

APPENDIX E

**WELL DEVELOPMENT, SLUG TEST, AND
GROUNDWATER SAMPLING LOGS**

Appendix E

Well Development Logs

LL1-MW-078	E-5
LL1-MW-079	E-6
LL1-MW-080	E-7
LL1-MW-081	E-8
LL1-MW-082	E-9
LL1-MW-083	E-10
LL1-MW-084	E-11
LL1-MW-085	E-12

Slug Test Solutions

LL1-MW-078	E-15
LL1-MW-079	E-16
LL1-MW-080	E-17
LL1-MW-081	E-18
LL1-MW-082	E-19
LL1-MW-083	E-20
LL1-MW-084	E-21
LL1-MW-085	E-22

1999 Groundwater Sampling Logs

LL1-MW-059	E-23
LL1-MW-060	E-29
LL1-MW-064	E-34
LL1-MW-065	E-39
LL1-MW-067	E-45
LL1-MW-078	E-50
LL1-MW-079	E-55
LL1-MW-080	E-60
LL1-MW-081	E-65
LL1-MW-082	E-70
LL1-MW-083	E-75
LL1-MW-084	E-80
LL1-MW-085	E-85

2000 Groundwater Sampling Logs

LL1-MW-059	E-93
LL1-MW-060	E-97
LL1-MW-063	E-101
LL1-MW-064	E-106
LL1-MW-065	E-110
LL1-MW-067	E-114
LL1-MW-078	E-118
LL1-MW-079	E-122
LL1-MW-080	E-126
LL1-MW-081	E-130
LL1-MW-082	E-134
LL1-MW-083	E-138
LL1-MW-084	E-142
LL1-MW-085	E-145

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Well Development Forms

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WELL DEVELOPMENT RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

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WELL NUMBER AND LOCATION: LL MW078 - ROAP-LL-1

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
8/28/99	0920	0	13.2	0.466	5.45	>999	0	0	
	0935	10	12.7	0.280	4.77	>999	10	2	
	0940	5	12.0	0.285	4.56	>999	15	3	
	0950	5	11.5	0.282	4.28	>999	20	4	
	0955	5	11.5	0.286	4.18	416	25	5	
	1000	5	11.6	0.285	4.20	132	30	6	
	1020	15	11.5	0.284	3.96	>999	45	9	
	1030	5	11.6	0.289	4.00	117	50	10	
	1035	5	11.5	0.290	3.97	52	55	11	
	1037	5	-	-	-	24	60	12	Pump Rate = 1 gpm
	1045	15	11.5	0.291	4.05	10	75	15	
	1047 - Pump OFF								

RECORDED BY: Mauro C. Clough
(Signature and Date)

QA CHECK BY:

Mauro C. Clough 11/9/99
(Signature and Date)

DELIVERY ORDER NO: 003

WELL NUMBER AND LOCATION: LL1Mw079

[illegible]

Mauro C. Clough 31 Aug. 1999
(Signature and Date)

(Signature and Date)

(Signature and Date)

DELIVERY ORDER NO: 003

PROJECT NAME: Load Line 1 Phase II RI

PAGE / OF

WELL NUMBER AND LOCATION: 771m3080

[illegible]

RECORDED BY:

Wanda C. Clough 9/3/99

PA CHECK BY:

11-4-97

DELIVERY ORDER NO: 003

PROJECT NAME: Load Line 1 Phase II RI

PAGE (OF (

WELL NUMBER AND LOCATION:

LL1mw081

[illegible]

RECORDED BY:

Clayton C. Clough 28 Aug. 1999

Subo T Cl
(Signature and Date)

QA CHECK BY:

(Signature and Date)

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO. 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL1NW-082

[illegible]

RECORDED BY: Matthew Boy 08/30/99

QA CHECK BY:

Dea. Chaz S. Mock 11/18/99
(Signature and Date)

DELIVERY ORDER NO: 003

PROJECT NAME: Load Line 1 Phase II RI

PAGE (OF (

WELL NUMBER AND LOCATION: LLM083

[illegible]

RECORDED BY:

Yanbo C Clough
(Signature and Date)

НА СЧЕТ ВУ.

(Signature and Date)

DELIVERY ORDER NO. 003

PROJECT NAME: Load Line 1 Phase II RI

PAGE (OF)

WELL NUMBER AND LOCATION: LLmw 484

[illegible]

RECORDED BY:

Yusef E Clough 30 Aug 1999

QA CHECK BY:

(Signature and Date)

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL1mw 685

[illegible]

RECORDED BY:

Charles C. Clough 9/3/99
(Signature and Date)

QA CHECK BY:

Paula Smith 11/9/99
(Signature and Date)

Slug Test Solutions

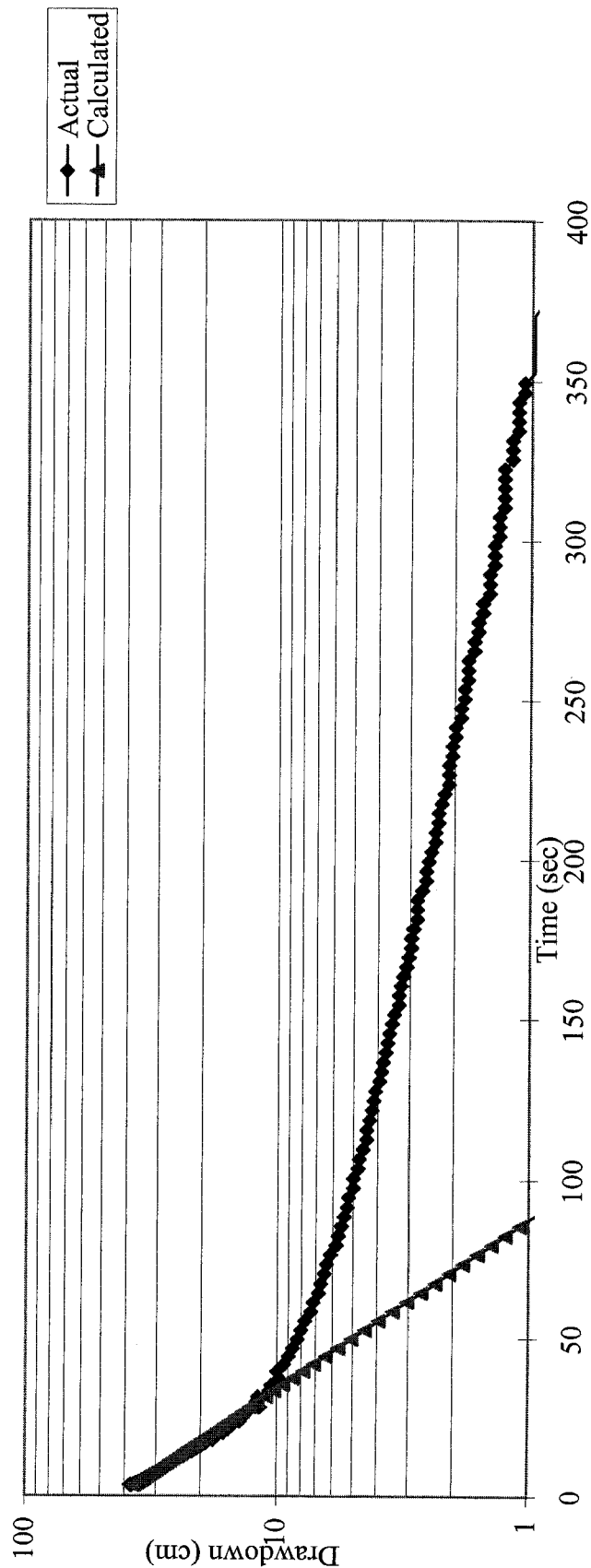
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Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-078		Test Date	9/8/99	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	34.34	ft bgs	Radius of casing (r_c^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	67.98	cm
Saturated thickness (H)	40.00	ft	Length of screen (Le)	290.47	cm
Screen length (Le)	9.53	ft	Distance from static water level (Yo)	37.00	cm
Saturated penetration (Lw)	4.46	ft	Hydraulic conductivity (K)	3.50E-05	cm/sec
			ln R/rw	0.07	



Load Line 1 Well MW-078

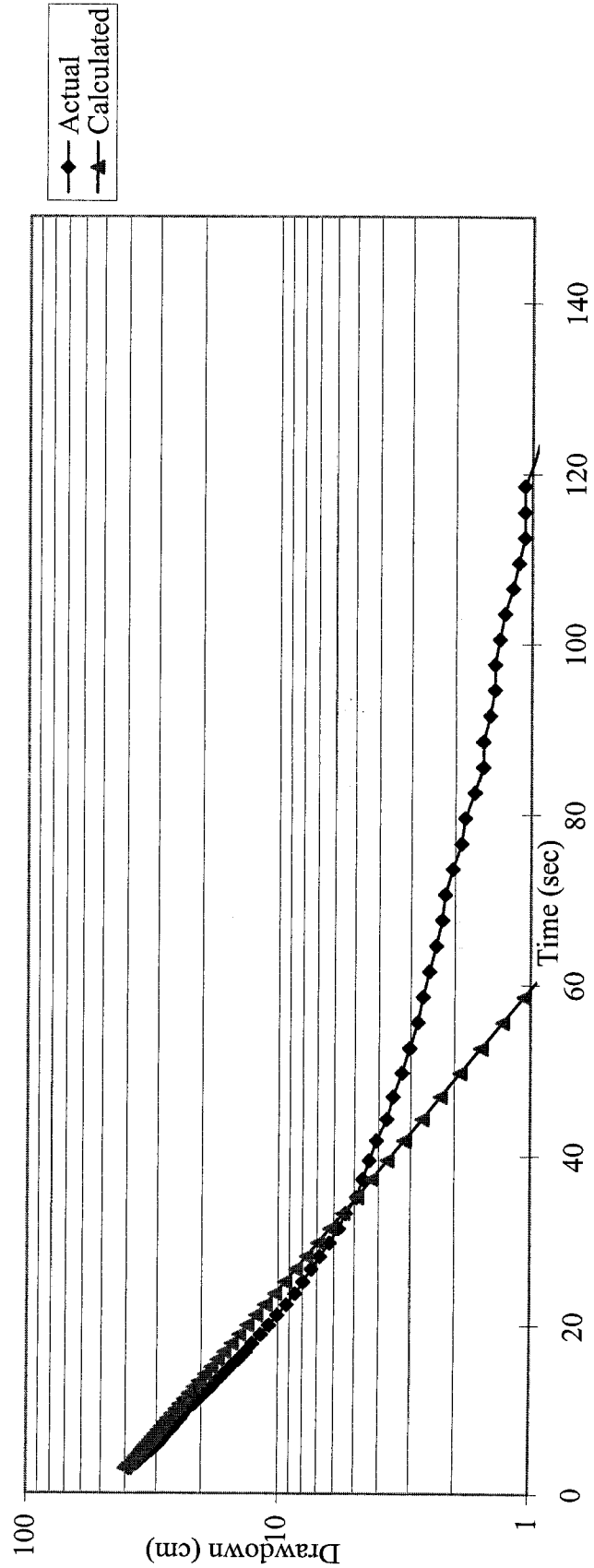


Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-079		Test Date	9/8/99	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	34.74	ft bgs	Radius of casing (rc^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	66.99	cm
Saturated thickness (H)	45.00	ft	Length of screen (Le)	286.51	cm
Screen length (Le)	9.40	ft	Distance from static water level (Yo)	40.00	cm
Saturated penetration (Lw)	4.72	ft	Hydraulic conductivity (K)	9.80E-05	cm/sec



Load Line 1 Well MW-079

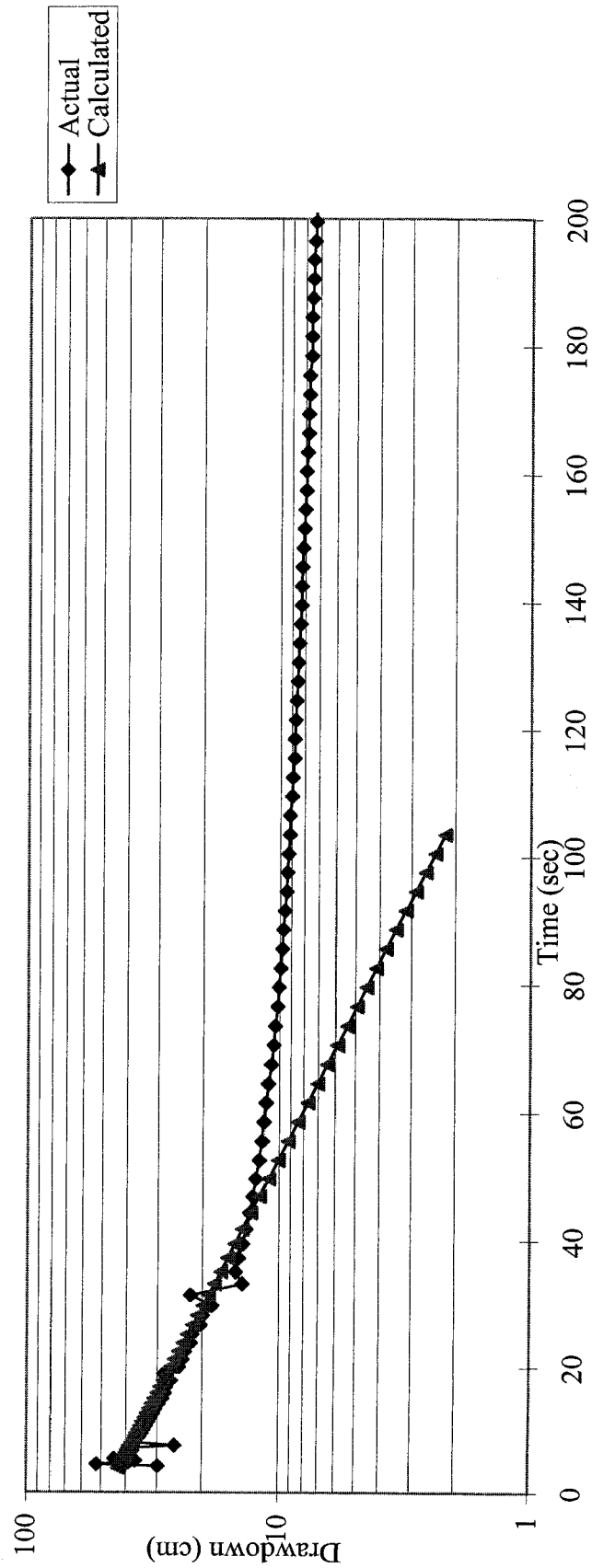


Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-80		Test Date	9/8/1999	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	15.81	ft bgs	Radius of casing (rc^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	18.46	cm
Saturated thickness (H)	25.00	ft	Length of screen (Le)	288.65	cm
Screen length (Le)	9.47	ft	Distance from static water level (Yo)	43.00	cm
Saturated penetration (Lw)	3.66	ft	Hydraulic conductivity (K)	3.50E-04	cm/sec
			ln R/rw		1.05



Load Line 1 Well MW-080

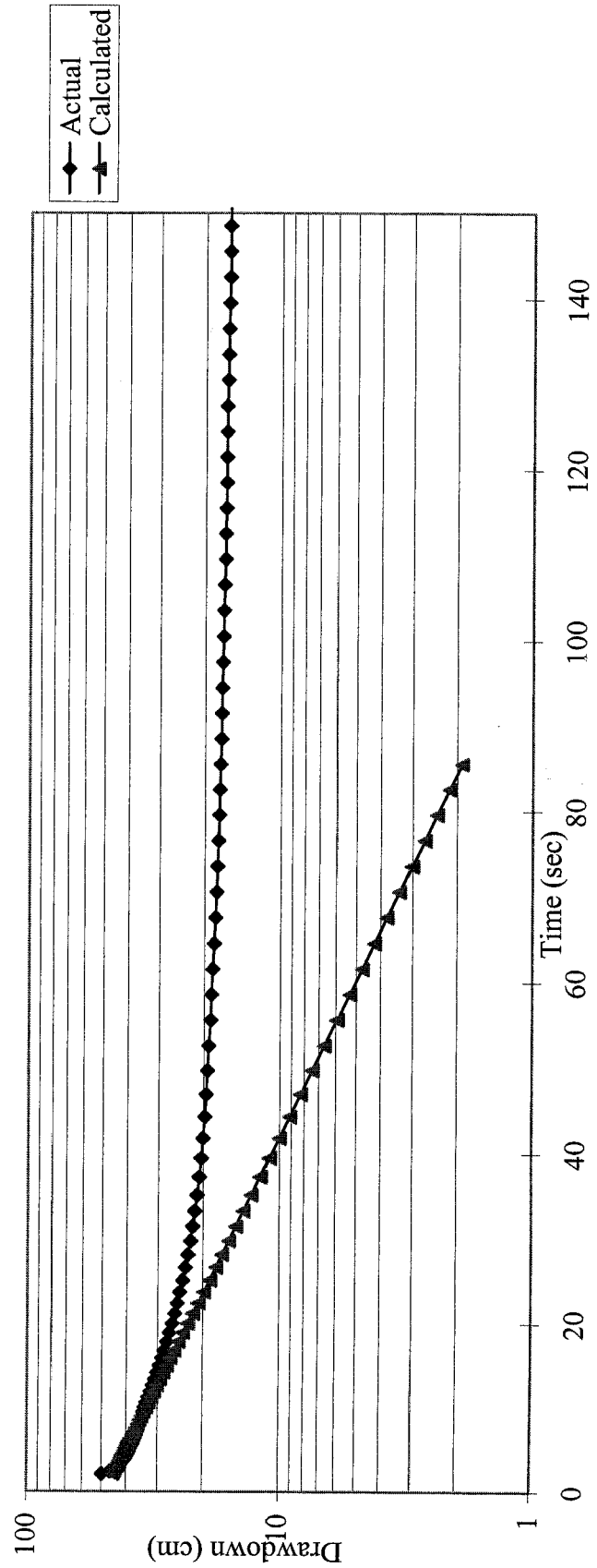


Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-081		Test Date	9/8/99	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	34.80	ft bgs	Radius of casing (rc^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	67.98	cm
Saturated thickness (H)	45.00	ft	Length of screen (Le)	288.65	cm
Screen length (Le)	9.47	ft	Distance from static water level (Yo)	45.00	cm
Saturated penetration (Lw)	4.55	ft	Hydraulic conductivity (K)	4.50E-05	cm/sec
			ln R/rw	0.11	



