APPENDIX G

MONITORING WELL DEVELOPMENT AND SAMPLING LOG

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Appendix G Monitoring Well Development And Sampling Logs

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SIGNATURE PAGE

Signature	Printed Name	Initials
	Susan McCauslin	SM
	Sue Boles	SB
	Chandelle Carroll	CC

Well Volume Calculation Sheet

Date: 08/06/02 Time: 1009

Well ID: MW-104

Well Location: DEMO AREA 2

Total Depth of Well (ft BTOC) ~~29.81~~ 29.28
Depth to Water (ft BTOC) 21.51
Height of water column (ft) (Hc) 7.77

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .17 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .73 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= 6.7 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft)
Hc = Height of water column 7.77 (ft)
Rf = Radius of filter pack (0.33 ft)
Rc = Radius of inside casing (0.083 ft)

WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 08/06/02

Well Number and Location: DA2 MW 104

Development Crew: Christy Esler
Susan McAustin

Driller (if applicable): N/A

Water Levels/Time: Initial: 21.51 / 1008 Pumping: 22.19 / 1025
Final: 22.54 / 1134

Total Well Depth: Initial: 29.28 Ft BTOC Final: 29.28 Ft BTOC

Date and Time: Begin: 08/06/1008 Completed: 08/06/1134

Development Method(s): Whale pump

Total Quantity of Water Removed: 51.0 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	08-06-02
Specific Conductivity	"	"
pH	pH 3 plus	"
Turbidity	LAMOTE 2261094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 09 15 02 TIME: 13 58

WELL ID NUMBER: D02-mw104 WELL LOCATION: Demo 2 Area

DEPTH OF SCREENED INTERVAL (BTOC): 26.3 ft to 16.3 ft

SWL 22.23
TD 29.25
HC 7.02

INNER CASING: TYPE: PVC ID: 2.0 inches

WELL VOLUME CALCULATION Vc = 3.142 X $(di/2)^2$ x (TD-H) (.007) .15

Vf = 3.142 x $[(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) (.11) (.3) .73

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

Vt = (Vc + Vf) (7.48) 6.58

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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

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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 19.8 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING P.C. cloudy, light breeze, 70's

FIELD OBSERVATIONS: _____

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

RECORDED BY: _____ 9/15/02
(Signature and Date)

QA CHECK BY: _____ 9-10-02
(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DA2-mw-104

PAGE 1 OF 1

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-5-02	14:05		13.18	13.7	8.49	>999	initial reading		DO. 90.5 (water looks like chocolate milk)
9-5-02	14:15	5	13.08	13.3	8.56	>999	5	.25	DO. 96.5
9-5-02	14:27	9.5	12.88	13.6	8.47	>999	10	.5	DO. 85.5
9-5-02	14:39	5	12.50	13.6	8.30	>999	15	.75	DO. 93.2
9-5-02	14:49	4.8	12.66	14.8	8.41	>999	19.8	1.0	DO. 87.6
9-5-02	1453	.2	12.65	13.5	8.42	>999	20.0	1.1	DO. 86.7

RECORDED BY: [signature] 9-5-02
(Signature and Date)

QA CHECK BY: [signature] 9-10-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 08/05/02 Time: 1415

Well ID: DAZMW 105

Well Location: _____

Total Depth of Well (ft BTOC) 16.20
Depth to Water (ft BTOC) 4.01
Height of water column (ft) (Hc) 12.19

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .27 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .47 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)

= 5.5 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft)
Hc = Height of water column 12.19 (ft)
Rf = Radius of filter pack (0.33 ft)
Rc = Radius of inside casing (0.083 ft)

WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 08/05/02

Well Number and Location: DA2 MW 105

Development Crew: Susan McClustin SpecPro
Christy Esler Taltest

Driller (if applicable): N/A

Water Levels/Time: Initial: 4.01 Pumping: Near Dryness
Final: 12.71 1517

Total Well Depth: Initial: 16.20 Ft BTOC Final: 16.20 Ft BTOC

Date and Time: Begin: 08/05 1415 Completed: 08/05 1518

Development Method(s): Whale Pump

Total Quantity of Water Removed: 45.0 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	08-05-02
Specific Conductivity	"	"
pH	pH 3 Plus	"
Turbidity	LaMotte 2261014	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/9/02 TIME: 9:05

WELL ID NUMBER: DD2-105 WELL LOCATION: Demo 2 Area

DEPTH OF SCREENED INTERVAL (BTOC): 13.3 ft to 8.3 ft

SWL 4.41
TD 16.19
Ht 11.78 17.19

INNER CASING: TYPE: PVC ID: 2.0 inches

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ .26

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2] (TD-S \text{ or } H) (P)$ 1.32 x 1.16 TD-S

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

$Vt = (Vc + Vf)(7.48)$ (1.42)(7.48)=10.6

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 31.8 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, clear, slight to no breeze, 70's

FIELD OBSERVATIONS: _____

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

RECORDED BY: Christie Canall 9/9/02 (Signature and Date)

QA CHECK BY: S McCaul 9-10-02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NUMBER AND LOCATION: DA0-105 Demo 2 area PAGE 1 OF 1

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/9/02	9:10	1 bailer	16.90	24.4	8.48	6.9	initial reading		D.O. 26.9
9/9/02	9:25	5	14.31	24.8	8.77	143.6	5	.5	D.O. 26.0
9/9/02	9:36	5	14.30	25.7	8.78	81.2	10	1	D.O 22.2
9/9/02	9:40	5	14.08	25.3	8.74	151.3	15	1.5	D.O 23.8
9/9/02	9:58	5	14.32	24.2	8.81	7999	20	2	D.O 21.6
9/9/02	10:07	5	14.22	24.0	8.79	7999	25	2.5	D.O. 24.1
9/9/02	10:16	5	14.22	24.1	8.77	7999	30	2.9	D.O 24.1
9/9/02	10:22	1.8	14.16	24.0	8.64	~~7999~~ 1739	31.8	3.0	D.O 24.2

