B;
- alkalinity by Method M2320 B; and
- chloride and sulfate by USEPA Method 300.0.

Additionally, two field quality assurance samples (i.e., field duplicate and trip blank) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);
- surrogate recovery (for organic parameters);

- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD; and
- field duplicate.

Qualified results are summarized in Table A-2.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received below the correct temperature ($4\pm 2^{\circ}$ Celsius) at the project laboratory. Samples received by the laboratory on October 30, 2009 and November 2, 2009 had a temperature of 1.0° and 0.4° Celsius, respectively. These temperature outliers did not significantly impact sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency. Target compounds were not detected in the method blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency. Target compounds were not detected in the trip blank.

2.5 SURROGATE RECOVERY

Surrogates for all organic parameters were recovered within acceptance limits, with one exception. For sample PW-1, the surrogate recovery for toluene-d8 was below acceptance limits. The associated analytes were qualified “J” and “UJ” to indicate a potential low bias.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified “J”.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits except for the following:

- The LCSD for analytical batch P9K0976 had high recovery for cis-1,3-dichloropropene (123 percent). Data qualification was not required because the analyte was not detected in the associated samples.
- The LCSD for analytical batch P9K0822 had high recovery for surrogate dibromofluoromethane (135 percent). Data qualification was not required because the LCS, MS, and MSD were all within control limits.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD duplicate were within acceptance limits except for the following:

- The MS/MSD for analytical batch P9K0708 had low recoveries for 19 analytes and toluene-d8 surrogate (6 percent). Qualified data are provided in Table A-2.
- The MS/MSD for analytical batch P9K0263 had recoveries for calcium (-70 and -79 percent), magnesium (8 and 4 percent) and sodium (301 and 266 percent) that were outside acceptance limits. Data were qualified "J" for sample MW-18 for calcium and magnesium to indicate a potential low bias. Data qualification was not required for sodium because the result concentration was greater than four times the spiked concentration.
- The MS for analytical batch P9K0263 had low recovery for potassium (131 percent). Data qualification was not required because the MSD was within acceptance limits.
- The MS for analytical batch P9K0264 had low recovery (39 percent) and high RPD (56 percent) for silver. Data qualification was not required because the MSD was within acceptance limits.

2.8 DUPLICATES

2.8.1 Field Duplicates

One field duplicate was collected during each performance monitoring event and submitted for analysis. The RPDs between the field duplicate and its associated sample

were calculated and are presented in Table A-3. The field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

$$\begin{aligned} & \% \text{ Contract Completeness} = \\ & \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \\ & \quad \times 100 \end{aligned}$$

$$\begin{aligned} & \% \text{ Technical Completeness} = \\ & \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \\ & \quad \times 100 \end{aligned}$$

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS/LCSD attained for the field samples was 82.4 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table A-4. All of the results were considered usable for the intended purposes and the project DQOs have been met.

**Table A-1
Sampling and Analysis Schedule**

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-5	PSJ1782-01	10/28/2009	N	Perchlorate
MW-18	PSJ1782-02	10/30/2009	N	VOCs, Metals, Perchlorate, Inorganics
MW-13	PSJ1782-03	10/29/2009	N	Perchlorate
TB10309	PSJ1782-04	10/30/2009	TB	VOCs
FD102909	PSJ1782-05	10/29/2009	FD of MW-13	Perchlorate
MW-6	PSJ1782-06	10/30/2009	N	Perchlorate
PW-1	PSJ1782-07	10/30/2009	N	VOCs, Metals, Perchlorate
MW-1	PSK0024-01	11/2/2009	N	Perchlorate
MW-2	PSK0024-02	11/2/2009	N	Perchlorate

Notes:

N = normal field sample

FD = field duplicate

TB = trip blank

Inorganics = alkalinity, chloride, sulfate

Metals = arsenic, barium, cadmium, calcium, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium

VOCs = volatile organic compounds, including 1,4-dioxane, by EPA Method 8260B.

Perchlorate = EPA Method 314.0. MW-18 was also analyzed by EPA Method 332.0.