Load Line 1 Well MW-081

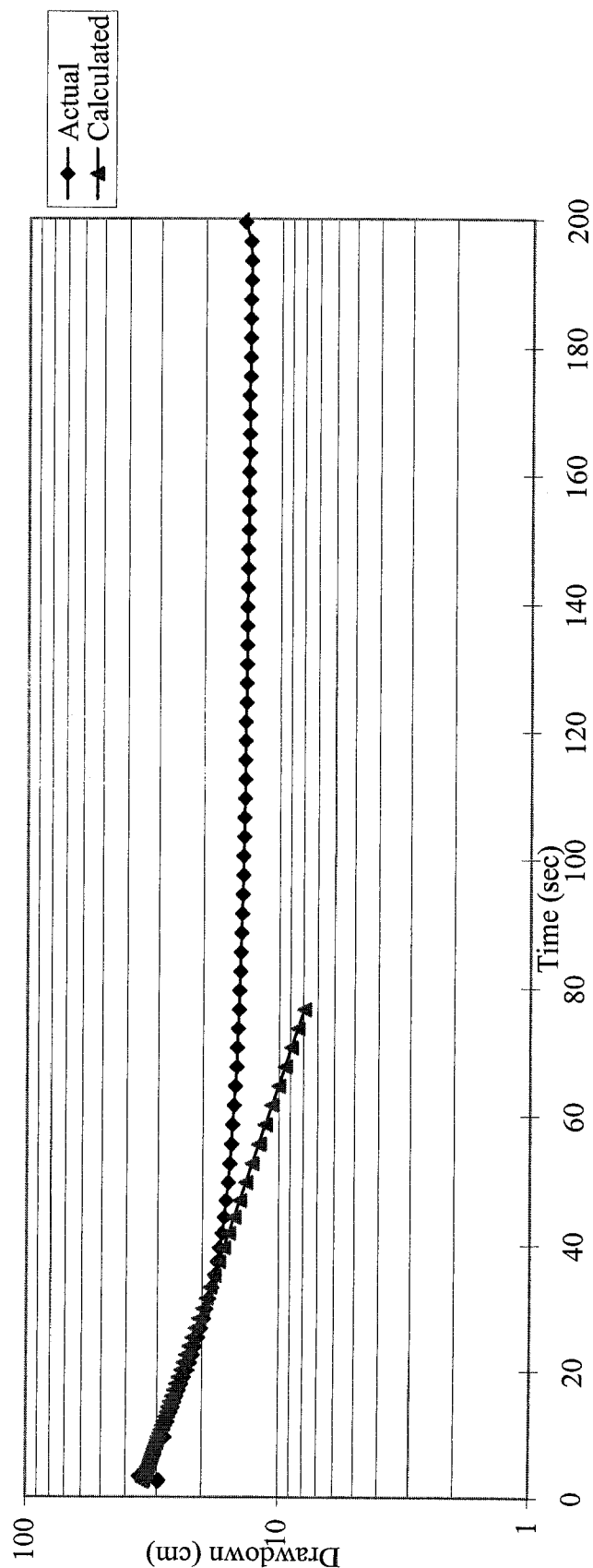


Slug Test Hydraulic Conductivity (K) Calculation

Well ID	L11MW-082		Test Date	9/8/99	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	32.83	ft bgs	Radius of casing (rc^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	67.98	cm
Saturated thickness (H)	45.00	ft	Length of screen (Le)	291.08	cm
Screen length (Le)	9.55	ft	Distance from static water level (Yo)	35.00	cm
Saturated penetration (Lw)	6.19	ft	Hydraulic conductivity (K)	6.50E-05	cm/sec
			ln R/rw	0.30	



Load Line 1 MW-082

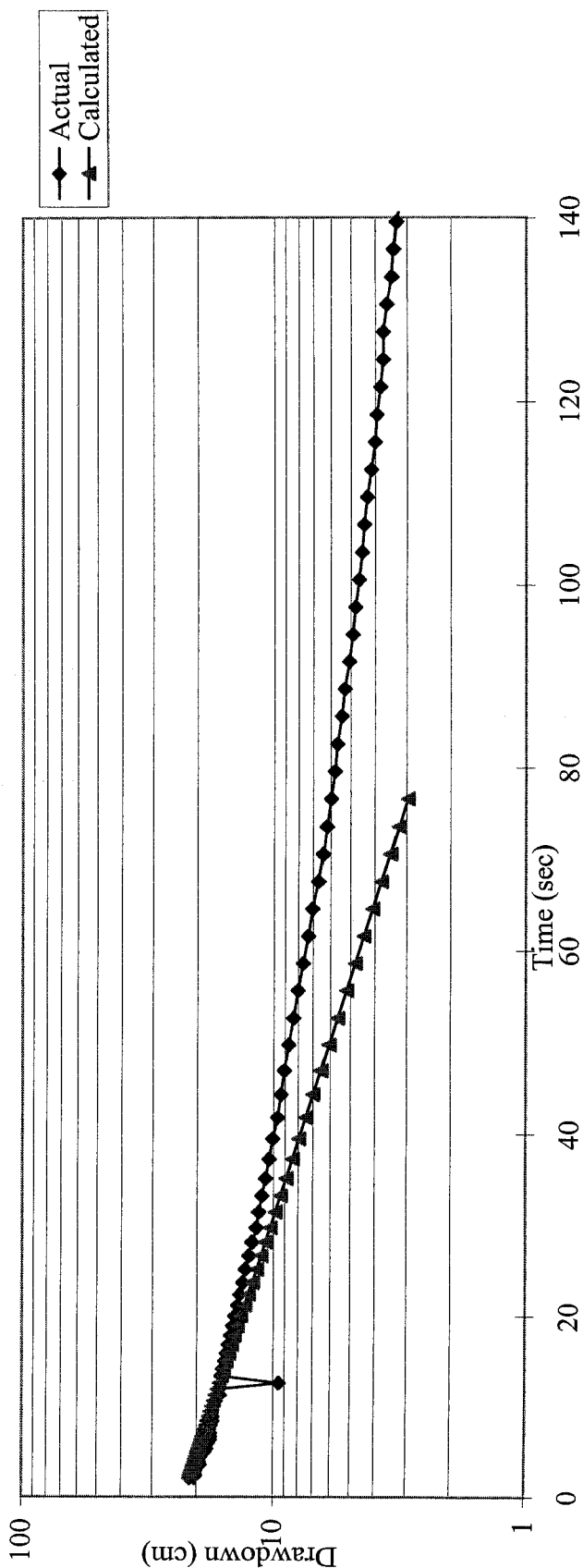


Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-083		Test Date	9/8/99			
Test Type	Rising Head		Evaluation Method	Bouwer & Rice			
Borehole Parameters		Calculation Parameters					
Pretest water level	35.59	ft bgs	Radius of casing (r_c^2)	6.45	cm	$\ln R/rw$	1.78
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm		
Borehole diameter	7.00	in	Effective radius of investigation (R_e)	4.85	cm		
Saturated thickness (H)	45.00	ft	Length of screen (L_e)	304.80	cm		
Screen length (L_e)	10.00	ft	Distance from static water level (Y_o)	22.00	cm		
Saturated penetration (L_w)	3.71	ft	Hydraulic conductivity (K)	5.00E-04	cm/sec		



Load Line 1 Well MW-083



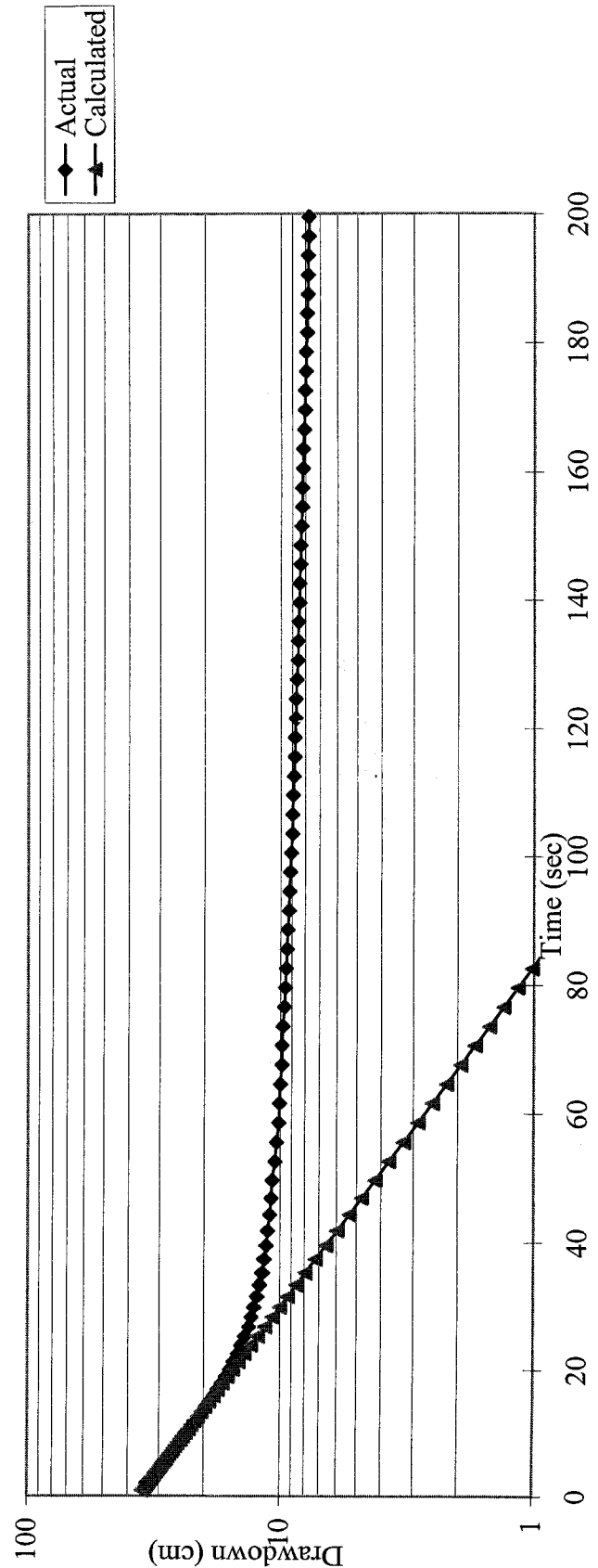
Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-084		Test Date	9/8/99	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	32.04	ft bgs	Radius of casing (rc^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	15.24	cm
Saturated thickness (H)	50.00	ft	Length of screen (Le)	291.08	cm
Screen length (Le)	9.55	ft	Distance from static water level (Yo)	35.00	cm
Saturated penetration (Lw)	4.92	ft	Hydraulic conductivity (K)	7.30E-04	cm/sec





Load Line 1 Well MW-084



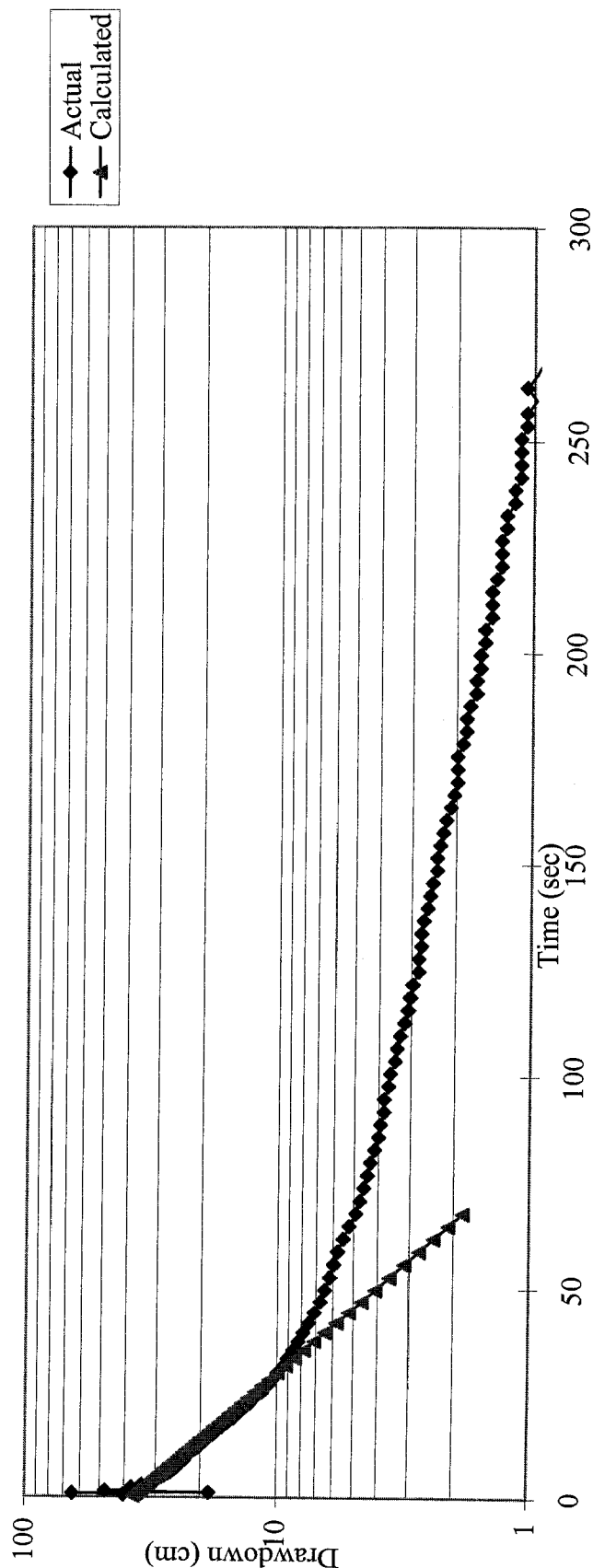
Slug Test Hydraulic Conductivity (K) Calculation

Well ID	LL1MW-085		Test Date	9/8/99	
Test Type	Rising Head		Evaluation Method	Bouwer & Rice	
Borehole Parameters			Calculation Parameters		
Pretest water level	37.47	ft bgs	Radius of casing (rc^2)	6.45	cm
Casing inside diameter	2.00	in	Radius of borehole (rw)	8.89	cm
Borehole diameter	7.00	in	Effective radius of investigation (Re)	15.24	cm
Saturated thickness (H)	45.00	ft	Length of screen (Le)	304.80	cm
Screen length (Le)	10.00	ft	Distance from static water level (Yo)	37.00	cm
Saturated penetration (Lw)	4.67	ft	Hydraulic conductivity (K)	7.00E-04	cm/sec





Load Line 1 Well MW-085



1999 Groundwater Sampling Logs

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09/03/99

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Matthew Root

Heather Smith

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

Narrative (include time and location):

1015 - arrive @ LL2 MW 059 + set up equipment. Initial WL = 15.82

1115 - begin purging well. WL stabilized @ 16.20' BT00

1310 - Turbidity leveled off @ ~ 60 NTU's. Discussed the situation w/

Heather Smith + it was decided that this was OK to quit purging +

start sampling

1343 - take final parameter reading + finish taking sample # LL0680

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

MSR 09/06/99

Daily Weather Conditions: A.M. NA

P.M. sunny, hot, humid

Recorded By

Matthew Root

QA Checked By

Heather Smith

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): _____

Su M Tu W Th F Sa

PAGE _____ OF _____

Task Team Members:

MSR 09/06/99

MSR 09/06/99

Narrative (include time and location):

MSR 09/06/99

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By

[Signature]