RECORDED BY: [signature] 9/9/02 (Signature and Date)

QA CHECK BY: S McCausland 9-10-02 (Signature and Date)

Well Volume Calculation Sheet

Date: 08/05/02 Time: 1325

Well ID: DA2 MW10 Co

Well Location: _____

Total Depth of Well (ft BTOC) 16.78
Depth to Water (ft BTOC) 11.06
Height of water column (ft) (Hc) 5.72

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ ~~.39~~ .13 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .47 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= ~~4.86~~ ~~3.52~~ 3.16 4.49 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft)
Hc = Height of water column 5.72 (ft) 7.8 ft screen
Rf = Radius of filter pack (0.33 ft) .11
Rc = Radius of inside casing (0.083 ft) .007

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 08/05/02

Well Number and Location: DA2 MW 106

Development Crew: Susan McCaustin
Christy Esler

Driller (if applicable): N/A

Water Levels/Time: Initial: 11.06 1325 Pumping: DRY
Final: 16.31 / 11629

Total Well Depth: Initial: 16.78 Ft BTOC Final: 16.78 Ft BTOC

Date and Time: Begin: 08/05/1350 Completed: 08/07/1625

Development Method(s): Whale Pump

Total Quantity of Water Removed: 7.5 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	08-05-02
Specific Conductivity	"	"
pH	pH 3 PLUS	"
Turbidity	LaMotte 226094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/19/02 TIME: 10:54

WELL ID NUMBER: DA2-1106 WELL LOCATION: Demo 2 Area

DEPTH OF SCREENED INTERVAL (BTOC): 15.3 ft to 8.3 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 9.08
TD 16.78
HC 7.7

WELL VOLUME CALCULATION Vc = 3.142 X $(di/2)^2$ x (TD-H) .17 (.007)

Vf = 3.142 x $[(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) .80 (.11) (.3)

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

Vt = (Vc + Vf) (7.48) 7.26

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 21.8 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, clear

FIELD OBSERVATIONS: _____

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

RECORDED BY: [signature] 9/19/02 (Signature and Date)

QA CHECK BY: [signature] 9-10-02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DA2-106 Demo 2 Area

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DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/9/02	11:00		18.24	44.4	7.61	9.5	initial reading		DO. 23.5
9/9/02	11:09	2.5	15.69	44.9	7.60	76.1	2.5 cc		DO. 23.8
9/9/02	11:14	.5	14.97	42.4	7.92	113.1	3.0	bailed dry	DO. ~~40.7~~ 35.5
9/9/02		5					15 cc		
9/9/02		5					~~20~~ cc		
9/9/02		1.8					1.8 cc		

RECORDED BY: Donald McCaull 9/9/02
(Signature and Date)

QA CHECK BY: S McCaull 9-10-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 08/02 Time: 1419

Well ID: DA2 MW 107

Well Location: _____

Total Depth of Well (ft BTOC) 16.82
Depth to Water (ft BTOC) 9.44
Height of water column (ft) (Hc) 7.38

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .16 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .42 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)

= 4.33 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft)
Hc = Height of water column 7.38 (ft) 5' screen
Rf = Radius of filter pack (0.33 ft)
Rc = Radius of inside casing (0.083 ft)

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI DELIVERY ORDER NO: 0003

Date: 08/02/02

Well Number and Location: DA2 MW 107

Development Crew: Susan McCauslin

Driller (if applicable): N/A

Water Levels/Time: Initial: 9.44/1422 Pumping: NOT DRAWDOWN

Final: 12.73/1105

Total Well Depth: Initial: 16.82 Ft BTOC Final: 16.82 Ft BTOC

Date and Time: Begin: 08/02/1422 Completed: 08/05/1105

Development Method(s): Whale Pump

Total Quantity of Water Removed: 53.0 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	08-02-02
Specific Conductivity	"	"
pH	pH 3 plus	"
Turbidity	LAMOTTE 224 1094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/11/02 TIME: ~~14:31~~ 14:31

WELL ID NUMBER: DA2-07 WELL LOCATION: Demo 2 Grounds

DEPTH OF SCREENED INTERVAL (BTOC): 13.8 ft to 8.8 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 9.81
TD 16.80
HC 6.99

WELL VOLUME CALCULATION Vc = 3.142 X (.007 di/2)^2 x (TD-H) 0.15

Vf = 3.142 x [(dH/2)^2 – (.11 do/2)^2] (TD-S or H) (.3 P) 0.52

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

Vt = (Vc + Vf) (7.48) 5.01

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 15.04 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, clouds, breezy, 70°F (Sam)

FIELD OBSERVATIONS: _____

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

RECORDED BY: Marcella Cavell 9-11-02
(Signature and Date)

QA CHECK BY: SMcCook 09-12-02
(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NUMBER AND LOCATION: DA2-107 Demo 2 Area PAGE 1 OF 1

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-11-02	1445	1 bailer	17.94	23.3	8.72	5.7	Initial reading		DO. 38.3
9-11-02	1453	5	16.54	24.6	8.96	>999	5	1.00 gal	DO. 19.4
9-11-02	1510	5	16.31	24.1	8.83	7999	10	2.00 gal	DO. 24.5
9-11-02	1514	5.1	16.31	24.1	8.84	>999	15.1	3.02	DO. 24.4

RECORDED BY: Marsha Canall 9-11-02
(Signature and Date)

QA CHECK BY: [signature] 09-12-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 07-30-02 Time: 0936

Well ID: DA2 MW-108

Well Location: _____

Total Depth of Well (ft BTOC) 17.15
Depth to Water (ft BTOC) 6.29
Height of water column (ft) (Hc) 10.86

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .239 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .47 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= 5.30 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft)
Hc = Height of water column 10.86 (ft) Screen length 5.0'
Rf = Radius of filter pack (0.33 ft)
Rc = Radius of inside casing (0.083 ft).