**Table A-2
Qualified Results**

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-18	Calcium	25	mg/l	J	Qualified due to low MS/MSD recovery
MW-18	Magnesium	12	mg/l	J	Qualified due to low MS/MSD recovery
PW-1	Bromoform	1.3	ug/l	J	Qualified due to low surrogate recovery
PW-1	n-Butylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	sec-Butylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	tert-Butylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,1-Dichloroethene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,1-Dichloropropene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	cis-1,3-dichloropropene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	trans-1,3-dichloropropene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Ethylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Iodomethane	<2.5	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Isopropylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	p-Isopropyltoluene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Naphthalene	<2.5	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	n-Propylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Styrene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Toluene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,2,4-Trimethylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,3,5-Trimethylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Vinyl acetate	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Vinyl chloride	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	All other analytes ^a	ND	ug/l	UJ	Qualified due to low surrogate recovery

Notes:

ug/l = microgram per liter

J = Estimated result

UJ = Estimated detection limit

MS/MSD = Matrix spike/matrix spike duplicate samples

^a Does not include acetone and total xylenes

Table A-3
Field Duplicate Summary

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-13 / FD102908	Inorganics (ug/l) Perchlorate by EPA 314.0	30	25	18.2

Notes:

RPD = Relative percent difference; [(difference)/(average)]*100

**Table A-4
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate (Method 314.0)	7	7	100	7	100
Perchlorate (Method 332.0)	1	1	100	1	100
All other analytes	3	3	100	3	100
Volatile Organic Compounds (8260)					
1,1-Dichloroethene	2	1 ^a	50	2	100
1,1-Dichloropropene	2	1 ^{a,b}	50	2	100
1,2,4-Trimethylbenzne	2	1 ^{a,b}	50	2	100
1,3,5-Trimethylbenzne	2	1 ^{a,b}	50	2	100
1,4-Dioxane	2	2	100	2	100
Bromoform	2	1 ^{a,b}	50	2	100
cis-1,3-dichloropropene	2	1 ^{a,b}	50	2	100
Ethylbenzene	2	1 ^{a,b}	50	2	100
Iodomethane	2	1 ^{a,b}	50	2	100
Isopropylbenzene	2	1 ^{a,b}	50	2	100
Naphthalene	2	1 ^{a,b}	50	2	100
n-Butylbenzene	2	1 ^{a,b}	50	2	100
n-Propylbenzene	2	1 ^{a,b}	50	2	100
p-Isopropyltoluene	2	1 ^{a,b}	50	2	100
sec-Butylbenzene	2	1 ^{a,b}	50	2	100
Styrene	2	1 ^{a,b}	50	2	100
tert-Butylbenzene	2	1 ^{a,b}	50	2	100
Toluene	2	1 ^{a,b}	50	2	100
trans-1,3-dichloropropene	2	1 ^{a,b}	50	2	100
Vinyl acetate	2	1 ^{a,b}	50	2	100
Vinyl chloride	2	1 ^{a,b}	50	2	100
All other analytes	46	46	100	46	100
Metals					
Calcium	2	1 ^b	50	2	100
Magnesium	2	1 ^b	50	2	100
All other analytes	22	22	100	22	100
TOTAL	125	103	82.4	125	100

Notes:

Number of samples used in completeness calculations includes field samples, but not field duplicates or blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

^a Qualified due to low surrogate recovery.

^b Qualified due to low MS/MSD recovery

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – JANUARY 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the January 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 4 samples were collected and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO-15

Table C-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks); and
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD).

Results did not require qualification based on the data verification.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature (ambient) at the project laboratory.

2.2 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.3 BLANK CONTAMINATION

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

2.4 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits with the following exceptions:

- The LCS duplicate for analytical batch P9A2115 had high recovery for benzyl chloride. Data qualification was not required because the associated samples were not detected for this analyte.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

$$\begin{aligned} \% \text{ Contract Completeness} = \\ & \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \\ & \times 100 \end{aligned}$$

$$\begin{aligned} \% \text{ Technical Completeness} = \\ & \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \\ & \times 100 \end{aligned}$$

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, and LCS/LCSD attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table C-2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PSA0871-01	1/19/2009	N	VOCs
SVMW-1-90-100	PSA0871-02	1/19/2009	N	VOCs
SVMW-1-140-150	PSA0871-03	1/19/2009	N	VOCs
SVMW-1-190-200	PSA0871-04	1/19/2009	N	VOCs

**Table C-2
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
All analytes	4	4	100	4	100

Notes:

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – APRIL 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the April 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of four samples were collected and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO-15

Table C-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD).

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable.