QA Checked By

MSR 09/06/99

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 2

WELL NUMBER AND LOCATION: LL2 MW 059

DATE	TIME	GALLONS ML REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (uMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS ML REMOVED	WELL VOLUMES REMOVED	COMMENTS
09/03/99	1115	~2000	15.87	192.00	12.13	999	2000	WL	WL=16.26
	1120	~200	16.02	189.00	12.10	999	2200		
	1125	~200	15.96	187.00	11.91	999	2400		
	1130	~200	16.20	186.00	11.62	999	2600		WL=16.21
	1135	~200	17.01	186.00	11.29	833	2800		
	1140	~200	16.91	185.00	11.36	558	3000		
	1145	~200	16.21	185.00	11.52	457	3200		WL=16.26
	1150	~200	15.65	183.00	11.70	350	3400		
	1155	~200	15.77	181.00	11.76	211	3600		
	1200	~200	15.77	181.00	11.56	200	3800		
	1205	~200	15.77	180.00	11.54	150	4000		
	1210	~200	15.82	180.00	11.48	130	4200		
	1215	~200	15.98	179.00	11.38	127	4400		
	1220	~200	15.87	179.00	11.50	113	4600		
	1225	~200	15.91	179.00	11.57	97	4800		
✓	1230		15.80	178.00	11.51	88	5000	✓	

RECORDED BY: [Signature]

(Signature and Date)

QA CHECK BY: [Signature]

(Signature and Date)

See back of this page for more readings 284

LL2MNΦ59

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	DATE	(ML) PURGED	Temp	SpC	pH	turns	TOTAL (ML) PURGED	WELL VOLUMES
	09/03/99	~200	15.97	179.00	11.40	82	5200	N/A
	1240	~200	15.96	179.00	11.30	81	5400	
	1245	~200	15.92	179.00	11.22	74	5600	
	1250	~200	16.03	178.00	11.16	73	5800	
	1255	~200	16.01	178.00	11.07	74	6000	
	1300	~200	15.94	178.00	11.02	60	6200	
	1305	~200	15.96	178.00	10.95	61	6400	
	1310	~200	15.95	178.00	10.93	57	6600	
		END PURGING						
FINAL	1343	—	16.58	185.00	10.83	192	—	

Walter Smith
11-18-99

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 09/03/99

Time: 1151

Well Number and Location: LL2 MW 59

Purge Crew: Matthew Root
Heather Smith

Date and Time: Begin: 09/03/99 1115 Completed: 09/03/99 1310

Purge Method(S): QED micro-purge w/a bladder pump

Total Quantity of Water Removed: ~6 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	HORIBA U-10 #148820	09/03/99
Specific Conductivity		
Water Level	HAZCO # 2053	
pH		

Recorded By: Matthew Root
(Signature and Date)

QA Check By: Heather Smith 11/18/99
(Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yyyy): 09/03/99

TIME: 11:57

WELL ID NUMBER: LL2 MW059

WELL LOCATION: LL2

DEPTH OF SCREENED INTERVAL (to notch): 12.47 ft. to 22.47 ft.

INNER CASING: TYPE: PVC ID: 2 inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_f = 3.142 \times \left[(dH/2)^2 \cdot (do/2)^2 \right] (TD - S \text{ or } 1, \dots)$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. do = outside of diameter of well casing, ft. di = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%) dH = diameter of borehole, ft. TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casingPURGE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Pump Type QEDMINIMUM PURGE VOLUME = $V_t \times 3$

PURGE VOLUME: ~6 GAL.

SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify)

SITE CONDITIONS DURING PURGING: used a decon pump for this well

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: very cloudy initial water

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY:

RECORDED BY: [Signature]

(Signature)

QA CHECKED BY: [Signature]

(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 9-6-99

Su (M) Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Heather Smith

Mark Root

~~115
09-06-99~~

Narrative (include time and location):

1030 Arrive On site @ LL2mw64

Set-up Build tubing for well 16' length.

T.D = 20.74' BTOC

Initial depth to W.L. = 12.24' BTOC

Pump intake will be at 19' BTOC

1050 Drop pump down well - wait for water to equilibrate.

1115 WL @ 12.25

1124 WL @ 12.30 flow rate: 100 ml/min

↓ stabilized - Looks good. ^{turbidity} clear to eye

1155 Begin Sampling WL still constant

1300 Sampling completed - take final readings
Take

Final Water level = 12.29' BTOC.

1315 Leave site

Daily Weather Conditions: A.M. humid, overcast ~70-80°F

P.M.

Recorded By

Heather Smith

QA Checked By

Valeri Brumback

PAGE / OF

Narrative (include time and location):

P.M. _____

Recorded By _____ QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL2mw60

DATE	TIME	GALLONS REMOVED	TEMP (C) ± .5°C	SPECIFIC CONDUCTIVITY (µMHOS/CM) 10-10	pH (Standard Units) -2	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-6-99	1120	500ml	16.7°C	.195	6.59	189	.5 L		100ml/min → WL=12.30'
9-6-99	1125	500ml	16.5°C	.184	6.59	81	1.0 L		
9-6-99	1130	4.5 L	16.1	.181	6.57	55	1.5 L		
9-6-99	1135	4.5 L	15.9	.177	6.54	34	2.0 L		
9-6-99	1140	4.5 L	15.8	.172	6.52	84	2.5 L		
9-6-99	1145	4.5 L	15.9	.168	6.50	25	3.0 L		
9-6-99	1150	4.5 L	16.3	.166	6.53	4	3.5 L		
9-6-99	1155	4.5 L	16.2	.165	6.51	3	4.0 L		Parameter Stable
									SAMPLE
9-6-99	1300	6.5 L	16.9	.163	6.56	30	10.5 L		Final Reading

RECORDED BY: *Kathleen Smith* 09-06-99

QA CHECK BY: *Uriah Brumbaugh* 12-6-99

(Signature and Date)

(Signature and Date)

WELL PURGE RECORD	
PROJECT NAME: <u>Load Line 1 Phase II RI</u>	PROJECT NO: <u>003</u>

Page 1 of 1

Date: 9/6/99 Time: 1200

Well Number and Location: LL2mw60

Purge Crew: Heather Smith / Matt Root

Date and Time: Begin: 09/05/99 1120 Completed: 9/6/99 1200

Purge Method(S): W/ Bladder pump - micropurge @ 100 ml/min

Total Quantity of Water Removed: 4 L ~~gals~~ AS

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	<u>Hazco # 148821</u>	<u>9/6/99</u>
Specific Conductivity	<u>148821</u>	<u>9/6/99</u>
Water Level	<u>Hazco # 2053</u>	<u>NA</u>
pH	<u>148821</u>	<u>9/6/99</u>

Recorded By: Heather Smith 9/6/99 QA Check By: Vicki Brumback 12-6-99
 (Signature and Date) (Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase (IIR)

DELIVERY ORDER NO: 003

DATE (mm/dd/yyyy): 09-06-99

TIME: _____

WELL ID NUMBER: LL2mw68

WELL LOCATION: LC2 near perimeter fence

DEPTH OF SCREENED INTERVAL (to notch): _____ ft. to _____ ft.

INNER CASING: TYPE: Sch. 40 PVC ID: 2" ID inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_f = 3.142 \times [(dH/2)^2 - (di/2)^2] \times S \text{ or } I, \dots$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. do = outside of diameter of well casing, ft. di = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%) dH = diameter of borehole, ft. TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casingPURGE METHOD: ☐ Bladder Pump ☒ Pump Type PAMINIMUM PURGE VOLUME = $V_t \times 3$

PURGE VOLUME: 19.44 GAL.

SAMPLE METHOD: ☐ Bladder Pump ☒ Other (specify) PASITE CONDITIONS DURING PURGING: Nothing unusual

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: Nothing unusualS&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY: _____RECORDED BY: [Signature]

(Signature)

QA CHECKED BY: [Signature]

(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy):

09/05/99

Su M Tu W Th F Sa

PAGE

OF

Task Team Members:

Matthew Root

Heather Smith

#15
9/5/99

Narrative (include time and location):

1200 - move to LL1 MW 064 + set up equipment - initial WL = 9.98' BTOC

1240 - begin pumping well - WL = 5.06' BTOC

1250 - WL = 5.17' BTOC (stabilized)

1400 Begin Sampling

Log Book signed over to Heather Smith

Sample ID #'s LL0692/0693

(Small Suck)

1440 Area picked up - Leave site

MSR 09/06/99

Daily Weather Conditions: A.M.

NA

P.M.

humid, Overcast H. breeze

Recorded By

Heather Smith

QA Checked By

Vicki Brumback

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): _____

Su M Tu W Th F Sa

PAGE _____ OF _____

Task Team Members:

~~MSR 09/06/99~~

~~MSR 09/06/99~~

Narrative (include time and location):

~~MSR 09/06/99~~

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By

~~MSR 09/06/99~~

QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: L11 MW064

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (uMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
09/05/99	1245	~500	17.9	0.230	7.56	237	~500	NA	WL ~ 5.17' bnc
	1250	~200	14.9	0.232	7.57	363	~700		
	1255	~200	14.4	0.234	7.58	999	~900		
	1300	~200	14.1	0.234	7.57	999	~1100		
	1305	~200	14.1	0.233	7.54	999	~1300		
	1310	~200	14.0	0.234	7.55	999	~1500		
	1315	~200	14.0	0.234	7.52	999	~1700		
	1320	~200	14.8	0.234	7.57	911	~1900		
	1325	~200	15.0	0.235	7.60	755	~2100		
	1330	~200	14.5	0.235	7.61	662	~2300		
	1335	~200	14.8	0.235	7.58	539	~2500		
	1340	~200	14.5	0.234	7.59	427	~2700		
	1345	~200	14.6	0.235	7.62	436	~2900		
	1350	~200	14.8	0.235	7.61	377	~3100		
	1355	~200	14.7	0.235	7.61	391	~3300		
✓	1400	~200	14.8	0.235	7.61	376	~3500	✓	Parameter stable turb. clear to eye

RECORDED BY:

Heidi Smith

09-05-99

QA CHECK BY:

Udini Brumback

12-6-99

(Signature and Date)

(Signature and Date)

1425

14.9

0.233

7.62

395

NA

5.21' bnc

48

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 09/05/99

Time: 1257

Well Number and Location: LL/mw64

Purge Crew: Matthew Root
Heather Anger Smith

Date and Time: Begin: 09/05/99 1240 Completed: 09/05/99

Purge Method(S): QED micropurge w/ a bladder pump

Total Quantity of Water Removed: ~5 gal gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	HORIBA U-10 #148821	09/05/99
Specific Conductivity		
Water Level		NA
pH		

Recorded By: Matthew Root
(Signature and Date)

QA Check By: Heather Anger Smith 11/18/99
(Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yy):

09/05/99

TIME: 12 : 58

WELL ID NUMBER:

LL1mw064

WELL LOCATION:

LL1

DEPTH OF SCREENED INTERVAL (to notch): 11.03 ft. to 21.03 ft.

INNER CASING: TYPE:

PVC

ID:

2

inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_f = 3.142 \times [(dH/2)^2 \times (do/2)^2 \times (TD - S \text{ or } 1, \dots)]$$

NOTE: If $S > H$ use S ; if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. do = outside of diameter of well casing, ft. di = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%)PURGE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Pump Type

QED # 16276

MINIMUM PURGE VOLUME = $V_t \times 3$

PURGE VOLUME:

MSR 09/05/99

SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify)

SITE CONDITIONS DURING PURGING: used a decontaminated bladder pump

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS:

MSR 09/06/99

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY:

RECORDED BY:

(Signature)

QA CHECKED BY:

(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09-05-99

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Heather Smith

Matt Root

~~09-05-99~~

Narrative (include time and location):

0900 Arrive on site @ ULMW65.

Build tubing for pump. Intake @ 20.8' BTOC

T.D = 23.0' BTOC Depth to WATER BY Pump

Installation = 16.2.

0915 Depth to water after pump installation 16.21' BT

Begin Pump. Initial flow rate = 120 ml/min

Water level stable @ 16.26' BTOC. Looks Good.

1100 End purging + begin sampling. Turbidity was not dropping very fast so Heather Smith decided to stop purging + begin sampling. Other Parameters were stable per spec. Matt Root

1200 Take final WL @ 16.24' BTOC Pull pump Leave Area

* Sample ID # U0694/0695

Daily Weather Conditions: A.M. overcast, chance of rain.

P.M.

Recorded By

Heather Smith

QA Checked By

Verin Brumback

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): _____

Su M Tu W Th F Sa

PAGE _____ OF _____

Task Team Members:

~~MSR 09/06/99~~

~~MSR 09/06/99~~

Narrative (include time and location):

~~MSR 09/06/99~~

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By _____

QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 2

WELL NUMBER AND LOCATION: 66mw65

DATE	TIME	GALONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-5-99	0925	~1500	14.7	0.346	7.09	999	~1500	NA	
	0936	~120	13.7	0.344	6.95	999	~1620		
	0935	~120	13.4	0.324	7.03	999	~1740		
	0940	~120	13.8	0.340	7.14	999	~1860		
	0945	~120	13.2	0.338	7.09	999	~1980		
	0950	~120	13.1	0.337	7.11	999	~1200		
	0955	~120	13.0	0.337	7.12	999	~1320		
	1000	~120	13.6	0.334	7.22	999	~1440		
	1005	~120	12.8	0.332	7.12	999	~1560		
	1010	~120	12.8	0.332	7.12	999	~1680		
	1015	~120	12.6	0.331	7.16	999	~1900		
	1020	~120	13.0	0.331	7.21	999	~2120		
	1025	~120	12.9	0.329	7.20	999	~3240		
	1030	~120	13.2	0.329	7.23	870	~3360		
	1035	~120	13.2	0.328	7.26	751	~4480		
	1040	~120	13.3	0.325	7.28	183	~5600		

RECORDED BY: 

(Signature and Date)

QA CHECK BY: 

(Signature and Date)

see back of this sheet for final readings →

43a

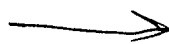
LL1MNW65

page 2 of 2

436

WELL
VOLUME

NA



1045	~120	13.4	0.325	7.29	580	~6720
1050	~120	13.6	0.326	7.31	526	~6840
1055	~120	13.5	0.326	7.33	480	~6960
1100	~120	13.7	0.327	7.38	449	~7180

END PURGING

Final Reading

1200 ~7200 13.7 .328 7.33 322 ~14380 ml

Final Water level 16.24' BTOC

[Handwritten signature]
11/18/99

44

WELL PURGE RECORD	
PROJECT NAME: <u>Load Line 1 Phase II RI</u>	PROJECT NO: <u>003</u>

Page 1 of 1

Date: 09/05/99

Time: 1100

Well Number and Location: LL1 MW 65

Purge Crew: Matthew Root
Heather Smith

Date and Time: Begin: 09/05/99 0925 Completed: 09/05/99 1100

Purge Method(S): RED micropurge w/ a bladder pump

Total Quantity of Water Removed: ~6 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	Horiba U-10 # 148821	09/04/99
Specific Conductivity	↓ # AZCO # 8053	
Water Level		NA
pH		

Recorded By: Matthew Root
(Signature and Date)

QA Check By: Heather Smith 11/18/99
(Signature and Date)

GROUND WATER PURGE SHEET

DELIVERY ORDER NO: 003

PROJECT NAME: Load Line 1 Phase II RI

DATE (mm/dd/yy): 09/05/99
WELL ID NUMBER: LL1mw065
DEPTH OF SCREENED INTERVAL (to notch): mar ft. to mar ft.
INNER CASING: TYPE: are PVC ID: 2 inches

TIME: 11:10

WELL LOCATION: LL1

MSR

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$VF = 3.142 \times [(dh/2)^2 - (do/2)^2] \times (TD - S \text{ or } L, \dots)$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$Vt = (Vc + Vf) (7.48)$$

WHERE:

V_c = Volume of water in well casing, cu.ft.

V_t = Total volume, gal

V_f = Volume of water in filter pack, cu.ft.

do = outside of diameter of well casing, ft.

di = inside diameter of well casing, ft.

P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%)

JRGE METHOD: [] Bailor [] Bladder Pump ☒ Pump Type QED #16276

MINIMUM PURGE VOLUME = $V_t \times 3$ PURGE VOLUME: ~6 GAL.

SAMPLE METHOD: [] Bailor ☒ Bladder Pump [] Other (specify) _____

SITE CONDITIONS DURING PURGING: used a deaired bladder pump

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: MSR

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES [] NO IF NO, WHY WAS A DEVIATION NECESSARY: _____

RECORDED BY: [Signature] (Signature)
QA CHECKED BY: [Signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09-05-99

(Su) M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Heather Smith

Matt Root

~~US~~
9/5/99

Narrative (include time and location):

1455 Arrive onsite at ULMW 67.

Build pump w/ intake at 24.5' BGS BToc

Initial water level = 20.90' BToc

TD = 25.62' BToc

1510 Upon attempt of running pump down ~~the~~

this well, a resistance was met at ~6' BToc

We will try alignment test w/ a bailer

& again try to maneuver pump down hole.