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI DELIVERY ORDER NO: 0003

Date: 7/30/02

Well Number and Location: MW-108

Development Crew: Susan McCausland
Christy Esler

Driller (if applicable): & N/A

Water Levels/Time: Initial: 6.29, 0936 Pumping: DRY

Final: 6.44, 1210

Total Well Depth: Initial: 17.15 Ft BTOC Final: 17.15 Ft BTOC

Date and Time: Begin: 07/30, 0936 Completed: 07/30, 1206

Development Method(s): Whale pump

Total Quantity of Water Removed: 53 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	7/30/02
Specific Conductivity	YSI 85 98C0754	"
pH	PH 3 plus	"
Turbidity	Lamotte 2261094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/9/02 TIME: 13:27

WELL ID NUMBER: DAA-108 WELL LOCATION: Demo 2 Grounds Area

DEPTH OF SCREENED INTERVAL (BTOC): 14.3 ft to 9.3 ft

INNER CASING: TYPE: 2" PVC ID: 2.0 inches

SWL 6.61
TD 17.14
HC 10.53

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^{2} \times (TD-H)$ (.007) .23

$Vf = 3.142 \times [(dH/2)^{2} - (do/2)^{2}]$ (TD-S or H) (P) (.11, S, .3) .52

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

$Vt = (Vc + Vf)\ (7.48)$ 5.61

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 16.8 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: _____

FIELD OBSERVATIONS: Sunny, clear, 80's, no breeze

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

RECORDED BY: Chris McConnell 9/9/02
(Signature and Date)

QA CHECK BY: [signature] 09-12-02
(Signature and Date)

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WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DAD-108 Demo 2 Grounds

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DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/9/02	13:30		16.50	14.6	9.30	10.5	initial reading		DO. 20.8
9/9/02	13:45	4	13.40	29.2	8.59	>999	4	.7	DO. 25.4
9/9/02	13:55	4	13.33	27.3	8.68	>999	8	1.4	DO. 24.5
9/9/02	14:00	4	13.29	24.1	8.46	>999	12	2.1	DO. 23.7
9/9/02	1407	4.0	13.15	21.0	8.24	>999	16.0	2.8	DO. 20.7
9/9/02	1412	1.0	13.40	20.9	8.07	>999	17.0	3.0	DO. 22.6

RECORDED BY: Chandra McCandless 9/9/02
(Signature and Date)

QA CHECK BY: SM Bruce 09-12-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 7/30/02 Time: 1350

Well ID: MW-109

Well Location: _____

Total Depth of Well (ft BTOC) 24.30
Depth to Water (ft BTOC) 15.59
Height of water column (ft) (Hc) 8.71

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .192 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30) .09
Note use length of screen if Hc>length of screen
= 0.74 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)

= 6.97 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft) Ro^2 0.01
Hc = Height of water column 8.71 (ft)
Rf = Radius of filter pack (0.33 ft) Rf^2 0.10
Rc = Radius of inside casing (0.083 ft) Rc^2 .007

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 07/30/02

Well Number and Location: DA2 MW-109

Development Crew: Christy Esler
Susan McCauslin

Driller (if applicable): N/A

Water Levels/Time: Initial: 15.59 / 1355 Pumping: DRY /
Final: 16.40 / 1413 8/02

Total Well Depth: Initial: 24.30 Ft BTOC Final: 24.32 Ft BTOC

Date and Time: Begin: 07-30 / 1355 Completed: 08-02 / 1411

Development Method(s): Whale Pump

Total Quantity of Water Removed: 45 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	07/30/02 07/31/02
Specific Conductivity	"	07/30/02 07/31/02
pH	pH 3 plus	07/30/02 07/31/02
Turbidity	LaMotte 2261094	07/30/02 07/31/02

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/16/02 TIME: 14:59

WELL ID NUMBER: DA2-109 WELL LOCATION: Demo 2 Area

DEPTH OF SCREENED INTERVAL (BTOC): 21.3 ft to 11.3 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 17.33
TD 24.30
HC 6.97

WELL VOLUME CALCULATION Vc = 3.142 X $(di/2)^2$ x (TD-H) .007 .15

Vf = 3.142 x $[(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) .11 6.97 .3 .72

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

Vt = (Vc + Vf) (7.48) 6.5

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 19.5 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny P. Clouds, 90's

FIELD OBSERVATIONS: _____

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

RECORDED BY: Charlotte Canall 9-16-02 (Signature and Date)

QA CHECK BY: S McCaul 9-17-02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NUMBER AND LOCATION: DA2-109 Demo 2 Grounds Area PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-18-02	12:05		13.04	26.3	7.77	163.9	initial reading		DO 22.3
9-18-02	No:13	2	12.48	26.0	7.89	>999	2gal		DO. 30.8 very muddy almost bailed dry
9-18-02	16:21	~5	12.51	23.3	7.84	>999	2.5		DO 51.9 slightly muddy bailed dry

RECORDED BY: Marcella Carroll 9-18-02
(Signature and Date)

QA CHECK BY: S McCauley 9-17-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 08/06/02 Time: 0203

Well ID: ~~MW-010~~ DA2mw-110 AB 5-12-05

Well Location: _____

Total Depth of Well (ft BTOC) 22.32
Depth to Water (ft BTOC) 12.27
Height of water column (ft) (Hc) 10.05

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .22 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .94 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= 8.7 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft)
Hc = Height of water column 10.05 (ft)
Rf = Radius of filter pack (0.33 ft)
Rc = Radius of inside casing (0.083 ft)

WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 08/06/02

Well Number and Location: DA2 MW-110

Development Crew: Susan McLaughlin SpecRo
Christy Esler TOHest

Driller (if applicable): N/A

Water Levels/Time: Initial: 12.27 / 1405 Pumping: DRY /
Final: 20.52 / 1550

Total Well Depth: Initial: 22.32 Ft BTOC Final: 22.33 Ft BTOC

Date and Time: Begin: 08/06/1403 Completed: 08/08/1550

Development Method(s): Whale Pump

Total Quantity of Water Removed: 18.5 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 95 98C0754	08/06/02 Daily
Specific Conductivity	"	"
pH	pH 3 plus	"
Turbidity	LAMOTTE 2261094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/18/02 TIME: 14 58

WELL ID NUMBER: DA2-110 WELL LOCATION: Demo Dgrounds

DEPTH OF SCREENED INTERVAL (BTOC): 19.3 ft to 9.3 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 13.73
TD 22.33
ftc 8.6

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ .19

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) .89

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

$Vt = (Vc + Vf)$ (7.48) 8.08

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 24.2 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, upper 80's, little to no breez

FIELD OBSERVATIONS: _____

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

RECORDED BY: Charles O. Cambell 9-18-02 (Signature and Date)

QA CHECK BY: [signature] 9-12-02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DA2-110 Area 2 Groundwater Area

PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-10-02	1455		16.68	19.2	8.11	1.2	Initial reading		D.O. 27.9
9-10-02	1509	4.5	14.62	21.5	8.12	145.9	4.5		D.O 33.3
9-10-02	1526	.5	13.82	21.9	7.89	>999	5		D.O. 33.3 - bailed dry

RECORDED BY: Chantelle Carroll 9-10-02
(Signature and Date)

QA CHECK BY: J McQuay 9-12-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 08/01/12 Time: 1315

Well ID: DA2MW-111

Well Location: _____

Total Depth of Well (ft BTOC) 14.78'
Depth to Water (ft BTOC) 6.39'
Height of water column (ft) (Hc) 8.39

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .14 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .47 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= ~~3~~ 4.56 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft) .01
Hc = Height of water column 8.39 (ft) 5' screen
Rf = Radius of filter pack (0.33 ft) .10
Rc = Radius of inside casing (0.083 ft) .007

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 08/05/02

Well Number and Location: DA2 MW 111

Development Crew: Christy Esler
Susan McCaulin

Driller (if applicable): _____

Water Levels/Time: Initial: 6.97 / 1110 Pumping: DRY /
Final: 13.98 / 1636

Total Well Depth: Initial: 14.78' Ft BTOC Final: 14.78 Ft BTOC

Date and Time: Begin: 08/05/1110 Completed: 08/07/1636

Development Method(s): Whale Pump

Total Quantity of Water Removed: 24.5 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 8598C0754	08-05-02
Specific Conductivity	"	"
pH	pH 3 plus	"
Turbidity	LAMOTTE 2261094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/16/02 TIME: 14.15

WELL ID NUMBER: MA2-111 WELL LOCATION: Demo 2 Grounds

DEPTH OF SCREENED INTERVAL (BTOC): 12.1 ft to 7.1 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 7.72
TD 14.77
HC 7.05

WELL VOLUME CALCULATION Vc = 3.142 X $(di/2)^2$ x (TD-H) .007 5 .16

Vf = 3.142 x $[(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) .11 .3 .52

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

Vt = (Vc + Vf) (7.48) 5.09

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 15.3 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, P. Clouds, 0-7-16 kts breeze, upper 80's

FIELD OBSERVATIONS: _____

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

RECORDED BY: Chandler Carroll 9-16-02 QA CHECK BY: SMcCue 9-17-02

(Signature and Date) (Signature and Date)

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WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DA2-111 Demo 2 Grounds

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DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-16-02	14:20		17.41	29.4	7.98	1.0	initial reading		D.O. 28.5
9-16-02	14:30	3	14.45	30.8	7.96	102.7	3		D.O. 30.2
9-16-02	14:40	.5	14.37	32.7	7.61	999	3.5		D.O. 30.4 Bailed dry (last 2 bailers only [illegible])

RECORDED BY: [signature] 9-16-02
(Signature and Date)

QA CHECK BY: [signature] 9-17-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 08-01-02 Time: 0911

Well ID: DAZ MW-11Z

Well Location: _____

Total Depth of Well (ft BTOC) 17.04
Depth to Water (ft BTOC) 6.62
Height of water column (ft) (Hc) 10.42

Well Volume Calculation:

Vc = 3.142(Rc^2)*Hc .4 cu. ft.

Vf = 3.142[(Rf^2)-(Ro^2)]*(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= .47 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= 4.56 4.00 gal:

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft) .01
Hc = Height of water column 10.42 (ft) 5 feet
Rf = Radius of filter pack (0.33 ft) .010
Rc = Radius of inside casing (0.083 ft) .007

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 08/01/02

Well Number and Location: DA2MW112

Development Crew: Susan McCauslin

Driller (if applicable): N/A

Water Levels/Time: Initial: 6.62/0911 Pumping: DRY

Final: 14.49/1555

Total Well Depth: Initial: 17.04 Ft BTOC Final: 17.04 Ft BTOC

Date and Time: Begin: 08/01/0911 Completed: 08/02/1555

Development Method(s): Whale Pump

Total Quantity of Water Removed: 37.0 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 98C0754	08-01-02
Specific Conductivity	"	"
pH	pH 3 Plus	"
Turbidity	LaMotte 2261094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/10/02 TIME: 10:05

WELL ID NUMBER: DA2-112 WELL LOCATION: Demo 2 Ground Area

DEPTH OF SCREENED INTERVAL (BTOC): 13.8 ft to 8.8 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 7.45
TD 17.02
HC 9.57

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ (.007) .21

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2]$ (.11) (TD-S or H) (5) (P) (.3) .52

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

$Vt = (Vc + Vf)\ (7.48)$ 5.46

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 16.4 GAL

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, hazy, some clouds, little to no breeze, Upper 70's

FIELD OBSERVATIONS: _____

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

RECORDED BY: Chad M Carroll 9/10/02 (Signature and Date)