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature (ambient) at the project laboratory.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory’s QAPP. Target compounds were not detected in method blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified “J”.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

LCS/LCSD percent recoveries and RPDs were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table C-2. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PSD0832-01	4/14/2009	N	VOCs
SVMW-1-90-100	PSD0832-02	4/14/2009	N	VOCs
SVMW-1-140-150	PSD0832-03	4/14/2009	N	VOCs
SVMW-1-190-200	PSD0832-04	4/14/2009	N	VOCs

**Table C-2
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
All analytes	4	4	100	4	100

Notes:

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – AUGUST 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the August 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of four soil-gas samples were collected during the monitoring event and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO15.

Table C-1 presents a summary of the sample identifications, laboratory sample identifications, and requested analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks, common laboratory contaminants);
- Surrogate Recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD); and
- other applicable QC parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable.

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

Results from this monitoring/investigation event that required data qualification are provided in Table C-2.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the respective project laboratory. The samples were received by the laboratory at the correct temperature (20 degrees Celsius).

2.3 HOLDING TIMES

All samples were analyzed within the method-specific holding time limits.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory’s QAPP. Target compounds were not detected in the method blanks.

2.4.2 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, and methylene chloride. Analytical results are qualified if the detected sample concentration is less than 10 times the method reporting limit. Common lab contaminant compounds were detected in the samples and were qualified “J” to indicate a potential bias.

2.5 SURROGATE RECOVERY

Surrogate recoveries for the organic analyses were within laboratory acceptance limits.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- The LCS and LCSD recoveries for 1,2,4-trichlorobenzene (138/150 percent) were above acceptance limits (65 to 135 percent) for the analytical batch P9I1029. Data qualification was not required because the associated samples were not detected for this analyte.
- The LCS and LCSD recoveries for 1,2,4-trichlorobenzene (156/161 percent) were above acceptance limits (65 to 135 percent) for the analytical batch P9I1102. Data qualification was not required because the associated samples were not detected for this analyte.
- The LCS recovery for 1,2,4-trimethylbenzene (136 percent) was above acceptance limits (65 to 135 percent) for the analytical batch P9I1102. Data qualification was not required because the LCSD recovery was within acceptance limits and the LCS recovery was barely outside acceptance limits.
- The LCS/LCSD RPD for 2-propanol (32 percent) was above its acceptance limit (25 percent) for analytical batch P9I1405. Data qualification was not required because the LCS/LCSD recoveries were within acceptance limits and the associated samples were not detected for this analyte.

2.7 OTHER APPLICABLE QC PARAMETERS

2.7.1 Calibration Verification Recovery

The calibration verification recovery was above the method control limit for 1,2,4-trichlorobenzene and 1,2,4-trimethylbenzene. Data qualification was not required because the analytes were not detected and data was not impacted.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 97 percent (8 out of a total 248 results required qualification). The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table C-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-90-100	PSH1061-01	8/19/2009	N	VOCs
SVMW-1-140-150	PSH1061-02	8/19/2009	N	VOCs
SVMW-1-190-200	PSH1061-03	8/19/2009	N	VOCs
SVMW-1-30-40	PSH1061-04	8/19/2009	N	VOCs

**Table C-2
Qualified Results**

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
SVMW-1-90-100	Acetone	240	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-90-100	2-Butanone	35	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-90-100	Methylene Chloride	3.7	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-140-150	Acetone	390	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-140-150	2-Butanone	29	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-190-200	Cyclohexane	0.76	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-30-40	Acetone	610	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-30-40	Methylene Chloride	3.2	ppbv	J	Qualified due to common laboratory contaminant

Notes:

ppbv = parts per billion by volume

J = estimated result

**Table C-3
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
Acetone	4	1 ^a	100	4	100
2-Butanone	4	2 ^a	100	4	100
Cyclohexane	4	3 ^a	100	4	100
Methylene Chloride	4	2 ^a	100	4	100
All analytes	4	4	100	4	100

Notes:

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to common laboratory contaminant

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – OCTOBER 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the October 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 4 samples were collected and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO-15

Table C-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks, common laboratory contaminants); and
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD).