If we have no success we will sample

this well w/ a bailer per spec.

1530 Still no luck - sample w/ bailer per spec.

1600 HAVE Pulled ~6 gal Take 1st reading

1715 Sample - parameters stable except

for turbidity - SAMPLE ID ULO696/0697

1735 Leave site - (final W.L. = 21.09' BToc)

Daily Weather Conditions: A.M.

NA

P.M.

hot, overcast humid

Recorded By

Heather Smith

QA Checked By

Vicki Brumback

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): _____

Su M Tu W Th F Sa

PAGE _____ OF _____

Task Team Members:

~~MSR 09/06/99~~

~~MSR 09/06/99~~

Narrative (include time and location):

~~MSR 09/06/99~~

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By

~~MSR 09/06/99~~

QA Checked By _____

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION:

LL1mw67

[illegible]

RECORDED BY:

Deborah Smith
(Signature and Date)

(Signature and Date)

QA CHECK BY:

Uzlin Brumbarh 12-6-99

(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 9/5/99

Time: 1500

Well Number and Location:

LL/mw 067

Purge Crew:

Kather Smith

Matt Root

Date and Time:

Begin:

9/5/99

Completed:

9/5/99

Purge Method(S):

bailer ~~for~~ method

(pump refusal)

Total Quantity of Water Removed:

21 1/2

gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	HAZCO # 148821	9/5/99
Specific Conductivity	HAZCO # 148821	9/5/99
Water Level	HAZCO # 2531	NA
pH	HAZCO # 148821	9/5/99

Recorded By:

Kather Smith
(Signature and Date) 9/5/99

QA Check By:

Vicki Brumbaugh
(Signature and Date)

12-6-99

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yyyy): LLmw067 07-05-99

TIME: _____

WELL ID NUMBER: LLmw067WELL LOCATION: LL

DEPTH OF SCREENED INTERVAL (to notch): _____ ft. to _____ ft.

INNER CASING: TYPE: Sch 40 PVC ID: 2" ID inchesWELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_c = \pi r^2 h = \pi \cdot \frac{1}{2}^2 \cdot (25.62 - 20.9) = 1.03$$

$$V_f = 3.142 \times \left[\frac{(dH)^2}{4} - \frac{(do)^2}{4} \right] \cdot (TD - S \text{ or } 1, \dots)$$

$$V_f = \pi r^2 h = \pi \cdot \frac{3}{2}^2 \cdot 4.72 = 1.261 - 1.03 = 1.231$$

$$(-1474 \times 7.48 \text{ gal}) \div (6.103 \times 7.48) = 1.10725$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. do = outside of diameter of well casing, ft. di = inside diameter of well casing, ft. dH = diameter of borehole, ft. TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casing P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%)PURGE METHOD: ☒ Bailer ☐ Bladder Pump ☐ Pump Type _____MINIMUM PURGE VOLUME = $V_t \times 3$ PURGE VOLUME: _____ GAL.SAMPLE METHOD: ☐ Bailer ☐ Bladder Pump ☐ Other (specify) _____

SITE CONDITIONS DURING PURGING: _____

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: _____

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY: _____RECORDED BY: Patricia Smith

(Signature)

QA CHECKED BY: Urban Brundage

(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 9-1-99

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Heather Smith

Matt Root

~~His 09-01-99~~

Narrative (include time and location):

1540 Set-up on #78. We discovered we can pump at least 1 gpm w/out draw down on this well during development. Initial water level is 34.56' BTOC.

1530 Purging @ ~ 120 ml/min

1715 Sample - Sample ID # LL0699

Filtered Metals - 1L Poly

Explosives X 2 - 1L Amb. Glass

Propellants X 2 - 1L Amb. Glass

Total Metals - 1L Poly

Cyanide - 250 ml

Equipment Used: flow cell #206276, PID #13275, Hoba #148820 an compressor QED box

1800 Done leave site

Daily Weather Conditions: A.M. N2

P.M. Hot sunny ~75-85°F

Recorded By

Heather Smith

QA Checked By

Vicki Brumbach

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Narrative (include time and location):

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By _____ QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

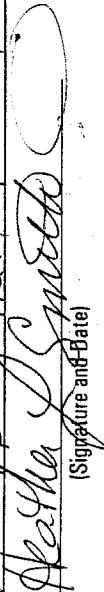
DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL1mw78

DATE	TIME	GALLONS- REMOVED	TEMP(C) ± .5	SPECIFIC CONDUCTIVITY (µMHOS/CM) 10%	pH (Standard Units) ± .20	TURBIDITY L/10	TOTAL GALLONS- REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/1/99	1600	3.6 L	14.1	.284 ms/cm	5.35	999	3.6 L		
9/1/99	1605	6.2 L	13.4	.288 ms/cm	5.34	575	4.2 L		
	1610	6.4 L	13.3	.288 ms/cm	5.34	483	4.8 L		
	1615	6.5 L	13.3	.286 ms/cm	5.30	360	5.4 L		
	1620	6.6 L	13.3	.286	5.38	286	6.0 L		Turbidity drops then
	1625	6.6 L	13.1	.282	5.31	666	6.6 L		increases then drops
	1630	6.7 L	13.2	.281	5.30	590	7.2 L		then increases
	1635	6.7 L	13.1	.281	5.24	432	7.8 L		
	1640	0.6	13.2	.280	5.18	253	8.4 L		
	1645	0.6	13.1	.280	5.14	106	9.0 L		
	1650	0.6	13.1	.279	5.09	134	9.6 L		
	1655	0.6	13.1	.279	5.07	226	10.2 L		
	1700	0.6	13.0	.278	5.04	182	10.8 L		
	1705	0.6	13.0	.279	5.03	144	11.4 L		
	1710	0.6	13.1	.279	5.01	35	12.0 L		
	1715	0.6	13.0	.279	5.02	8	12.6 L		Begin Sampling

RECORDED BY:



(Signature and Date)

QA CHECK BY:



(Signature and Date)

12-6-99

FINAL READING

13.1°C .279 ms/cm 5.04 52 mm

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1Date: 9/1/99Time: 1700

Well Number and Location:

LL1^{HS} Phase LL1mw78

Purge Crew:

Matt Boot, Heather Smith, Martha Clough (occasionally)

Date and Time:

Begin:

9/1/99 1520

Completed:

9/1/99 1715

Purge Method(S):

micropurge technique

Total Quantity of Water Removed:

18.6 ^{gal}used Horiba - Waterchecker U-10

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	# 148820	9/1/99
Specific Conductivity		
Water Level	HAZCO # 2053	NA
pH	↓	↓

Recorded By:

Heather Smith
(Signature and Date)

QA Check By:

Valeri Brundage 12-6-99
(Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yy): 09-01-99

TIME: 17:00

WELL ID NUMBER: LLmw78

WELL LOCATION: LLI

DEPTH OF SCREENED INTERVAL (to notch): ft. to ft.

INNER CASING: TYPE: PVC, sch 40 ID: 2" ID inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_f = 3.142 \times \left[(d_o/2)^2 - (d_i/2)^2 \right] \times (TD - S \text{ or } L, \dots)$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. d_o = outside diameter of well casing, ft. d_i = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%)PURGE METHOD: ☐ Bladder Pump ☒ Pump TypeMINIMUM PURGE VOLUME = $V_t \times 3$ SAMPLE METHOD: ☐ Bladder Pump ☒ Other (specify)

SITE CONDITIONS DURING PURGING: sunny

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: Not Sunny, Asbestos workers pack their vehicles near this well

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY:

RECORDED BY:

QA CHECKED BY:

(Signature)

(Signature)

2" well
7" bore hole
T.D = 38.7' BGS.
W.C = 34.56' BTOC - 32.1' BGS.
Water column is 6.6'

$$\frac{(1.7638 + 14398)(7.48)}{0.529} = 1427 \text{ AS } 5.03$$

 dH = diameter of borehole, ft.

TD = total depth of well from top of well casing, ft.

 H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casing

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 2 SEPT 99

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

M. Root

M. Clouath

Narrative (include time and location):

0900 AT LL1MW079

to begin sampling activities.

Well produces at least 2 gpm.

0941 BEGIN PUMPING

1030 - ran out of gas for compressor - stop sampling

1040 - begin to sample

1215 - finish sampling #: LL0714

LL0700

LL0716

~~KS 11.18.99~~

Daily Weather Conditions: A.M. Sunny, 80's, Lt. Breeze

P.M. NA

Recorded By

M. Root

QA Checked By

Heather Smith

DELIVERY ORDER NO: 003

Su M Tu W Th F Sa

PAGE 1 OF 1

A hand-drawn diagram of a cell. It consists of a large, irregular outer boundary representing the cell membrane. Inside this boundary is a smaller, roughly circular structure representing the nucleus. The space between the nucleus and the outer boundary is filled with small, scattered dots representing cytoplasm. A single line extends from the outer boundary towards the bottom right, possibly representing a flagellum or a projection.

~~Walter Smith~~
11-18-99

P.M. _____

Recorded By _____ QA Checked By _____

WELL NUMBER AND LOCATION: LL1KW079

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (uMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
2 Sept 99	0941	0	12.6	0.319	6.18	258	0	0	Fast to 0
	0946	5L	11.8	0.293	6.42	162	5L		
	0951	10.5L	11.7	0.297	6.48	80	10		
	0956	5L	11.6	0.301	6.51	60	15L		
	1001	5L	11.5	0.301	6.49	47	20L		
	1006	5L	11.5	0.302	6.49	35	25L		
	1011	5L	11.6	0.303	6.44	36	30L		
	1014	5L	11.7	0.303	6.41	25	35L		
	1021	5L	11.7	0.303	6.45	17	40L		
	1026	5L	11.6	0.303	6.41	13	45		
	1031	5L	11.6	0.302	6.43	10	50L		
	1033	BEGIN SAMPLING							
	1208	5L	16.2	0.284	6.65	237			pump stopped after sample

RECORDED BY: Michael Clough 2 Sept 1999

QA CHECK BY: [Signature]

(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 9/2/99

Time: 0900

Well Number and Location: LL1mw079

Purge Crew: M. Root, M. Clough

Initial = 34.97 ^{BTOC} w/ pump in
H₂O 34.91 ^{BTOC} w/ pump out

Date and Time: Begin: 2 SEPT 1999 0941

Completed: 1

Purge Method(S): Bladder Pump - Micro Purge

Total Quantity of Water Removed: ~15 gals

Field Measurements Using: HORIBA U-10

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	803062	2 SEPT 1999
Specific Conductivity	803062	2 SEPT 1999
Water Level	HAZCO# 2053	—
pH	803062	2 SEPT 1999

Recorded By: M Root 9/2/99

(Signature and Date)

QA Check By: [Signature] 11/18/99

(Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase I RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yy): 2 SEPT 1999

TIME: 09:00

WELL ID NUMBER: LLMW079

WELL LOCATION: LL-1 R

DEPTH OF SCREENED INTERVAL (to notch): _____ ft. to _____ ft.

INNER CASING: TYPE: PVC-sh. 4" ID: 2" ID inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$VF = 3.142 \times (dh/2)^2 \times (do/2)^2 \times (TD \cdot S \text{ or } 1, \dots)$$

NOTE: If $S > H$ use S , if $S < H$ use H
 $V_t = (V_c + V_f) (7.48)$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft.

do = outside of diameter of well casing, ft.

di = inside diameter of well casing, ft.

P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%)

dh = diameter of borehole, ft.

TD = total depth of well from top of well casing, ft.

H = depth of water, ft., from top of well casing

S = depth to base of seal, ft., from top of well casing

PURGE METHOD: () Bladder Pump (X) Bladder Pump

MINIMUM PURGE VOLUME = $V_t \times 3$

SAMPLE METHOD: () Bladder Pump () Other (specify)

SITE CONDITIONS DURING PURGING:

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS:

S&A PLAN SAMPLING PROCEDURE FOLLOWED: YES (X) YES () NO () IF NO, WHY WAS A DEVIATION NECESSARY: _____

RECORDED BY:

QA CHECKED BY:

(Signature)

(Signature)

TASK TEAM ACTIVITY LOG SHEET

61

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09-06-99

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Heather Smith
Matt Root

~~MS~~
~~09-06-99~~

Narrative (include time and location):

1105 Install Pump @ LL/mw 80

T.D = 22.31' BTOC

Initial WL = 15.31' BTOC

Used 17.5' of tubing - putting bottom of pump at 21.5' BTOC top of pump at 17.5' pump intake at 20.5' BTOC

1320 WL @ 15.12' BTOC

WL is stable at 15.25' BTOC running @

40 ml/min (still falling a bit) (15.25' @ 1325, 15.29' @ 1330)

1335 Decrease discharge to ~20 ml/min due to drawdown of WL.

1355 Begin sampling

1645 end sampling - 15.71' BTOC = final WL → sample # LL0702
put equipment away + leave site LL0703

Daily Weather Conditions: A.M. humid overcast 80°K

P.M. RAIN

Recorded By Heather Smith QA Checked By Vicki Brumback

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE / OF

WELL NUMBER AND LOCATION:

LLmw88

[illegible]

RECORDED BY:

(Signature and Date)

9.6.99

QA CHECK BY:

(Signature and Date)

Uichi Brumbaugh 12-6-99

64

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 9/6/99

Time: 1105

Well Number and Location:

LL/mw80

Purge Crew:

Heather Smith
Matt Root

Date and Time:

Begin:

9/6/99, 1105

Completed:

9/6/99, 1645

Purge Method(S):

Diaphragm pump - micropurge system

Total Quantity of Water Removed:

72 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	HAZCO # 148821 Hontela U-10	9/6/99
Specific Conductivity	HAZCO # 148821	9/6/99
Water Level	HAZCO # 2053	NA
pH	HAZCO # 148821	9/6/99

Recorded By:

Heather Smith 9/6/99
(Signature and Date)

QA Check By:

Vicki Brumbach 12-6-99
(Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yyyy): 9/6/99

TIME: 11:00

WELL ID NUMBER: 461mw80

WELL LOCATION: Load Line 1, RMAP

DEPTH OF SCREENED INTERVAL (to notch): ft. to ft.

INNER CASING: TYPE: Sch. 40 A/C ID: 2" 50 inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_f = 3.142 \times [(dH/2)^2 - (dO/2)^2] \times (TD - S \text{ or } L_{\text{casing}})$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. d_o = outside of diameter of well casing, ft. d_i = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%) dH = diameter of borehole, ft. TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casingPURGE METHOD: ☐ Bladder Pump ☒ Pump Type HAMINIMUM PURGE VOLUME = $V_t \times 3$ PURGE VOLUME: 15.71 16 GAL. $\rightarrow$ if we needed to purge for traditionalSAMPLE METHOD: ☐ Bladder Pump ☒ Other (specify) HA

bailer sampling method. Not reg. for micropurge system.