QA CHECK BY: [signature] 9/12/02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DA2-112 Demo 2 Area

PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-10-02	10:08		18.67	25.9	8.55	1.02	initial	reading	DO. 24.9
9-10-02	10:14	2 gal	15.77	26.8	8.40	>999	2		D.O. 26.0 (bailer ½-¾ full)
9-10-02	10:24	1 ½ gal	16.40	26.7	8.52	>999	3		DO. 30.6 dry - but recharging

RECORDED BY: Drew McCarroll 9-10-02
(Signature and Date)

QA CHECK BY: SMcCarroll 9-17-02
(Signature and Date)

Well Volume Calculation Sheet

Date: 07-31-02 Time: 0855

Well ID: DA2 MW-113

Well Location: _____

Total Depth of Well (ft BTOC) 16.27'
Depth to Water (ft BTOC) 7.80
Height of water column (ft) (Hc) 8.47

Well Volume Calculation:

Vc = $3.142(Rc^2)*Hc$ .11 cu. ft.

Vf = $3.142[(Rf^2)-(Ro^2)]*$(Hc or length of screen)*(0.30)
Note use length of screen if Hc>length of screen
= 2.04 .47 cu. ft.

Vt = (Vc+Vf)*(7.48 gal/cu. ft.)
= 4.00 3.46 gal.

Where:

Vc = Volume of casing (ft^3)
Vf = Volume of filter pack (ft^3)
Vt = Total Volume
Ro = Outside radius of casing (0.10 ft) .01
Hc = Height of water column 8.47 (ft) Screen 5 ft
Rf = Radius of filter pack (0.33 ft) .10
Rc = Radius of inside casing (0.083 ft) .007

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WELL DEVELOPMENT FORM

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO:** 0003

Date: 07/31/02

Well Number and Location: DA2MW13

Development Crew: Susan McCauslin

Driller (if applicable): N/A

Water Levels/Time: Initial: 7.80 / 0855 Pumping: Dry-ish

Final: 7.89 / 14:17

Total Well Depth: Initial: 16.27 Ft BTOC Final: 16.28 Ft BTOC

Date and Time: Begin: 07/31 / 0855 Completed: 07/31 / 1408

Development Method(s): Whale Pump

Total Quantity of Water Removed: 52 gals

FIELD MEASUREMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Temperature	YSI 85 9800754	07-31-02
Specific Conductivity	"	"
pH	pH 3 Plus	"
Turbidity	LaMotte 2261094	"

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/10/02 TIME: 10:31

WELL ID NUMBER: DA2-113 WELL LOCATION: Demo 2 grounds

DEPTH OF SCREENED INTERVAL (BTOC): 3.3 ft to 8.3 ft

INNER CASING: TYPE: PVC ID: 2.0 inches

SWL 8.31
TD 16.27
HC 796

WELL VOLUME CALCULATION $Vc = 3.142 \times (.087)(di/2)^2 \times (TD-H)$ .18

$Vf = 3.142 \times [(dH/2)^2 - (.11)(do/2)^2] (TD\text{-}S \text{ or } H) (.3)(P)$ .52

NOTE: If S>H use S, if S<H use H (5)

$Vt = (Vc + Vf)(7.48)$ 5.2

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME 15.6 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, hazy, few clouds, little bit breeze, upper 70's

FIELD OBSERVATIONS: _____

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

RECORDED BY: Chantelle Carroll 9/10/02 (Signature and Date)

QA CHECK BY: [illegible] 9-12-02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DA2-113 Demo 2 Grounds

PAGE 1 OF 1

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9-16-02	1035		17.09	19.8	8.43	3.2	initial	reading	D.O. ~~26.5~~ 25.4
9-16-02	1044	2.5	15.92	22.2	8.22	7999	2.5		D.O. 19.1 [illegible]
9-16-02	1052	2.5	15.88	21.0	8.04	7999	5		D.O. 18.9
9-16-02	11:03	5	15.86	20.5	8.0	7999	10		D.O. 19.3
9-16-02	11:11	5	15.87	19.9	7.81	7999	15.		D.O. 19.9
9-16-02	1116	1	15.88	20.3	7.79	7999	16.0		D.O. 20.0

RECORDED BY: Chantelle Carroll 9-16-02
(Signature and Date)

QA CHECK BY: S McCave 9-12-02
(Signature and Date)

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 09 / 28 / 02 TIME: 09 : 10

WELL ID NUMBER: WBG MW 112 WELL LOCATION: WBG MW 112

DEPTH OF SCREENED INTERVAL (BTOC): _____ ft to _____ ft

INNER CASING: TYPE: _____ ID: _____ inches

Swt 18.20
TD 31.61
HC 13.41

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ .22

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) 1.39
NOTE: If S>H use S, if S<H use H

$(dH/2)^2 = .12$
$(do/2)^2 = .01$

Vt = (Vc + Vf) (7.48) 12.0 GALS

If HC > screen then use screen length otherwise use HC

P = .3

$(di/2)^2 = .007$

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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

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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 36 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: _____

FIELD OBSERVATIONS: _____

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

RECORDED BY: _____ (Signature and Date)

QA CHECK BY: _____ (Signature and Date)

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WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NUMBER AND LOCATION: WBG MW112

PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
08/28	0930	5	13.1	349.7	8.39	7999	0	0	INITIAL READINGS
08/28	1000	5	13.1	354.3	8.42	530	5GAL	.4	DO METER NOT FUNCTIONING
08/28	1030	5	13.2	358.4	8.76	32.4	10Gal	.8	
8/28	1100	5	13.8	286.5	9.06	>999	15GAL	1.2	
8/28	1118	5	13.4	356.2	8.18	7999	20GAL	1.6	
8/28	1135	5	13.5	353.5	8.22	7999	25GAL	2.0	
8/28	1155	5	13.6	354.1	8.17	152.0	30GAL	2.4	
8/28	1200	3	13.3	355.3	8.59	799 9	33GAL	2.7	
8/28	1215	3	13.3	355.2	8.74	146.5	36 GAL	3.0	
8/28	1405	1	15.3	355.4	8 79	125.6	37GAL	3.1	
8/28	1411	1	13.3	355.3	8.79	155.6	38GAL	3.2	