Qualified results are summarized in Table C-2.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature (ambient) at the project laboratory.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blanks

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

2.4.2 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, and methylene chloride. Analytical results are qualified if the detected sample concentration is less than 10 times the method reporting limit. Common lab contaminant compounds were not detected in the samples associated with the monitoring events except for the following:

- Acetone was detected in samples SVMW-1-30-40, SVMW-1-140-150, and SVMW-1-190-200 collected October 27, 2009. Data were qualified “J” to indicate a potential bias.
- Methylene chloride was detected in samples SVMW-1-30-40 and SVMW-1-90-100 collected October 27, 2009. Data were qualified “J” to indicate a potential bias.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicates were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

$$\begin{aligned} & \% \text{ Contract Completeness} = \\ & \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \\ & \quad \times 100 \end{aligned}$$

$$\begin{aligned} & \% \text{ Technical Completeness} = \\ & \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \\ & \quad \times 100 \end{aligned}$$

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, and LCS/LCSD attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 98 percent. The completeness results are provided in Table C-3. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PSJ1585-01	10/27/2009	N	VOCs
SVMW-1-90-100	PSJ1585-02	10/27/2009	N	VOCs
SVMW-1-140-150	PSJ1585-03	10/27/2009	N	VOCs
SVMW-1-190-200	PSJ1585-04	10/27/2009	N	VOCs

Notes:

N = Normal sample

VOCs = volatile organic compounds, analyzed by USEPA Method TO-15

**Table C-2
Qualified Results**

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
SVMW-1-30-40	Acetone	1500	ug/m ³	J	Qualified due to presence of common laboratory contaminant
SVMW-1-30-40	Methylene chloride	270	ug/m ³	J	Qualified due to presence of common laboratory contaminant
SVMW-1-90-100	Methylene chloride	660	ug/m ³	J	Qualified due to presence of common laboratory contaminant
SVMW-1-140-150	Acetone	1400	ug/m ³	J	Qualified due to presence of common laboratory contaminant
SVMW-1-190-200	Acetone	360	ug/m ³	J	Qualified due to presence of common laboratory contaminant

Notes:

ug/m³ = microgram per cubic meter

J = Estimated result

**Table C-3
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
Acetone	4	1 ^a	25	4	100
Methylene chloride	4	2 ^a	50	4	100
All other analytes	240	240	100.0	240	100
TOTAL	248	243	98.0	248	100

Notes:

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

^a Qualified due to presence of common laboratory contaminant.

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS – APRIL 2009

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the April 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 12 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 314.0; and
- perchlorate by USEPA Method 332.0.

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD); and
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as “J” or UJ” are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature ($4\pm 2^{\circ}$ Celsius) at the project laboratory except for the following:

- Two coolers containing multiple samples were received intact at 0.2° Celsius and 1.0° Celsius. These temperature outliers did not significantly impact sample results and data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory’s QAPP. Target compounds were not detected in method blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified “J”.
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

LCS/LCSD percent recoveries and RPDs were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified “J”.
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\% \text{ Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table B-2. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

**Table B-1
Sampling and Analysis Schedule**

Sample ID	Lab ID	Collected	Sample Type	Parameters
122 W Yearling	PSD1036-01	4/16/2009	N	Perchlorate ¹
	PSD1015-01	4/16/2009	N	Perchlorate ²
106 W Yearling	PSD1025-01	4/16/2009	N	Perchlorate ¹
	PSD1014-01	4/16/2009	N	Perchlorate ²
18 E Yearling	PSD1035-01	4/16/2009	N	Perchlorate ¹
	PSD1024-01	4/16/2009	N	Perchlorate ²
204 E Yearling	PSD1026-01	4/16/2009	N	Perchlorate ¹
	PSD1023-01	4/16/2009	N	Perchlorate ²
218 E Yearling	PSD1027-01	4/16/2009	N	Perchlorate ¹
	PSD1022-01	4/16/2009	N	Perchlorate ²
25825 N 1st Place	PSD1031-01	4/16/2009	N	Perchlorate ¹
	PSD1017-01	4/16/2009	N	Perchlorate ²
25903 N 2nd St	PSD1033-01	4/16/2009	N	Perchlorate ¹
	PSD1019-01	4/16/2009	N	Perchlorate ²
412 E Yearling	PSD1028-01	4/16/2009	N	Perchlorate ¹
	PSD1021-01	4/16/2009	N	Perchlorate ²
520 E Yearling	PSD1029-01	4/16/2009	N	Perchlorate ¹
	PSD1016-01	4/16/2009	N	Perchlorate ²
616/604 E Yearling	PSD1034-01	4/16/2009	N	Perchlorate ¹
	PSD1020-01	4/16/2009	N	Perchlorate ²
424 E Yearling	PSD1032-01	4/16/2009	N	Perchlorate ¹
	PSD1018-01	4/16/2009	N	Perchlorate ²
16 E Yearling	PSD1070-01	4/17/2009	N	Perchlorate ¹
	PSD1068-01	4/17/2009	N	Perchlorate ²