SITE CONDITIONS DURING PURGING: nothing out of ordinary

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED

FIELD OBSERVATIONS: nothing out of ordinaryS&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY: _____RECORDED BY: [Signature]

(Signature)

QA CHECKED BY: [Signature]

(Signature)

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09/02/99

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Matthew Root

Heather Smith

Matthew Root 09/06/99

Narrative (include time and location):

1530 - set up @ LL1 MW 81 + begin purging.
1600 - begin taking readings after ML stabilization @ 35.20' BTOC
1635 - begin sampling: # LLO715 - duplicate
LLO704
1700 - leave site

Matthew Root 09/06/99

Daily Weather Conditions: A.M. NA

P.M. hot, sunny

Recorded By Matthew Root

QA Checked By Heather Smith

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

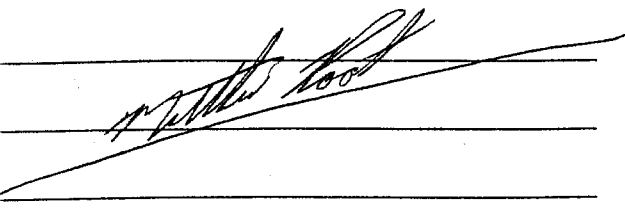
DELIVERY ORDER NO: 003

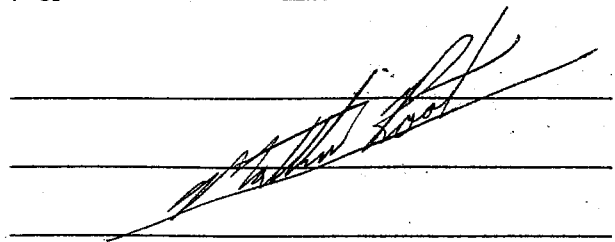
Date (mm/dd/yy): _____

Su M Tu W Th F Sa

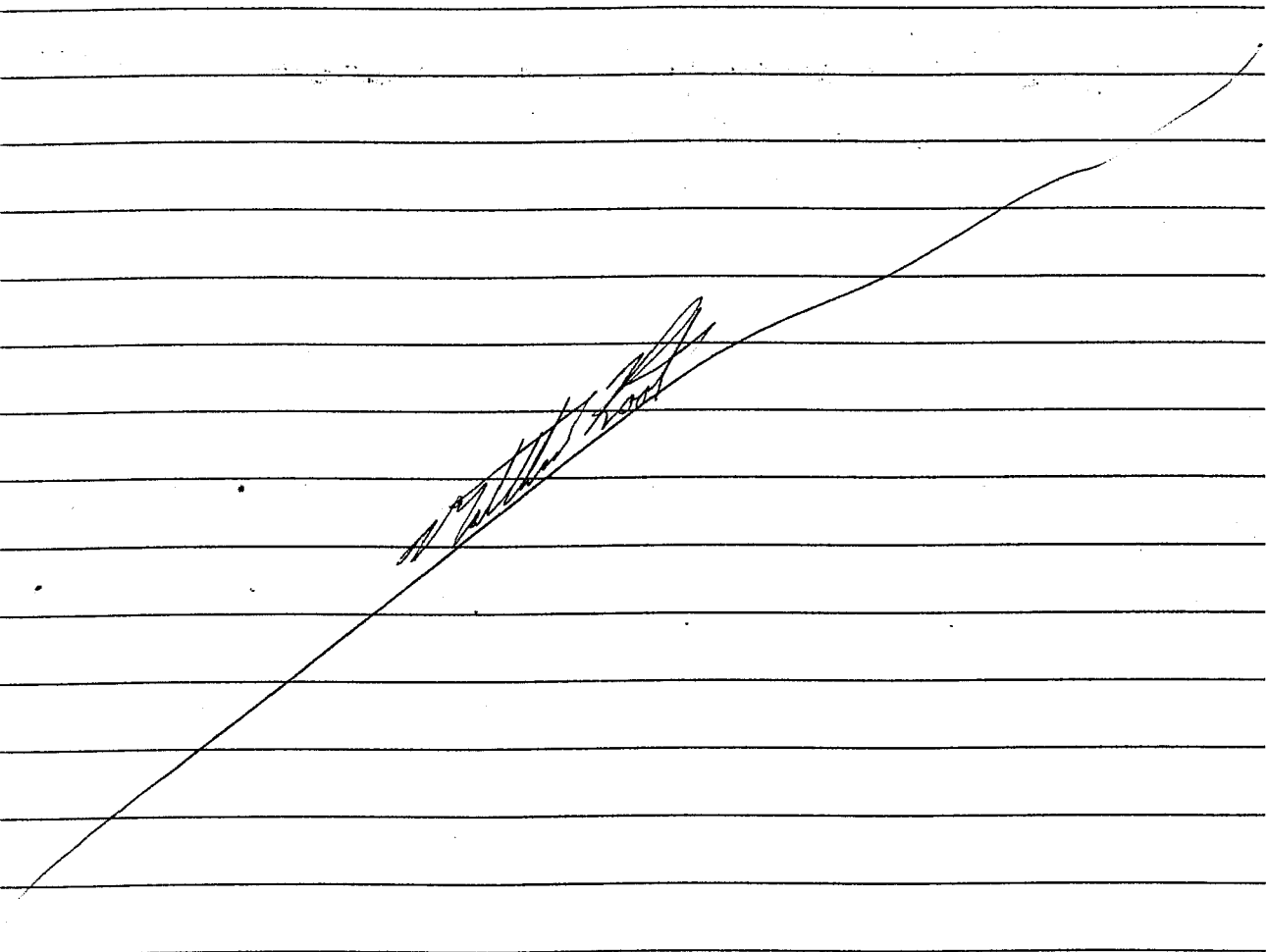
PAGE _____ OF _____

Task Team Members:





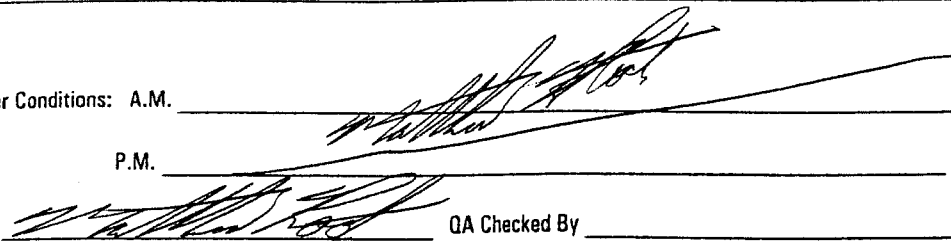
Narrative (include time and location):



Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By



QA Checked By

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL1 MW081

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (uMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
09/02/99	1600	~1500	16.0	0.325	6.62	243	~1500	N/A	WL @ 35.20
09/02/99	1605	~200	16.0	0.325	6.53	122	~1700	1	
	1610	~200	16.5	0.327	6.51	93	~1900		
	1615	~200	15.0	0.325	6.49	44	~2100		WL @ 35.27
	1620	~200	14.7	0.324	6.47	39	~2300		
	1625	~200	14.6	0.325	6.48	15	~2300		WL @ 35.28
	1630	~200	14.4	0.325	6.47	13	~2500		
	1635	~200	14.3	0.324	6.49	4	~2700		WL @ 35.30
		END PURGE		per Heather Smith					0.02' drop OK'd by
	1828	-	14.8	0.319	6.74	55	-	✓	Heather Smith

RECORDED BY: *[Signature]* 9/2/99 (Signature and Date)

QA CHECK BY: *[Signature]* 11/18/99 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 09/02/99

Time: 1614

Well Number and Location: LL1 MW Ø81

Purge Crew:

Matthew Root

Heather Smith

Date and Time: Begin: 09/02/99 1530 Completed: 09/02/99

Purge Method(S):

QED micro-purge w/ a bladder pump

Total Quantity of Water Removed: ~3 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	Hanna U-10 # 148820	09/02/99
Specific Conductivity	↓	↓
Water Level		
pH	↓	↓

Recorded By:

Matthew Root

(Signature and Date)

QA Check By:

Heather Smith

(Signature and Date)

11/18/99

TIME: 17:30

WELL LOCATION: Load #1

TIME: 17:30

TIME: 17:30

TIME: 17:30

$$VF = 3.142 \times \left[\frac{(dH/2)^2}{0.34} - \frac{(dO/2)^2}{0.096} \right] \cdot (TD \cdot Sor_{1,1,1}) \cdot P_{30\%}$$

NOTE: If $S > H_{use} S$, if $S < H_{use} H$

$$V_t = \{V_c + V_f\} \{7.48\}$$

WHERE:

/c = Volume of water in well casing, cu.ft.

V_t = Total volume, gal

Vf = Volume of water in filter pack, cu.ft.

do = outside of diameter of well casing, ft. = 0.192

di = inside diameter of well casing, ft. = 0.167

P - estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%)

PURGE METHOD: [] Bailer ☒ Bladder Pump [] Pump Type GED #16276

9L291 # Q3D

MINIMUM PURGE VOLUME = $V_t \times 3$

PURGE VOLUME: ~ 3 GAL.

SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify) HA

A

16 SITE CONDITIONS DURING PURGING: used deconed pump to sample

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: water not very cloudy @ initial inspection

SS&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES [] NO IF NO, WHY WAS A DEVIATION NECESSARY:

RECORDED BY: Matthew Bond

DATA CHECKED BY: Kelly J. J...
(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09-04-99

Su M Tu W Th F (Sa)

PAGE 1 OF 1

Task Team Members:

Heather L Smith

Math Root

~~MS~~
~~09-04-99~~

Narrative (include time and location):

0930 On site, build tubing for LLmw 82.

0950 Start compressor - turn off water has not ^{equilibrated} ~~equilibrated~~.

(Initial Water Level 33.02' BGS - B4 pump installed ⁰⁹³⁰ ~~0930~~)

1050 WATER Level = 32.87' BGS START COMPRESSOR.

1103 Attempting to stabilize water drawdown -
current WL = 33.18 Running @ ~20ml

1150 WL @ 33.40 still running @ ~20ml. - Sign logbook over to M. Root
- Heather Smith

1225 end purging + begin sampling

1345 WL @ 33.62 ← resume logbook Heather Smith

1510 Sampling Complete.

SAMPLE ID # ~~LLmw~~ ⁹⁻⁴⁻⁹⁹ U0710/U0711

took propellants, explosives, Metals (TOTAL FILTERED)
3 Cyanide

1625

~~1525~~ Leave site - Final WATER LEVEL = 33.86

TOTAL DRAW DOWN .99' over 5 hours 15 minutes

Daily Weather Conditions: (A.M.) overcast, cool ~75°

P.M. 11A

Recorded By

Math Root
Heather L Smith

QA Checked By

Ursin Borumbe

30

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): _____

Su M Tu W Th F Sa

PAGE _____ OF _____

Task Team Members:

~~MSR 09/04/99~~

~~MSR 09/06/99~~

Narrative (include time and location):

~~MSR 09/06/99~~

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By _____

QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL1 MW 082

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (uMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
09/04/99	1120 ^{MS}	~500	20.4	0.146	6.55	336	~500	N/A	WL not able to be
	1130	~20	20.7	0.134	6.67	277	~520		stabilized @ any acceptable
	1135	~20	20.5	0.132	6.57	245	~540		flow rate. The lowest
	1140	~20	20.6	0.131	6.54	233	~560		possible rate w/ the least
	1145	~20	21.0	0.131	6.62	183	~580		drawdown was close ~ (20 m/h)
	1150	~20	20.6	0.131	6.51	158	~600		
	1155	~20	20.4	0.131	6.53	144	~620		
	1200	~20	20.1	0.132	6.52	129	~640		
	1205	~20	20.0	0.132	6.53	125	~660		
	1210	~20	19.9	0.132	6.54	106	~680		
	1215	~20	19.6	0.133	6.54	97	~700		
	1220	~20	19.2	0.133	6.55	84	~720		WL @ 33.60' BTOC
	1225	~20	19.4	0.134	6.55	82	~740		
		END	PURGING						per Heather Smith - Turbidity
	1410	—	16.2	0.131	6.78	343	—		is OK

RECORDED BY: *[Signature]*

(Signature and Date)

QA CHECK BY: *[Signature]*

(Signature and Date)

WELL PURGE RECORD	
PROJECT NAME: <u>Load Line 1 Phase II RI</u>	PROJECT NO: <u>003</u>

Page 1 of 1

Date: 09/04/99 Time: 1000

Well Number and Location: LL1 MW 082

Purge Crew: MATT KOOT
HEATHER SMITH

Date and Time: Begin: 09/04/99 1100 Completed: 09/04/99 1225

Purge Method(S): QED micropurge system w/ a bladder pump
@ 120 ml/min

Total Quantity of Water Removed: ~1 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	<u>Horiba U-10</u> <u>#148826</u>	<u>09/04/99</u>
Specific Conductivity	↓	↓
Water Level	<u>nanco</u> <u>#2053</u>	<u>NA</u>
pH	↓	↓

Recorded By: [Signature]
 (Signature and Date)

QA Check By: [Signature]
 (Signature and Date) 11/18/99

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 0003

DATE (mm/dd/yyyy): 09/04/99

TIME: 10:10

WELL ID NUMBER: LLI MW 082

WELL LOCATION: LLI

DEPTH OF SCREENED INTERVAL (to notch): _____ ft. to _____ ft.

INNER CASING: TYPE: PVC ID: 2 inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$V_f = 3.142 \times ((dH/2)^2 - (do/2)^2) \times (TD - S \text{ or } L_{\text{pack}})$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. do = outside of diameter of well casing, ft. di = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Morie #1 sand or glass beads this value is estimated at a range of 30 to 35%) dH = diameter of borehole, ft. TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casingPURGE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Pump Type QED #16276MINIMUM PURGE VOLUME = $V_t \times 3$ PURGE VOLUME: ~ / GAL.SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify) _____

SITE CONDITIONS DURING PURGING: used a decontaminated bladder pump

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: MTR 09/06/99

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☐ YES ☒ NO IF NO, WHY WAS A DEVIATION NECESSARY: WL dropped to 0.7' per 10min.

RECORDED BY: [Signature]

(Signature)

QA CHECKED BY: [Signature]

(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09-01-99

Su M Tu W Th F Sa

PAGE 1 OF 2

Task Team Members:

Kather Smith

Matt Root

~~HLF~~
~~9-1-99~~

Narrative (include time and location):

1100 - LLI mw 083 -

Initial Water Level = 35.8' BTOC

Total Depth = 41.5' BTOC

Tubing is 35' long + 4' pump. = Bottom

of pump @ 39.0' BGS. TOP of Pump = 35.0' BGS

We can not tag water level while we pump this

Because the top of the pump is 0.8' higher

than the top of the water table. We will micro-

Purge very slowly. & tag water level upon completion

of this hole. The final tag will also reflect

the displacement of the water from the pump removal.

1120 Begin Pumping

Purge rate is ~40ml/min

Sign logbook over to Matt Root

Daily Weather Conditions: A.M. Hot Sunny 70-85-

P.M.

NA

Recorded By

Kather Smith

QA Checked By

Vicki Brunbal

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09/01/99

Su M Tu W Th F Sa

PAGE 2 OF 2

Task Team Members:

Heather Smith
Matt Root

12/9/99

Narrative (include time and location):

1240 - begin sampling (end purging).

1445

Heather Smith took over back

- 1445 leave site sampling complete - HS

Final water level ^{immediately} after pulling pump = 35.78' ^{BS}

Equipment used during sampling event

Micropurge flow cell #: 206276

PID #: 13275

hoibra #: 148820 # SMC

aircompressor: belongs to SMC

PED controller box: belongs to SMC

Sample ID # LL0708 taken @ 1415

took 1-Cyanide 250 ml

Filtered & unfiltered Metals 1-L Poly

Explosives & Propellants 2ea Amb. Glass

Daily Weather Conditions: A.M. NA

P.M.

Recorded By

Heather Smith

QA Checked By

Liz Brumback

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: LL1mw83

DATE	TIME	ML GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM) 15% 15%	pH (Standard Units) F.2	TURBIDITY CLO	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
09/10/99	1140	999 ~300	19.89	325.00	4.43	999	~300		sample in direct sunlight
09/10/99	1145	~330	18.59	325.00	4.82	999	~630		~66 ml/min
09/10/99	1150	~330	17.53	324.00	4.93	999	~960		
09/10/99	1155	~330	16.95	324.00	4.71	999	~1290		
09/10/99	1200	~375	16.39	324.00	4.25	835	~1665		~75 ml/min
	1205	~375	16.57	323.00	4.15	680	~2040		
	1210	~375	16.85	323.00	4.00	390	8415		
	1215	~375	17.01	324.00	3.88	295	2790		
	1220	~375	17.05	324.00	3.85	296	3165		
	1225	~375	17.45	324.00	3.68	183	3540		
	1230	~375	17.73	324.00	3.59	155	3915		
	1235	~375	18.01	324.00	3.52	147	4290		
	1240	~375	18.21	324.00	3.46	139	4665		
	End purging + begin sampling								

RECORDED BY: *[Signature]*

9/11/97

(Signature and Date)

QA CHECK BY: *[Signature]*

9/11/95

(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

PROJECT NO: 003

Page 1 of 1

Date: 9/1/99

Time: 1100

Well Number and Location:

LL1mw 083

Purge Crew:

Deather Smith

Matt Root

Date and Time: Begin:

9/1/99, 1140

Completed:

9/1/99, 1240

Purge Method(S):

bladder pump.

Total Quantity of Water Removed:

4.665 ~~L~~
-gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	HAZCO # 148820	9/1/99
Specific Conductivity	HAZCO # 148820	9/1/99
Water Level	HAZCO # 2053	NA
pH	HAZCO # 148820	9/1/99

Recorded By:

Deather Smith 11/18/99
(Signature and Date)

QA Check By:

Vicki Brumbach 12-6-99
(Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase I RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yyyy): 09-01-99

TIME: 11:00

WELL ID NUMBER: LLMW83

WELL LOCATION: Load Line 1

DEPTH OF SCREENED INTERVAL (to notch): _____ ft. to _____ ft.