RECORDED BY: SM Quinn 8/28/02
(Signature and Date)

QA CHECK BY: _____
(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NUMBER AND LOCATION: 0206MW013 PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/3/02	1115	Initial	13.73	13.6	9.96	7999 (Slightly cloudy)	0	0	DO 78.4
9/3/02	11:38	5	~~13.53~~ 13.7	~~13.33~~ OK cn	8.47	7999 (very murky)	5	0.4	D.O. 60.8
9/3/02	1141	5	13.13	15.4	8.54	7999 (murky)	10	.6	DO. 66.5
9/3/02	1158	5	14.07	11.9	8.17	7999 (murky)	15	1.2	DO 61.9
9/3/02	12:04	5	13.36	10.7	8.03	7999 (very murky)	20	1.6	DO 67.5
9/3/02	12:13	5	13.56	14.6	7.75	7999 (murky)	25	2.0	DO 61.8
9/3/02	12:24	5	13.41	12.5	7.74	7999 (murky)	30	2.4	DO. 62.9
9/3/02	12:35	5	13.65	12.4	7.47	7999 (murky)	35	2.8	60.9
9/3/02	1250	5	13.63	11.4	7.61	7999	40	3.2	DO 67.8
9/3/02	1305	5	13.57	11.7	7.62	7999	45	3.6	67.5
9/3/02	1320	5	13.62	11.3	7.70	7999	50	4.0	67.6

RECORDED BY: [signature] 9/3/02 (Signature and Date)

QA CHECK BY: [signature] 9-12-02 (Signature and Date)

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/3/02 TIME: 10:40

WELL ID NUMBER: WBGMW013 WELL LOCATION: WBGMW013, Winklepeck Burning Grounds

DEPTH OF SCREENED INTERVAL (BTOC): _____ ft to _____ ft

INNER CASING: TYPE: _____ ID: _____ inches

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ .27

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2] (TD\text{-}S \text{ or } H) (P)$ 1.28

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

$Vt = (Vc + Vf)\ (7.48)$ 11.59

BWL 11.76
TD 24.13
HC 12.37

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga
Vf = 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

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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 34.8 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: Sunny, 80's, light breeze

FIELD OBSERVATIONS: Using Hydrolab H20 as measurement instrument

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

RECORDED BY: Chantell McCall 9/3/02
(Signature and Date)

QA CHECK BY: Chantell McCall 9-12-02
(Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

WELL NUMBER AND LOCATION: ~~GW66~~ DC-7-3

PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/3/02	15:15	0	19.27	23.4	8.60	Clear & not reading	Initial	Reading	D.O. 23.9 (1 Daily)
9/3/02	15:35	5	15.89	26.7	8.46	" " not reading	5	of 4	DO. 23.9
9/3/02	15:48	~~5~~ 1	15.23	24.7	8.59	" Clear & not reading	~~5~~ 6		DO. 26.7
9/3/02	15:58	~~4~~	15.33	25.4	8.73	" clear & not reading	10		DO. 26.5
9/3/02	16:19	5	15.29	25.3	8.73	" Clear & not reading	15		DO. 26.9 25.6
9/3/02	16:30	3.5	Unable to take reading due to computer battery failure				18.5		DO. —
9/4/02	9:27	.4 (1 Daily)	14.03	27.2	8.76	4.0			DO. 28.3
9/4/02	9:39	1	14.41	25.9	8.50				D.O. 26.5

RECORDED BY: Jennifer Carroll 9/3/02 / 9/4/02
(Signature and Date)

QA CHECK BY: S McCauley 9-12-02
(Signature and Date)

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9,3,02

TIME: 15:09

WELL ID NUMBER: ~~WBG~~ DET-3 (cc)

WELL LOCATION: ~~Waste Pack Burning~~ (cc) DET-3 Demo Area

DEPTH OF SCREENED INTERVAL (BTOC): _____ ft to _____ ft

INNER CASING: TYPE: _____ ID: _____ inches

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ .14 (.007)

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2] (TD-S \text{ or } H) (P)$ .67 (.11)

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

$Vt = (Vc + Vf) (7.48)$ 6.1

SWL 9.50
TD 16.00
HC 6.50

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 18.3 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: P.Cloudy, breeze, 80's,

FIELD OBSERVATIONS: Very rain clouds, thunder at end of purging - unable to finish due to rain/lightning

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

RECORDED BY: _____ 9/3/02
(Signature and Date)

QA CHECK BY: _____ 9/12/02
(Signature and Date)

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9 4 02 DAB

WELL ID NUMBER: ~~MW~~ DET-4 CC

WELL LOCATION: Demo 2 Area (Winkelspecht Burning Grounds) CC TIME: 10:25

DEPTH OF SCREENED INTERVAL (BTOC): _____ ft to _____ ft

INNER CASING: TYPE: _____ ID: _____ inches

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ .007 _____ 0.67

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2]$ .11 .3 (TD-S or H) (P) _____ ~~0.90~~ .31

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

$Vt = (Vc + Vf)(7.48)$ _____ ~~7.26~~ 2.84

Size 10.69
TD 13.69
HC 3.00

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: ~~21.8~~ 8.5 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: _____

FIELD OBSERVATIONS: Only able to remove 3/4 full bailer on 1st try, 2nd was 1/2, 3rd was 1/4, 4th was only bottom, - considered well dry and stopped

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

RECORDED BY: Thomas DeCarlo 9-4-02 (Signature and Date)

QA CHECK BY: JMcDavid 9-12-02 (Signature and Date)