Notes:

¹ Perchlorate by USEPA Method 314.0

² Perchlorate by USEPA Method 332.0

N = normal field sample

**Table B-2
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Perchlorate (USEPA Method 314.0)					
Perchlorate	12	12	100	12	100
Perchlorate (USEPA Method 332.0)					
Perchlorate	12	12	100	12	100

Notes:

Number of samples used in completeness calculations includes field samples but not field duplicates or trip blanks.

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS – OCTOBER 2009

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the October 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 12 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 314.0; and
- perchlorate by USEPA Method 332.0

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD); and
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD.

Results did not require qualification based on the data verification.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

- J The analyte was positively identified; however, the result should be considered an estimated value.
- UJ The reporting limit is considered an estimated value.
- R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received below the correct temperature ($4\pm 2^{\circ}$ Celsius) at the project laboratory. Samples received by the laboratory on October 30, 2009 had a temperature of 1.0° Celsius. These temperature outliers did not significantly impact sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified by the project laboratory. Target compounds were not detected in the method blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".

- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified (“UJ” for non-detects and “J” for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified “R”.

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified “J”.
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

$$\begin{aligned} \% \text{ Contract Completeness} = \\ & \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}} \right) \\ & \quad \times 100 \end{aligned}$$

$$\begin{aligned} \% \text{ Technical Completeness} = \\ & \left(\frac{\text{Number of usable results}}{\text{Number of reported results}} \right) \end{aligned}$$

x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table B-2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

**Table B-1
Sampling and Analysis Schedule**

Sample ID	Lab ID	Collected	Sample Type	Parameters
122 W. Yearling	PSJ1794-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1806-01	10/30/2009	N	Perchlorate by EPA Method 332.0
16 E. Yearling	PSJ1791-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1803-01	10/30/2009	N	Perchlorate by EPA Method 332.0
18 E. Yearling	PSJ1792-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1804-01	10/30/2009	N	Perchlorate by EPA Method 332.0
204 E. Yearling	PSJ1783-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1795-01	10/30/2009	N	Perchlorate by EPA Method 332.0
218 E. Yearling	PSJ1789-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1801-01	10/30/2009	N	Perchlorate by EPA Method 332.0
25825 N. 1st Place	PSJ1784-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1796-01	10/30/2009	N	Perchlorate by EPA Method 332.0
25903 N. 2nd Street	PSJ1790-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1802-01	10/30/2009	N	Perchlorate by EPA Method 332.0
412 E. Yearling	PSJ1788-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1800-01	10/30/2009	N	Perchlorate by EPA Method 332.0
424 E. Yearling	PSJ1787-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1799-01	10/30/2009	N	Perchlorate by EPA Method 332.0
520 E. Yearling	PSJ1786-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1798-01	10/30/2009	N	Perchlorate by EPA Method 332.0
616/604 E. Yearling	PSJ1785-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1797-01	10/30/2009	N	Perchlorate by EPA Method 332.0
8 W. Yearling	PSJ1793-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1805-01	10/30/2009	N	Perchlorate by EPA Method 332.0

Notes:

N = Normal sample

**Table B-2
Completeness Summary**

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate (Method 314.0)	12	12	100	12	100
Perchlorate (Method 332.0)	12	12	100	12	100

Notes:

Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100

Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

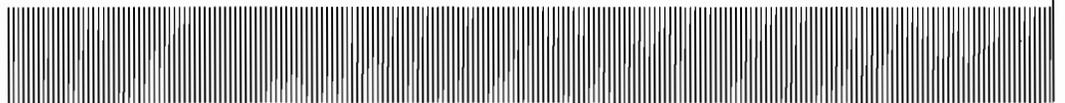
J

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix J
Laboratory Reports (CD)



**MALCOLM
PIRNIE**

INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

K

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix K
Geophysical Data (CD)