INNER CASING: TYPE: PVC - sch 40 ID: 2" ID inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$$VF = 3.142 \times (dH/2)^2 \cdot (do/2)^2 \cdot (TD - S \text{ or } L, \dots)$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu. ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu. ft. do = outside diameter of well casing, ft. di = inside diameter of well casing, ft. P = estimated porosity of filter pack for most Ottawa, Morte #1 sand or glass beads this value is estimated at a range of 30 to 35%PURGE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Pump TypeMINIMUM PURGE VOLUME = $V_t \times 3$ SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify)

SITE CONDITIONS DURING PURGING: nothing out of the ordinary

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: Purging @ ~65 m/min

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY: _____

RECORDED BY:

(Signature)

QA CHECKED BY:

(Signature)

$$3.142 \times \left(\frac{2}{12}\right)^2 \times 5.7 = .12437$$

$$3.142 \times \left(\frac{2}{12}\right)^2 \times 5.7 = 1.526$$

$$(.12437 + 1.526) \times 7.48 = 12.346$$

$$.4578$$

 dH = diameter of borehole, ft. 7" 1.956 gal TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casing 19.05' + Stick up from ground surface.PURGE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Pump TypeMINIMUM PURGE VOLUME = $V_t \times 3$ SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify)

SITE CONDITIONS DURING PURGING: nothing out of the ordinary

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: Purging @ ~65 m/min

RECORDED BY:

(Signature)

QA CHECKED BY:

(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 09-04-99

Su M Tu W Th F (Sa)

PAGE 1 OF 1

Task Team Members:

Heather Smith

Matt Root

HLS
09-04-99

Narrative (include time and location):

Pump length for LLmw84 is 385' BTOC to intake. (~36' BGS)

1050 Pump set in well. - Heather J Smith

1130 - arrive @ well + set up equipment @ 1530

1145 - begin purging well - initial WL = 32.22 @ 1545
stabilize WL @ 32.47

1715 - talked w/ Heather + decided to stop purging + begin sampling

1715 - WL = 32.60' BTOC - after talking w/ Heather Smith it was decided to bump up (increase) the sampling rate + allow for additional drawdown due to time constraints. due to reaction of other wells to a faster purge rate - HS

1755 - WL = 32.68' BTOC

1830 - WL = 32.71' BTOC → stabilization occurred at this water level after increasing the flow rate.

1903 - end sampling # LL0710 & LL0711 - HS

- WL = 32.71' BTOC

TOTAL draw down .11' over 3 1/2 hrs. - HS

Daily Weather Conditions: A.M. HA

P.M.

cloudy, windy, hot

Recorded By

Matt Root

QA Checked By

Heather J Smith

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): _____

Su M Tu W Th F Sa

PAGE ____ OF ____

Task Team Members:

MTR 09/06/99

MTR 06/09/99

Narrative (include time and location):

MTR 06/09/99

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By *[Signature]* QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

PAGE 1 OF 1

WELL NUMBER AND LOCATION: 441 MW 084

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
09/04/99	1600	~250	23.1	0.182	4.35	326	~250	NA	WL @ 32.47
	1605	~20	22.8	0.18	4.34	218	~270		
	1610	~20	22.2	0.181	4.32	168	~290		
	1615	~20	22.0	0.179	4.31	166	~310		
	1620	~20	21.9	0.178	4.31	163	~330		WL @ 32.48
	1625	~20	22.1	0.178	4.30	149	~350		
	1630	~20	22.9	0.176	4.30	147	~370		
	1635	~20	22.9	0.177	4.31	125	~390		
	1640	~20	22.6	0.177	4.30	117	~410		WL @ 32.48
	1645	~20	22.8	0.176	4.30	98	~430		
	1650	~20	23.1	0.176	4.30	94	~450		
	1655	~20	22.9	0.176	4.29	88	~470		
	1700	~20	22.9	0.178	4.30	74	~490		
	1705	~20	22.1	0.177	4.32	62	~510		WL @ 32.49
	1710	~20	22.0	0.176	4.32	50	~530		
	1715	~20	21.8	0.177	4.33	50	~550		

RECORDED BY: *[Signature]*

(Signature and Date)

END PURGE

QA CHECK BY: *[Signature]*

(Signature and Date)

161

4.42

0.175

16.4

1903

—

16.4

11-18-99

NA

WELL PURGE RECORD	
PROJECT NAME: <u>Load Line 1 Phase II RI</u>	PROJECT NO: <u>003</u>

Page 1 of 1

Date: 09/04/99

Time: 1735

Well Number and Location:

LL1 mw 084

Purge Crew:

Matthew Root
Heather Smith

Date and Time:

Begin:

09/04/99 1700

Completed:

0904 1703

Purge Method(S):

QED micropurge w/ a bladder pump

Total Quantity of Water Removed:

~1

gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	Horiba U-10 #148826	09/04/99
Specific Conductivity		
Water Level	HAZCO #2053	NA
pH		

Recorded By:

Matthew Root 9/4/99
(Signature and Date)

QA Check By:

Heather Smith 11/18/99
(Signature and Date)

DATE (mm/dd/yyyy): 09/04/99

WELL ID NUMBER: LL1NW84

TIME: 16:20

WELL LOCATION: LL2

DEPTH OF SCREENED INTERVAL (to notch): ft. to ft.

INNER CASING: TYPE: PVC ID: 2 inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (di/2)^2 \times (TD-H)$

$VF = 3.142 \times [(dH/2)^2 - (do/2)^2] \times (TD - S \text{ or } L, \dots)$

NOTE: If $S > H$ use S , if $S < H$ use H

 $V_t = (V_c + V_f) (7.48)$

WHERE:

V_c = Volume of water in well casing, cu.ft.

V_t = Total volume, gal

V_f = Volume of water in filter pack, cu.ft.

do = outside of diameter of well casing, ft.

di = inside diameter of well casing, ft.

P = estimated porosity of filter pack (for most Ottawa, More #1 sand or glass beads this value is estimated at a range of 30 to 35%)

PURGE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Pump Type QED #16276

MINIMUM PURGE VOLUME = $V_t \times 3$ PURGE VOLUME: GAL.

SAMPLE METHOD: ☐ Bailer ☒ Bladder Pump ☐ Other (specify)

SITE CONDITIONS DURING PURGING: need a decont bladder pump

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: MSR 9/16/99

S&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY:

RECORDED BY: [Signature] (Signature)

QA CHECKED BY: [Signature] (Signature)

8

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

Date (mm/dd/yy): 9/3/99Su M Tu W Th F SaPAGE 1 OF 1

Task Team Members:

M. CloughM. Root

Narrative (include time and location):

0730 Arrive at CLMW085 to begin
Sampling Activities H₂O level = 37.74' BTOC

0745- While trying to put pump down
well - alignment test failed.

Bladder pump will not pass
past ~ 7 ft BTOC.

Will use bailer method to sample

0825 Begin bailing.

1016 Sample well # 85

1100 off site -HS

~~HS~~
~~11-18-99~~

Daily Weather Conditions: A.M.

Sunny, 70's, Lt. breeze

P.M.

NA

Recorded By

Yanick Clough

QA Checked By

[Signature]

23

DELIVERY ORDER NO: 003

PAGE / OF

[illegible]

P.M. _____

Recorded By _____ QA Checked By _____

DELIVERY ORDER NO: 003

PROJECT NAME: Load Line 1 Phase II RI

PAGE (OF (

WELL NUMBER AND LOCATION: LLMW085

[illegible]

RECORDED BY:

Yankel Cough 9/3/99
(Signature and Date)

QA CHECK BY: ,

Dea. M. J. Smith 11-8-59
(Signature and Date)

WELL PURGE RECORD	
PROJECT NAME: <u>Load Line 1 Phase II RI</u>	PROJECT NO: <u>003</u>

Page 1 of 1

Date: 9/3/99 Time: 10800

Well Number and Location: LLIMW085 - Load Line 1 RUAP

Purge Crew: M. Clough / M. Root

Date and Time: Begin: 9/3/99, 0825 Completed: 9/3/99, 1012

Purge Method(S): Disposable Bailer

Total Quantity of Water Removed: 28 gals

HORIBA U-10 Water Quality Checker

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	148824	3 SEPT 99
Specific Conductivity	↓	↓
Water Level	2053-HA2CB	NA
pH	148826	3 SEPT 99

Recorded By: Mauro E Clough 9/3/99 (Signature and Date)

QA Check By: Heather Smith 11/18/99 (Signature and Date)

GROUND WATER PURGE SHEET

PROJECT NAME: Load Line 1 Phase II RI

DELIVERY ORDER NO: 003

DATE (mm/dd/yy): 9/3/99

TIME: 0: 800

WELL ID NUMBER: LLMW085

WELL LOCATION: Load Line 1 RUAA P

DEPTH OF SCREENED INTERVAL (to notch): _____ ft. to _____ ft.

INNER CASING: TYPE: PVC ID: 2 inches

WELL VOLUME CALCULATION $V_c = 3.142 \times (d_i/2)^2 \times (TD-H)$

$$V_f = 3.142 \times [(dH/2)^2 - (d_i/2)^2] \times (TD - S \text{ or } L_{\text{screen}})$$

NOTE: If $S > H$ use S , if $S < H$ use H

$$V_t = (V_c + V_f) (7.48)$$

WHERE:

 V_c = Volume of water in well casing, cu.ft. V_t = Total volume, gal V_f = Volume of water in filter pack, cu.ft. d_o = outside of diameter of well casing, ft. d_i = inside diameter of well casing, ft. P = estimated porosity of filter pack (for most Ottawa, Merie #1 sand or glass beads this value is estimated at a range of 30 to 35%) dH = diameter of borehole, ft. TD = total depth of well from top of well casing, ft. H = depth of water, ft., from top of well casing S = depth to base of seal, ft., from top of well casingPURGE METHOD: ☒ Bailer ☐ Bladder Pump ☐ Pump Type _____MINIMUM PURGE VOLUME = $V_t \times 5$ PURGE VOLUME: 27 GAL.SAMPLE METHOD: ☒ Bailer ☐ Bladder Pump ☐ Other (specify) _____

SITE CONDITIONS DURING PURGING: pump would not fit down well.

NOTE: IF WELL HAS A DEDICATED PUMP, IT IS TO BE USED.

FIELD OBSERVATIONS: HAS&A PLAN SAMPLING PROCEDURE FOLLOWED: ☒ YES ☐ NO IF NO, WHY WAS A DEVIATION NECESSARY: _____

RECORDED BY:

Gordon C. Clough

(Signature)

QA CHECKED BY:

Heather Smith

(Signature)

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2000 Groundwater Sampling Logs

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/01/00 ^{BGA 10/04/00} (Su) ☒ (M) Tu W Th F Sa PAGE 7 OF 3
Task Team Members:

BROOKS ABELN

MATT ROOT

KARL GOENRING (UXO)

Narrative (include time and location):

ARRIVED AT LL2 MW-059 @ 1405. RECORDED WATER LEVEL
= 15.26' TOP OF CASING (TIC). BEGAN PURGING @ 1455

AND ENDED @ 1545. PURGED AT 2 CYCLES/MIN,
24 S REFILL, AND 6 S DISCHARGE

1550 COLLECTED SAMPLE # LL1078: 3 VOA'S FOR VOC'S,
(1L)
2 AMBER BOTTLES FOR SVOC'S, 2 (1L) AMBERS FOR
PCB/PESTICIDES, 2 (1L) AMBERS FOR PROPELLANTS, 2 (1L)
AMBERS FOR EXPLOSIVES, 1 POLY BOTTLE FOR METALS,
AND 1 POLY BOTTLE FOR CYANIDE. FLOW RATE
FOR WELL = 142 ml/min

Daily Weather Conditions: A.M. BVA

P.M. SUNNY, WARM (270°F)

Recorded By BROOKS ABELN QA Checked By W.H. Goy 10-11-02

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation **DELIVERY ORDER NO:** 0003

Date (mm/dd/yy): _____ Su M Tu W Th F Sa PAGE _____ OF _____

Task Team Members: _____

Narrative (include time and location):

TPILB

BGA
10/04/00

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By _____ QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Page 2 of 3

Date: 10/01/00

Time: 14:05 W.P.
10-14-02

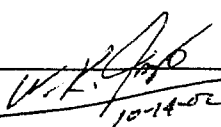
Well Number and Location: LL1mw - 059

Purge Crew: MATT ROOT, BROOKS ABELW, KARL GOEHRING

Date and Time: Begin: 10-01/00 1455 Completed: 10/01/00 1545

Purge Method(S): MICRO PURGE W/BLADDER PUMP

Total Quantity of Water Removed: 1.5 W.P.
10-14-02 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	NA
Specific Conductivity	7019	10/01/00
Water Level	3435	NA
pH	7019	10/01/00
		

Recorded By: B. L. Dech 10/01/00
(Signature and Date)

QA Check By: W.P. 10-14-02
(Signature and Date)

DELIVERY ORDER NO: 0003

PROJECT NAME: LL1 Phase II Remedial Investigation

PAGE 3 OF 3

WELL NUMBER AND LOCATION: 44/ mw-059

[illegible]

RECORDED BY:

BOOKS ARE IN

WLOKS ABZ
(Signature and Date)

QA CHECK BY:

W. K. J. 10-14-02
(Signature and Date)

(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/01/00

(Su) M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

SHARON ROBERS

JASON BROWN

CHARLES L. KLINGER

[Signature]
10-14-02

Narrative (include time and location):

1422 At well # LL2 MW-060 TO MICROPISTON AND SAMPLE GROUNDWATER.

1426 RAN DISPOSABLE BAILER TO TD = OF WELL TO CHECK FOR ALIGNMENT OR OBSTRUCTIONS. SOUNDED BOTTOM OF WELL, WILL DROP PUMP.

1438 BEGIN PUMPING WITH PSI = 18, DISCHARGE = 2 SEC, REFILL = 28 SEC.

1547 PARAMETER STABLE, ALTHOUGH TURBIDITY IS ~12% INSTEAD OF 10%, IT WILL NOT APPROX 5 (NTU) AND IS RELATIVELY STABLE A MAGNITUDE HIGHER. WILL BEGIN SAMPLING. PUMP RATE IS ONLY 41 ml/min.

[Signature]
10-14-02

Daily Weather Conditions: A.M. NA

P.M. Partly Cloudy, Warm ~70°F, Breezy

Recorded By *[Signature]* 10/01/00

QA Checked By *[Signature]* 10-14-02

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

~~Task Team Members:~~

Narrative (include time and location):

P.M. _____

E-98

WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation

DELIVERY ORDER NO 0003

Page 1 of 2

Date: 10/01/00

Time: 1430

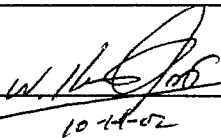
Well Number and Location: LL2MW-060

Purge Crew: SHAWN ROBERTS, JASON BROWN, CHARLES L. KLINER

Date and Time: Begin: 10/01/00 1438 Completed: 10/01/00 1815

Purge Method(S): MICROPURGED WITH QED BLOWER PUMP

Total Quantity of Water Removed: ^{WATER 10-14-02} NOT RECORDED gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	MP20-1028	NA
Specific Conductivity	MP20-1028	10/01/00
Water Level	10200 3435	NA
pH	MP20-1028	10/01/00
		

Recorded By: [Signature] 10/01/00
(Signature and Date)

QA Check By: [Signature] 10-14-02
(Signature and Date)

PROJECT NAME: LL1 Phase II Remedial Investigation

WELL NUMBER AND LOCATION: 442 MW-260

[illegible]RECORDED BY: CLB 10/0/00

(Signature and Date)

QA CHECK BY:

 (Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

DATE: 10/4/00

TASK TEAM MEMBERS: Martha Clough
Eric Martin

NARRATIVE: arrived 08:40 @ mw-063

initial initial depth 28.5 to water

0850 purged 3/4 gallon well dry

1050 depth to water 29.53

WEATHER CONDITIONS:

OVERCAST 65°F NO WIND

RECORDED BY:

E. Martin

13

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation

DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 12 OCT 02

Su M Tu W Th F Sa

PAGE 1 OF 1

WTS
10-14-02

Task Team Members:

M. Clough

B. Williams

WTS
10-14-02

WTS
10-14-02

Narrative (include time and location):

0900 ARRIVE at LL1 MW-63

0914 DEPTH TO WATER 29.12 FT, TOTAL DEPTH OF WELL 30.66

0920 WATER PARAMETERS READ WITH HORIBA U-10

pH 3.82

DO - INSUFFICIENT WATER FOR PROPER MEASUREMENT

cond 0.183 ms/cm

TEMP - 11.3°C

turb 999 NTU

0930 BAILED DRY - LEAVE SITE/WELL

1425 ARRIVE BACK COLLECT ONE 40 ml VOC OF TAPPEL, BAILED DRY

1432 LEAVE SITE/WELL

WTS
10-14-02

Daily Weather Conditions: A.M. SUNNY, CALM, HIGH 50°F

P.M. N/A

Recorded By B. Williams

checked By WTS 10-14-02

TASK TEAM ACTIVITY LOG SHEET

~~Task Team Members:~~

Daily Weather Conditions: A.M. _____

P.M.