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: WBG-DGT-4

PAGE _____ OF _____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/4/02	1042	3/4 bailer	17.76	38.9	7.67	4.3	initial reading		DO 37.6
9/4/02	1049	1/2 bailer	17.74	35.4	7.67	46.2	1 bailer dry total - 3		DO 44.2

S McCann 9-12-02

RECORDED BY: Chantel M Carroll
(Signature and Date)

QA CHECK BY: S McCann 9-12-02
(Signature and Date)

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 9/4/02 TIME: 11:38

WELL ID NUMBER: ~~MW~~ DET-2 WELL LOCATION: ~~Duke Peck Burning Grounds~~ Demo 2 Area

DEPTH OF SCREENED INTERVAL (BTOC): _____ ft to _____ ft

INNER CASING: TYPE: _____ ID: _____ inches

SWL 32.74
TD 41.86
HC 9.12

WELL VOLUME CALCULATION $Vc = 3.142 \times (.007 \times di/2)^2 \times (TD-H)$ .20

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2] \times 11 \times (TD-S \text{ or } H) \times (P)$ .95

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

$Vt = (Vc + Vf) \times (7.48)$ 8.60

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 25.8 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: _____

FIELD OBSERVATIONS: _____

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

RECORDED BY: _____ 9-4-02
(Signature and Date)

QA CHECK BY: _____ 9-12-02
(Signature and Date)

2/0

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DET-2

PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (uMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/4/02	1149	initial	12.46	25.5	8.15	330	initial reading		DO 43.6
9/4/02	1217	5	12.33	27.4	9.03	155.3	5		DO 42.5
9/4/02	1345	5	12.73	~~27.6~~	9.13	113.0	10		DO 37.5
9/4/02	1414	5	12.50	27.9	9.43	111.3	15		DO 37.9
9/4/02	1447	5	12.57	27.7	~~9.37~~ 9.47 rc	108.5	20		DO 37.7
9/4/02	1512	5	13.05	27.3	9.39	105.3	25.5		DO 38.3

RECORDED BY: [signature] 9-4-02
(Signature and Date)

QA CHECK BY: [signature] 9/12-02
(Signature and Date)

GROUNDWATER PURGE SHEET

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI **DELIVERY ORDER NO: 0003**

DATE (mm/dd/yy): 09/05/02 TIME: 8:30

WELL ID NUMBER: DET 1-B WELL LOCATION: Demo 2 Area

DEPTH OF SCREENED INTERVAL (BTOC): _____ ft to _____ ft

INNER CASING: TYPE: _____ ID: _____ inches

WELL VOLUME CALCULATION $Vc = 3.142 \times (di/2)^2 \times (TD-H)$ (.087) .29

$Vf = 3.142 \times [(dH/2)^2 - (do/2)^2]$ (TD-S or H) (P) (.11) (.3) 1.39

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

$Vt = (Vc + Vf)\ (7.48)$ 12.57

SWL 25.11
TD 38.48
HC 13.37

WHERE:

Vc = Volume of water in well casing, cu. ft.
Vt = Total volume, ga.
Vf = 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
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: [X] Bailer [ ] Bladder Pump [ ] Pump Type _____

MINIMUM PURGE VOLUME = Vt x 3 PURGE VOLUME: 37.7 GAL.

SAMPLE METHOD: [X] Bailer [ ] Bladder Pump [ ] Other (specify) _____

SITE CONDITIONS DURING PURGING: _____

FIELD OBSERVATIONS: Sunny, some puffy clouds, 70's, occass. breeze

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

RECORDED BY: [signature] 9-5-02
(Signature and Date)

QA CHECK BY: [signature] 9-12-02
(Signature and Date)

251

WELL PURGE RECORD

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER AND LOCATION: DET-1-B Demo Dana

PAGE ____ OF ____

DATE	TIME	GALLONS REMOVED	TEMP (C)	SPECIFIC CONDUCTIVITY (µMHOS/CM)	pH (Standard Units)	TURBIDITY	TOTAL GALLONS REMOVED	WELL VOLUMES REMOVED	COMMENTS
9/5/02	943	2nd bailer	11.94	25.1	8.77	9.6	initial	reading	D.O. 49.9 (compared to first bailer - 50 and to casing 25)
9/5/02	1050	5	12.16	23.7	8.66	7999	5		D.O. 43.7
9/5/02	1047	4.5	11.87	25.8	8.47	>999	9.5		D.O. 58.1 (bailer only ½ full last 2 bails)
9/5/02	1422	.5	11.87	26.1	8.53	7999	10.0		D.O. 71.6 after waiting 1-2 min. the bailer ¾-1 full. Haven't stopped and considered dry

RECORDED BY: Chantelle Carroll 9-5-02
(Signature and Date)

QA CHECK BY: SH Carr 9-12-02
(Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER	DATE	TIME	DEPTH TO WATER*	INSTRUMENT	SERIAL NO.	REMARKS
MW105	7-18-02	1327	1.40**	Heron Dipper T	05767	
MW109	7-23-02	805	13.36**	"	"	
MW106	7-23-02	808	12.06**	"	"	
MW105	7-23-02	811	1.07**	"	"	
MW104	7-23-02	815	18.07**	"	"	
MW111	7-23-02	820	3.64**	"	"	
MW108	7-23-02	1611	3.85**	"	"	
MW108	7-25-02	1035	6.12	"	"	
MW106	7-25-02	1045	9.02**	"	"	
MW105	7-25-02	1055	.8**	"	"	
MW104	7-25-02	1059	18.69**	"	"	
MW107	7-25-02	1103	6.58**	"	"	
MW113	7-25-02	1105	4.88**	"	"	
MW112	7-25-02	1107	3.78**	"	"	
MW111	7-25-02	1110	3.38**	"	"	
MW110	0725-02	1115	10.67**	"	"	

*All measurements from top of casing.