Recorded By _____ QA Checked By _____

15

WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Page 1 of 2 ^{WPS}₁₀₋₁₄₋₀₂

Date: 10/12/00

Time: 09:00 ^{WPS}₁₀₋₁₄₋₀₂

Well Number and Location: LL1 MW-63 LOAD LINE 1 - RAVENNA

Purge Crew: M. CLARK

B. WILLIAMS

Date and Time: Begin: 10/12/00 0920 Completed: 10/12/00 109:30 ^{WPS}₁₀₋₁₄₋₀₂

Purge Method(S): DISPOSABLE BARRIER

Total Quantity of Water Removed: 1.0 ^{WPS}₁₀₋₁₄₋₀₂ gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature		
Specific Conductivity		
Water Level		
pH		

Recorded By: BEN WILLIAMS (RECORDER) ^{WPS}₁₀₋₁₄₋₀₂
(Signature and Date)

QA Check By: [Signature] ^{WPS}₁₀₋₁₄₋₀₂
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET
PROJECT NAME: LL1 Phase II Remedial Investigation **DELIVERY ORDER NO: 0003**

Date (mm/dd/yy): 10/02/00 Su M Tu W Th F Sa PAGE 1 OF 1 *WAD 10-14-02*
Task Team Members:

BROOKS ABELN _____
MATT ROOT _____
WAD 10-14-02 *WAD 10-14-02*

Narrative (include time and location):

1300 ARRIVED AT LL1 MW 064. WELL HEADSPACE
READING FOR VOC'S > 2000 ppm. INITIAL WATER
LEVEL = 3.58' (TIC)
1340 BEGAN PURGING AT 4 CYCLES/MINUTE, 9.5 SEC REFILL, AND
5.5 SEC DISCHARGE.
1425 COLLECTED SAMPLE # LL1081: 3 VOA JARS FOR VOC'S,
2 (1L) AMBER JARS FOR SVOC'S, 2 (1L) AMBER JARS
FOR PCB'S/PESTICIDES, 2 (1L) AMBER JARS FOR PROPELLANTS,
2 (1L) AMBER JARS FOR EXPLOSIVES, 1 (1L) POLY JAR FOR
FILTERED METALS, AND 1 (1L) POLY JAR FOR CYANIDE

WAD 10-14-02

Daily Weather Conditions: A.M. NA
P.M. WARM, MOSTLY SUNNY ~ 75°F

Recorded By BROOKS ABELN Checked By WIKES *10-14-02*

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Task Team Members:

Narrative (include time and location):

P.M. _____

E-107

WELL PURGE RECORD

PROJECT NAME: LLI Phase II Remedial Investigation **DELIVERY ORDER NO:** 0003

Page 1 of 2 *WTS 10-14-02*

Date: 10/02/00

Time: 13:00 *WTS 10-14-02*

Well Number and Location: LLI MW - 064

Purge Crew: BROOKS ABELW
MATT ROOT

Date and Time: Begin: 10/02/00 1340 Completed: 10/02/00 1720

Purge Method(S): MICROPURGE W/BLANDER PUMP

Total Quantity of Water Removed: ~2.0 *WTS 10-14-02* gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	NA
Specific Conductivity	7019	10/02/00
Water Level	3435	NA
pH	7019	10/02/00
<i>[Signature]</i> <u>10-14-02</u>		

Recorded By: *[Signature]* 10/04/00
(Signature and Date)

QA Check By: *[Signature]* 10-14-02
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

LEI mw - 064

WELL NUMBER AND LOCATION:

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (μ MHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
10/00/00	1340	-	-	-	-	-	-	NA	DO
	1350	0.5	13.4	.343	7.38	337	0.5		0.19
	1400	0.5	13.2	.344	7.16	-10	1.0		0.10
	1410	0.5	13.1	.344	7.15	-10	1.5		0.08
✓	1420	0.5	13.2	.344	7.14	-10	2.0	✓	0.07
DGA 10/04/00									

QA CHECK BY: W. K. [Signature] 10-14-02
(Signature and Date)

RECORDED BY: B. B. Chak 19/04/02
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/04/00

Su (M) Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

JARSEN BROWN

CHARLES L. KLINGER

~~W. H. G. 10-14-02~~

~~W. H. G. 10-14-02~~

Narrative (include time and location):

1305 AT WELL #LLIMW-065 TO PARGE AND SAMPLE WELL FOR GROUNDWATER.

PID-0ppm AT TOC, RAN DISPOSABLE BAILER TO TD= TO CHECK ALIGNMENT AND FREE OF OBSTRUCTIONS. WILL DROP PUMP.

1324 BEGIN PURGING WELL, GETTING ~116 ml/min.

1517 ALL PARAMETERS STABLE, BEGIN SAMPLING. GROUNDWATER SAMPLE FROM WELL

#LLIMW-065 IS SAMPLE #LL11082, ALSO COLLECTED A

DUPLICATE (#LL11145) AND SPLIT (#LL11194) SAMPLE FOR VOCs,

SVOCs, PCBs, PESTICIDES, METALS (FILTERED), CN, EXPLOSIVES AND PROPAGANTS.

~~W. H. G. 10-14-02~~

Daily Weather Conditions: A.M.

P.M. MOSTLY CLOUDY, WINDY, WARM ~75°F

Recorded By

~~W. H. G. 10-14-02~~

NA Checked By

~~W. H. G. 10-14-02~~

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Task Team Members:

Narrative (include time and location):

Recorded By _____ NA Checked By _____

WELL PURGE RECORD

PROJECT NAME LL1 Phase II Remedial Investigation DELIVERY ORDER NO 0003

Page 1 of 2

Date: 10/02/00

Time: 1250

Well Number and Location: LL1MW-065 NEAR FENCE PAST G RND

Purge Crew: JASON BROWN

CHARLES L. KUNIGER

Date and Time: Begin: 10/02/00 1324 Completed: 10/2/00 1512 ^{with 10-14-02} ₁₀₋₁₄₋₀₂

Purge Method(S): GED Bladder Pump, Microaver

Total Quantity of Water Removed: ^{with 10-14-02} NOT RECORDED gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	MP20-1028	NA
Specific Conductivity	mp20-1028	10/02/00
Water Level	HARZO 3435	
pH	MP20-1028	10/02/00
 10-14-02		

Recorded By: [Signature] (10/02/00)
(Signature and Date)

QA Check By: [Signature] 10-14-02
(Signature and Date)

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WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation

DELIVERY ORDER NO: 0003

PAGE 2 OF 2

WELL NUMBER AND LOCATION: LL1 MW-065

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY (NTU)	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	DTW (FT)	COMMENTS
10/02/00	1318	—	—	—	—	—	—	—	14.37	PID = Open
↑	1324	0	—	—	—	—	—	—	—	BEGIN PURGE
	1332		14.70	531	7.23	920		—	14.37	Average 116 m/min
	1342		14.02	521	7.28	445		—	—	
	1352		13.85	513	7.34	293		—	—	
10/03/00	1402		13.34	505	7.38	171		—	—	
	1412		13.07	501	7.40	127		—	—	Rate 116 m/min
	1422		13.18	499	7.42	77		—	—	
	1432		13.19	496	7.43	56		—	—	
	1442		13.07	496	7.47	44		—	—	176 m/min
	1452		13.12	494	7.45	37		—	—	
	1502		13.14	493	7.42	34		—	—	
	1512		13.16	493	7.42	30		—	—	
↓	1517		—	—	—	—		—	—	BEGIN SAMPLING
	1828		—	—	—	—		—	14.37	FINISHED SAMPLING

RECORDED BY: Collyer (10/02/00)
(Signature and Date)

QA CHECK BY: Collyer (10-4-02)
(Signature and Date)

25.

PAGE 1 OF 1

A handwritten uppercase letter 'Z' is shown on a set of three horizontal lines. A small circle with a dot inside is placed at the top left of the letter, indicating the starting point for writing. The letter is formed by three strokes: a diagonal line down to the left, a horizontal line to the right, and a diagonal line up to the right.

0935 ~~FINISH~~ ~~SOIN~~ Sampling

Checked By [Signature] 10-14-17

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

~~Su M Tu W Th F Sa~~

PAGE OF

Narrative (include time and location):

~~Daily Weather Conditions:~~ A.M.

P.M.

Recorded By

Checked By

27

WELL PURGE RECORD

PROJECT NAME LLI Phase II Remedial Investigation DELIVERY ORDER NO 0003

Page 1 of 2

Date: 10/04/00

Time: 0845

Well Number and Location: LL1 MW-067

Purge Crew: JASON BROWN
CARLOS L. KLINAR

Date and Time: Begin: 10/04/00 0855 Completed: 10/04/00 0940

Purge Method(S): HAND BALED

Total Quantity of Water Removed: 5 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	MP20-1028	NA
Specific Conductivity	MP20-1028	10/04/00
Water Level	WS200 3435	NA
pH	MP20-1028	10/04/00

Recorded By: [Signature]
(Signature and Date)

QA Check By: [Signature] 10-14-02
(Signature and Date)

PROJECT NAME: LL1 Phase II Remedial Investigation

DELIVERY ORDER NO: 0003

PAGE 2 OF 2

WELL NUMBER AND LOCATION: UMW-067

[illegible]

RECORDED BY:

COLBY COLLEGE

(Signature and Date)

QA CHECK BY:

Ch. K. S. 10-14-02
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET	
PROJECT NAME: LL1 Phase II Remedial Investigation	DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/3/00 Su M Tu W Th F Sa PAGE 1 OF 2
Task Team Members:

<u>Paul YESCONIS</u>	<u> </u>
<u>Matt Root</u>	<u> </u>
<u> </u>	<u> </u>

Narrative (include time and location):

Arrived @ LL1 MW-078 1300. Bail'er test was performed and passed, integrity of well was not compromised. Recorded water level (TIC) @ 34.09'. Began Purging @ 13:13 (Purge Cycles, 2 cpm, 24" rec-fill, 6 sec discharge). Purge rate = 380 mil/min. Sampled for: 3 VOA's for VOC's, 2 Ambers (1 liter) for SVOC's, 2 Ambers (1 liter) for Explosives, 2 Amber (1 liter) for propellants, 2 Ambers (1 liter) for PCB/Pesticides, 1 poly bottle (1 liter) for metals, 1 poly bottle (1 liter) for cyanide

10/3/00

PRY

Daily Weather Conditions: A.M.

P.M. Partly Cloudy 75°

Recorded By P. YESCONIS

acked By W. L. [Signature] 10-11-02

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TASK TEAM ACTIVITY LOG SHEET	
PROJECT NAME: LL1 Phase II Remedial Investigation	DELIVERY ORDER NO: 0003

Date (mm/dd/yy): _____ Su M Tu W Th F Sa PAGE 2 OF 2
Task Team Members: _____

10/3/00

Narrative (include time and location):

TPILB

PPY

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By _____ QA Checked By _____

WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation

DELIVERY ORDER NO: 0003

Page 1 of 2

Date: 10/03/00

Time:

Well Number and Location: LL1MW-078

Purge Crew: PAUL YESCONIS

Matt Root

Date and Time: Begin: 10/3/00 13:13 Completed: 10/3/00 1343

Purge Method(S): Micropurge with bladder pump, Equipment: QED MPI 10 Micropurge controller
QED well wizard air compressor # 18836, Horiba U-10 water checker # 7019 MP10-1632

Total Quantity of Water Removed: 2.25 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	10/3/00
Specific Conductivity	7019	10/3/00
Water Level	3435	N/A
pH	7019	10/3/00
D.O.	7019	10/3/00
Turbidity	7019	10/3/00

Recorded By: Progen 10/3/00
(Signature and Date)QA Check By: W. K. P. 10-10-02
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

PAGE 2 OF 2

WELL NUMBER AND LOCATION: L21mw-0788

[illegible]

RECORDED BY:

Paul Bremer 10/3/00

al
(Signature and Date)

QA CHECK BY:

Kate 10-14-02
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/3/00

Su M Tu W Th F Sa

PAGE 1 OF 2

Task Team Members:

Paul YESCONIS

Matt Root

Narrative (include time and location):

Arrived @ LLMW-079, 1445. Baler test was performed and passed, integrity of well was not compromised. Recorded water level (TIC) prior to installation of pump @ 34.39'. Stabilization of water level (TIC) @ 34.68'. Began to Purge @ 1450 (Purge Cycle: 2 cpm, 24 sec Rchill, 60 sec discharge) Purge Rate = 330 ml/min. Samples collected: 3 VOA's for VOC's, 2 Ambers (1 liter) for SVOC's, 2 Ambers for PCB/Pest., 2 Ambers for Explosives, 2 Ambers for propellants, 1 poly bottle for metals, 1 poly bottle for cyanide

10/3/00

PPY

Daily Weather Conditions: A.M. _____

P.M. Partly Cloudy 78°

Recorded By P. YESCONIS

Checked By

E-122

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TASK TEAM ACTIVITY LOG SHEET	
PROJECT NAME: LL1 Phase II Remedial Investigation	DELIVERY ORDER NO: 0003

Date (mm/dd/yy): _____ Su M Tu W Th F Sa PAGE 2 OF 2
Task Team Members: _____

10/3/00

Narrative (include time and location):

TPILB

PR1

Daily Weather Conditions: A.M. _____
P.M. _____

Recorded By _____ QA Checked By _____

35

WELL PURGE RECORD	
PROJECT NAME <u>LL1 Phase II Remedial Investigation</u>	DELIVERY ORDER NO. <u>0003</u>

Page 1 of 2

Date: 10/3/00

Time:

Well Number and Location:

LL1MW-078 ^{g vjb 4/2/01}

Purge Crew:

Paul Vesconis
Matt Root

Date and Time:

Begin: 10/3/00 1 1450

Completed: 10/3/00 1 1550

Purge Method(S):

Micropurge w/ bladder pump, Equip: QED MPI Micropurge contr. # MP10-1032,
QED wellhead air comp # 19836, Herts 0-10 waterchecker # 7019

Total Quantity of Water Removed:

3.0 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	10/3/00
Specific Conductivity	7019	↓
Water Level	3435	
pH	7019	
D.O.	7019	
Turbidity	7019	

Recorded By:

Paul Vesconis 10/3/00
(Signature and Date)

QA Check By:

W. Root 10-14-02
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

PAGE 2 OF 2

WELL NUMBER AND LOCATION: LL1 MW-678

[illegible]

RECORDED BY:

Paul S. ...
(Signature and Date)

rd
(Signature and Date)

QA CHECK BY:

C. J. Kalk 10-14-02
(Signature and Date)

(Signature and Date)

E-125

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/4/00

Su M Tu W Th F Sa

PAGE 1 OF 1

Task Team Members:

Matt Root

Paul Vesconis

Narrative (include time and location):

Arrived @ LL1mw-080 0900. Bailer test was performed and passed, integrity of well was not compromised. Recorded water level (TIC) Top of inner casing @ 12.87' prior to placement of bladder pump. Began to purge @ 0925. Purge Cycle (1rpm, 57 sec refill, 3 sec discharge). At lowest cycle possible water level drop 0.05' per min. Can not lower cycles per min. due to limitations of machine. Ended purging at 1025. Began sampling @ 1025. Flow Rate = 133 ml/min. Collected samples: 3 vials for VOC's, 2 Ambers (1 liter) for SVOC's, 2 Ambers (1 liter) for Explosives, 2 Ambers (1 liter) for propellants, 2 Ambers (1 liter) for PCB/Pesticides, 1 poly bottle (1 liter) for metals, 1 poly bottle (1 liter) for cyanide.

10/4/00

PRY

Daily Weather Conditions: A.M. Cloudy 55°-58° (Am) / (Pm)

P.M.

Recorded By P. VESCONIS

Checked By W. Root 10-11-02

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TASK TEAM ACTIVITY LOG SHEET	
PROJECT NAME: LL1 Phase II Remedial Investigation	DELIVERY ORDER NO: 0003

Date (mm/dd/yy): _____ Su M Tu W Th F Sa PAGE _____ OF _____

Task Team Members:

10/4/00

Narrative (include time and location):

PI LB

PRY

Daily Weather Conditions: A.M. _____

P.M. _____

Recorded By _____ CA Checked By _____

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WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation **DELIVERY ORDER NO:** 0003

Page 1 of 2 ¹⁰⁻¹⁴⁻⁰²

Date: 10/4/00

Time: 09:00 ¹⁰⁻¹⁴⁻⁰²

Well Number and Location: LL1 MW - 080

Purge Crew: Matt Root, PAUL YESCONIS

Date and Time: Begin: 10/4/00 / 0925 Completed: 10/4/00 / 1025

Purge Method(S): Micro purge w/ bladder pump, Equipment: QED MPI10 micro purge controller # MPI10-1032, QED well wizard air compressor #18836, Horiba

Total Quantity of Water Removed: 0.90 gals U-10 WC # 7019

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	10/4/00
Specific Conductivity	7019	10/4/00
Water Level	3435	N/A
pH	7019	10/4/00
D.O.	7019	10/4/00
Turbidity	7019	10/4/00

Recorded By: [Signature] 10/4/00
(Signature and Date)

QA Check By: [Signature] 10-14-02
(Signature and Date)

DELIVERY ORDER NO. 0003

PROJECT NAME: LL1 Phase II Remedial Investigation

PAGE 2 OF 2 *WDB*
10-14-02

WELL NUMBER AND LOCATION: *Ulinw-080*

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (μ MHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
10/4/00	0925	—	15.7°	0.218	5.70	1.0	—	N/A	DTW(FIC) - 12.87 m/sppm
	0935	0.25	15.8°	0.207	5.82		0.25		Water level not stabilized
	0945	0.25	15.9°	0.265	5.71		0.50		
	0955	0.05	15.8°	0.301	5.80		0.55		
	1005	0.25	15.8°	0.413	5.81		0.80		
	1015	0.05	15.9°	0.443	5.88		0.85		
	1025	0.05	16.0°	0.460	5.90		0.90		
		10/4/00							

RECORDED BY: K. S. G.
(Signature and Date)

QA CHECK BY: W. K. [Signature] 10-14-02
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/03/00

Su M TU W Th F Sa

PAGE 1 OF 1

Task Team Members:

JASON BROWN

PID# 13898

CHARLES L. KLINGER

Narrative (include time and location):

0835 AT WELL # LL1MN-081 AT NE CORNER OF BLDG. CB-4 TO COLLECT
GROUNDWATER SAMPLES # LL1087 FOR VOCs, SVOCs, PCBs, CN, FILTERED METALS,
EXPLOSIVES AND PROPAGANTS. CHECKED WELL HEAD WITH PID, RESULT WAS 0ppm,
ABOVE BACKGROUND (BG = 10.5, VERY HUMID)

0852 CHECKED WELL TO TID= WITH DISPOSABLE BAUER TO CONFIRM PROPER
ALIGNMENT AND NO OBSTRUCTIONS.

0920 PUMP IN WELL, FLOW CELL ETC. SET UP, WAITING FOR OTHER CREW TO FINISH
WITH SHARED WATER TAPE.

1005 FLOW RATE ADJUSTED WITH 68 ml/min, PSI=20, DISCHARGE=3 SEC
AND REEL=27 SEC

1030 REACHED STABLE PARAMETERS (W/I 10%) AND BEGAN TO SAMPLE.

Daily Weather Conditions: A.M. SUNNY, HOT, HUMID, CALM, 65°F

P.M.

Recorded By

Checked By

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Task Team Members:

Narrative (include time and location):

P.M. _____

E-131

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WELL PURGE RECORD	
PROJECT NAME: <u>LL1 Phase II Remedial Investigation</u>	DELIVERY ORDER NO: <u>0003</u>

Page 1 of 2

Date: 10/03/00

Time: 0835

Well Number and Location: LL1MW-081

Purge Crew: JASON BROWN

CHARLES L. KLINGER

Date and Time: Begin: 10/03/00 0940 Completed: 10/03/00 10:25 ^{into 10-14-02}

Purge Method(S): MICROPURGE ^{with 10-14-02}

Total Quantity of Water Removed: >2 ^{with 10-14-02} gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	MP20-1028	NA
Specific Conductivity	MP20-1028	10/03/00
Water Level	WAZCO ^H 3435	NA
pH	MP20-1028	10/03/00

Recorded By: CC [Signature] (10/03/00)
(Signature and Date)

QA Check By: W. [Signature] 10-14-02
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

PAGE 2 OF 2 ⁴⁴⁵₁₀₋₁₄₋₈₂

WELL NUMBER AND LOCATION: 44mw-081

[illegible]

RECORDED BY: CLL (10/03/00)
(Signature and Date)

QA CHECK BY: W. K. 10-11-02
(Signature and Date)

45

TASK TEAM ACTIVITY LOG SHEET	
PROJECT NAME: LL1 Phase II Remedial Investigation	DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/02/00 Su (M) Tu W Th F Sa PAGE 1 OF 2
Task Team Members:

<u>SHARON ROBERS</u>	<u>10/03/00</u>
<u>JASON BROWN</u>	<u>JASON BROWN</u>
<u>CHARLES L. KLINGER</u>	<u>CHARLES L. KLINGER</u>

Narrative (include time and location):

0900 At well # LL1 MW 082 TO PURGE AND SAMPLE GROUNDWATER.
RAN DISPOSABLE BOLLER DOWN WELL TO TD= TO CHECK ALIGNMENT AND
FOR OBSTRUCTIONS. NO PROBLEMS, WILL INSTALL (QES) BLADDER PUMP.
0918 Set up AND READY TO BEGIN, MUST WAIT FOR WATERTAPE (SHOULD W/ OTHER
CROW) BEFORE STARTING
1026 EXTREMELY HARD TIME SETTING PURGE RATE DUE TO ONLY A COUPLE OF
FEET OF WATER ABOVE INTAKE AND FOUR RECOVERY
1045 SHUT OFF PUMP, ONLY GETTING AIR OR <50 ml WATER VOLUMES
PER CYCLE, WILL CONSULT WITH KATH DEMINIC ON HOW TO PROCEED.
1116 COULD NOT REACH K.D. OR OFFICE, PACKED-UP + HEADED TO 1036,
1240 PULSED PUMP, TAGGED TOP OF PUMP @ ~37.5 BTOL, BELIEVE PUMP
BLADDER IS LEAKING.
10/03/00 1520 At well LL1 MW 082 TO PURGE + SAMPLE.
1536 BEGIN PURGING.
1640 BEGIN SAMPLING, PARAMETERS ARE STABLE.

Daily Weather Conditions: 10/03/00 A.M. Mostly Sunny, Cool ~ 60°F, Windy
10/04/00 P.M. Sunny Warm, Breezy

Recorded By CLK 10/02/00 QA Checked By W. K. 10-14-02

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/03/00 Su M TU W Th F Sa PAGE 2 OF 2

Task Team Members:

JASON BROWN

CARLOS L. KLINGER

Narrative (include time and location):

1850 FINISHES SAMPLING, WILL PACK-UP AND DEMO FROM
WELL SITE

OK

Daily Weather Conditions: A.M. NA

10/03/00 P.M. Sunny, Warm, Breezy

Recorded By CLK

QA Checked By W. H. G. 10-14-02

WELL PURGE RECORD		
PROJECT NAME:	LL1 Phase II Remedial Investigation	DELIVERY ORDER NO: 0003

Page 1 of 2

Date: 10/02/00
10/03/00 - RESUME PURGE + SMPW

Time: 0800

Well Number and Location: LL1 MW-082 BETWEEN BDCS 4A AND 6A

Purge Crew: SHAWN ROGERS, JASON BROWN, CHARLES L. KLINGER

Date and Time: Begin: 10/03/00 1536 Completed: 10/03/00 1850

Purge Method(S): MICRO-PURGE WITH BLADDER PUMP (CED)

Total Quantity of Water Removed: ^{WBS 10-11-02} NOT RECORDED gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	MP20-1028	NA
Specific Conductivity	MP20-1028	10/02/00 / 10/03/00
Water Level	HAZCO 3435	NA
pH	MP20-1028	10/02/00 / 10/03/00

Recorded By: [Signature] 10/02/00
 (Signature and Date)

QA Check By: [Signature] 10-11-02
 (Signature and Date)

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WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation

DELIVERY ORDER NO: 0003

PAGE 2 OF 2

WELL NUMBER AND LOCATION: LL1 MW-082

DATE	TIME	GALLONS REMOVED	TEMP(C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	DTW (ft)	COMMENTS
10/02/00	0740	—	—	—	—	—	—	—	29.81	DD
	0744	—	—	—	—	—	—	—	—	BEGIN PURGE
	1009	>1	16.9	307	6.86	104	>1	—	30.25	6.30
	1029	1	13.9	297	7.02	77	1	—	31.68	10.63
✓	1109	—	—	—	—	—	20AL	—	30.15	—
10/03/00	1536	—	—	—	—	—	—	—	29.55	—
	1550	—	15.40	295	6.85	—	—	—	30.55	1.25
	1600	—	15.97	294	6.78	—	—	—	30.75	0.87
	1610	CELL IN 01.02.05.00	17.16	290	6.74	38	—	—	30.80	0.88
	1620		16.62	289	6.72	25	—	—	30.84	0.83
	1630		16.92	289	6.73	19	—	—	30.88	0.85
	1640	—	—	—	—	—	—	—	—	BEGIN SAMPLING
	1850	—	—	—	—	—	—	—	31.01	END SAMPLING

RECORDED BY: W. K. [Signature] (Signature and Date)

QA CHECK BY: W. K. [Signature] (10-14-02) (Signature and Date)

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PAGE 11 OF 22

Task Team Members:

Matt Root

Paul Vesconis

Narrative (include time and location):

DB45 arrived at LL1-MW~~083~~¹⁴⁷¹⁰ MW083. Bailor test was performed and passed, integrity of well was not compromised. Recorded water level @ 35.02' (TIC) Top of inner casing, prior to placement of bladder pump. Began purging @ 0920 (Purge Cycle, 2 cpm, 24 sec refill, 6 sec discharge). Ended purging @ 1000. Flow Rate = 400 mil/min. Sampling collected: 3 VOA's for VOC's, 2 Ambers (1 liter) for SVOC's, 2 Ambers (1 liter) for PCB's/Pesticides, 2 Ambers (1 liter) for Explosives, 2 Ambers (1 liter) for propellants, 1 poly bottle (1 liter) for metals, 1 poly bottle (1 liter) for cyanide.

10/3/00

627

Daily Weather Conditions: A.M.

Partly cloudy

P.M.

Recorded By

P. YESCONIS

ected By

W. K. B. 10-19-02

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy):

Su M Tu W Th F Sa

PAGE 2 OF 2

Task Team Members:

10/3/00

Narrative (include time and location):

~~TP~~^{P7} TPILB

PRV

Daily Weather Conditions: A.M.

P.M.

Recorded By _____ Checked By _____

51

WELL PURGE RECORD		
PROJECT NAME	LL1 Phase II Remedial Investigation	DELIVERY ORDER NO 0003

Page 1 of 2

Date: 10/3/00

Time:

Well Number and Location: LL1 MW-083

Purge Crew: Paul YESCONIS
Matt Root

Date and Time: Begin: 10/3/00 09:30 Completed: 10/3/00 10:00

Purge Method(S): Microperge w/bladder pump, Equipment: QED MP10 Microperge
controller # MP10-1032, QED well wizard air compressor # 18836,
Horiba U-10 waterchucker # 7019

Total Quantity of Water Removed: 3.0 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	10/03/00
Specific Conductivity	7019	10/3/00
Water Level	3435	N/A
pH	7019	10/3/00
D.O	7019	10/3/00
Turbidity	7019	10/3/00

Recorded By: Paul Y 10/3/00
(Signature and Date)

QA Check By: W. Kim 10/14/02
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

PROJECT NAME: L11 Phase II Remedial Investigation

PAGE 2 OF 2

WELL NUMBER AND LOCATION: LL1mw-083

[illegible]

RECORDED BY:

Karl G. G... 10/3/00
(Signature and Date)

QA CHECK BY:

W. K. K. 10-14-02
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/04/02 ⁰² ^{10/04/02} Su (M) Tu ~~W~~ Th F Sa PAGE 1 OF

Task Team Members:

BROOKS ABELW

PAUL YASCONIS

KATHY DOMINATE

MATT ROOT

Narrative (include time and location):

0930 ARRIVED AT WELL # LL1 MW 084. BEGAN

^{BOT 10/04/02}

BALLOON PURGING AT 0915. INITIAL WATER LEVEL

^{BOT 10/04/02}

30.42' WAS 37.34' BTDC. BEGAN PURGING AT 1 CYCLE/MIN,

52 SECOND REFILL, AND 8 SECOND RECHARGE. ENDED

PURGING AT 0955.

1005 COLLECTED SAMPLE # LUI090 FOR: 3 VOAS JARS

FOR VOC'S, 2 (1L) AMBER JARS FOR PCB'S / PESTICIDES,

2 (1L) AMBER JARS FOR PROPELLANTS, 2 (1L) AMBER JARS

FOR EXPLOSIVES, 1 (1L) POLY JAR FOR FILTERED METALS,

AND 1 (1L) POLY JAR FOR CYANIDE. FLOW RATE = 120 ML/MIN.

1200 TERMINATED SAMPLING

W. Root
10-14-02

Daily Weather Conditions: A.M. Cool, CLOUDY

P.M.

Recorded By BROOKS ABELW

QA Checked By *W. Root* 10/14/02

PROJECT NAME: LL-1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Su M Tu W Th F Sa

PAGE 1 OF 1

Narrative (include time and location):

E-143

WELL PURGE RECORD

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Page 1 of 2 ^{WHS}
10-14-02

Date: 10/02/00

Time: 09:30 ^{WHS}
10-14-02

Well Number and Location: LL1mw-084

Purge Crew: ^(BIA 10/04/00) KATHY DOMINIC MATT ROOT

BROOKS ABELN, PAUL YESCONIS

Date and Time: Begin: 10/02/00 0915 ^(BIA 10/04/00) Completed: 10/02/00 0955

Purge Method(S): MICRO ~~BALLOON~~ PURGING W/ BLADDER PUMP

Total Quantity of Water Removed: ~1 ^{WHS}
10-14-02 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	7019	NA
Specific Conductivity	7019	10/02/00
Water Level	3435	NA
pH	7019	10/02/00
<u>WHS</u> 10-14-02		

Recorded By: B. A. Clech 10/02/00
(Signature and Date)

QA Check By: W. K. P. 10-14-02
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

PROJECT NAME: LL1 Phase II Remedial Investigation

PAGE 2 OF 2 WTS
10-14-22

WELL NUMBER AND LOCATION: 771 mw-085

[illegible]

RECORDED BY:

[Signature]
(Signature and Date)

QA CHECK BY:

W. K. S. 10-14-02
(Signature and Date)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/03/00

Su M Tu W Th F Sa

PAGE 1 OF

Task Team Members:

JASON BROWN

CHARLES L. KLINGER

10/04/00

BROOKS ABELN

Narrative (include time and location):

1440 AT WELL #LL1MW-085 TO PUMP AND SAMPLE GROUNDWATER.

PID=1.3 AT WELL OPENING, RAN BAILER DOWN TO TD= TO CHECK ALIGNMENT

AND BE SURE WELL IS OBSTRUCTION FREE. BAILER MADE IT TO TD, WILL DROP PUMP.

1508 CAN NOT GET PUMP IN WELL STICKING HIGH IN RISER.

10/04/00

0900 ARRIVED AT LL1MW 085.

0915 INITIAL WATER LEVEL = 30.42' BEGAN BAILER PURGING.

PURGED 26.7 gal

1020 BEGAN COLLECTING SAMPLE # LL1 1091

COLLECTED 3 VOA JARS FOR VOC'S, 2 (1L) AMBER BOTTLES

FOR SVOC'S, 2 (1L) AMBERS FOR PCB'S/PESTICIDES, 2 (1L) BOTTLES

FOR PROPELLANTS, 2 (1L) AMBERS FOR EXPLOSIVES, 1 (1L)

POLY JAR FOR FILTERED METALS, 1 (1L) POLY JAR FOR

CYANIDES.

Daily Weather Conditions: A.M. NA

P.M. SUNNY, HOT, CALM ~ 70°F, HUMID

Recorded By

QA Checked By

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: LL1 Phase II Remedial Investigation DELIVERY ORDER NO: 0003

Date (mm/dd/yy): 10/04/00 Su M Tu ☒ Th F Sa PAGE ____ OF ____
Task Team Members:

BROOKS ABELW

KATHY DOMMIC

Narrative (include time and location):

WELL VOLUME CALCULATION:

$$\text{HEIGHT OF WATER COLUMN} = \frac{41.2 - 34.39}{6.81}$$

CASING VOLUME

$$= \pi \left(\frac{1}{2} \right)^2 (6.81)$$

$$= 3.14 (1.007) (6.81)$$

$$= .15$$

BOREHOLE VOLUME

$$= \left[\pi \left(\frac{4}{2} \right)^2 (6.81) - .15 \right] .3$$

$$= [3.14 (1.111) (6.81) - .15] .3$$

$$= [2.374 - .15] .3 = .667$$

$$\text{VOLUME} = .15 + .667 (6.48)$$

$$= 5.3 \text{ GAL}$$

$$5 \text{ WELL VOLUMES} = 5.3 (5)$$

$$= 26.5 \text{ GAL}$$

Daily Weather Conditions: A.M. COOL, CLOUDY

P.M. N/A

Recorded By BROOKS ABELW QA Checked By

59

WELL PURGE RECORD

PROJECT NAME LL1 Phase II Remedial Investigation DELIVERY ORDER NO 0003

Page 1 of

Date: 10/03/00
10/04/00

Time: 1440

Well Number and Location: LL1 MW-085

Purge Crew: JASON BROWN
CARLOS L. KLINCKE

Date and Time: Begin: 10/03/00 0915 Completed: 10/04/00 1015

Purge Method(S): BALLOON PURGE

Total Quantity of Water Removed: 26.5 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	MP20-1028	NA
Specific Conductivity	MR20-1028	10/04/00
Water Level	3435	NA
pH	MP20-1028	10/04/00

Recorded By: [Signature] (10/03/00)
(Signature and Date)

QA Check By:
(Signature and Date)

WELL PURGE RECORD

DELIVERY ORDER NO: 0003

PROJECT NAME: LL1 Phase II Remedial Investigation

PAGE 2 OF 2

WELL NUMBER AND LOCATION: LL1 MW-085

[illegible]

RECORDED BY:

CDLZ (10/03/00)
(Signature and Date)

QA CHECK BY:

(Signature and Date)

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