** Below ground surface

RECORDED BY: Chantelle Carroll 7/25/02
(Signature and Date)

QA CHECK BY: _____
(Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER	DATE	TIME	DEPTH TO WATER*	INSTRUMENT	SERIAL NO.	REMARKS
WBG-MW013	08/27/02	1045	11.60	HERON DIPPER T	057167	
WBGMW012	08/27/02	1057	18.08	"	"	
DA2MW110	8/27/02	1400	13.25	"	"	
DA2MW109	8/27/02	1404	17.09	"	"	
DA2MW111	8/27/02	1407	7.32	"	"	
DA2MW112	8/27/02	1410	7.30	"	"	
DA2MW113	8/27/02	1412	8.18	"	"	
DA2MW107	8/27/02	1415	9.48	"	"	
DA2DET-3	8/27/02	1419	9.46	"	"	
DA2DET-4	8/27/02	1422	10.65	"	"	
DET-2	8/27/02	1425	32.67	"	"	
DA2MW108	8/27/02	1430	6.41	"	"	
DET-1B	8/27/02	1435	24.58	"	"	
DA2MW104	8/27/02	1438	22.07	"	"	
DA2MW105	8/27/02	1441	3.99	"	"	
DA2MW106	8/27/02	1444	12.53	"	"	

*All measurements from top of casing.

RECORDED BY: [signature] 8/27/02
(Signature and Date)

QA CHECK BY: [signature] 9/28/02
(Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER	DATE	TIME	DEPTH TO WATER*	INSTRUMENT	SERIAL NO.	REMARKS
WBGMW112	08/28/02	0910	18.20	Heron Dipper T	05767	
WBGMW113	09/3/02	0951	11.76	Heron Dipper T	05767	
DA2 DET 3	09/3/02	1515	9.50	Heron Dipper T	"	
DA2 DET 4	09/4/02	1072	10.69	Heron Dipper T	"	
DA2 DET 2	09/4/02	1145	32.74	"	"	
DA2 DET 1	09/5/02	0845	25.11	"	"	
DA2MW104	09/5/02	1348	22.23	"	"	
DA2MW105	09/9/02	0850	4.41	"	"	
DA2MW106	09/9/02	1054	9.08	"	"	
DA2MW109	09/9/02	1327	6.61	"	"	
DA2MW112	9/10/02	1005	7.45	"	"	
DA2MW113	9/10/02	1031	8.31	"	"	
DA2MW109	9/10/02	1559	17.33	"	"	
DA2MW118	9/10/02	1415	7.72	"	"	
DA2MW110	9/11/02	0903	~~15.60~~ 13.73	"	"	
DA2MW107	9/11/02	1431	9.81	"	"	

*All measurements from top of casing.

RECORDED BY: _____ 9/11/02
(Signature and Date)

QA CHECK BY: _____
(Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER	DATE	TIME	DEPTH TO WATER*	INSTRUMENT	SERIAL NO.	REMARKS
MW109	10-14-02	1450	18.29	Hera Data T	05769	
MW113	10-14-02	1454	8.11	"	"	
MW112	10-14-02	1457	7.33	"	"	
MW107	10-14-02	1500	9.53	"	"	
MW108	10-14-02	1504	6.58	"	"	
MW104	10-14-02	1510	23.02	"	"	
MW105	10-14-02	1514	3.97	"	"	
MW106	10-14-02	1516	8.78	"	"	
MW111	10-14-02	1520	7.30	"	"	
MW110	10-14-02	1524	14.50	"	"	
DET 1B	11-26-02	0910	25.15	"	"	
MW104	11-26-02	0912	23.40	"	"	
DET 2	11-26-02	0920	32.48	"	"	
MW108	11-26-02	0926	6.29	"	"	
MW106	11-26-02	0934	4.49	"	"	
MW105	11-26-02	0936	3.35	"	"	

*All measurements from top of casing.

RECORDED BY: _____ 11/26/02
(Signature and Date)

QA CHECK BY: _____
(Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER	DATE	TIME	DEPTH TO WATER*	INSTRUMENT	SERIAL NO.	REMARKS
MW107	11-26-02	0940	8.24	Heron Dipper T	Ø5769	
DET 4	11-26-02	0943	10.30	"	"	
DET 3	11-26-02	0945	9.19	"	"	
MW 112	11-26-02	0950	6.59	"	"	
MW 113	11-26-02	0952	7.31	"	"	
MW111	11-26-02	0955	6.10	"	"	
MW 109	11-26-02	0958	17.91	"	"	
MW110	11-26-02	1003	13.20	"	"	
WBGØ13	4-3-Ø3	9:21	11.68	Heron Dipper T	Ø5769	
WBGØ12	4-3-Ø3	9:30	16.95	"	"	
MW110	4-3-Ø3	9:58	7.43	"	"	
MW109	4-3-Ø3	10:02	12.05	"	"	
MW111	4-3-Ø3	10:05	6.16	"	"	
MW112	4-3-Ø3	10:08	6.37	"	"	
MW113	4-3-Ø3	10:10	6.76	"	"	
DET4	4-3-Ø3	10:14	9.94	"	"	

*All measurements from top of casing.

RECORDED BY: _____ (Signature and Date) Chantelle Cavell 4/13/03

QA CHECK BY: _____ (Signature and Date)

COMPREHENSIVE WATER LEVEL MEASUREMENTS

PROJECT NAME: Ravenna Demolition Area 2 Phase II RI

DELIVERY ORDER NO: 0003

WELL NUMBER	DATE	TIME	DEPTH TO WATER*	INSTRUMENT	SERIAL NO.	REMARKS
DET 3	4-3-03	1016	8.93	Heron Dipper T	057169	
MW107	4-3-03	1019	7.37	"	"	
MW106	4-3-03	1021	3.77	"	"	
MW105	4-3-03	1022	3.46	"	"	
MW108	4-3-03	1029	5.41	"	"	
DET-2	4-3-03	1032	32.10	"	"	
DET-1B	4-3-03	1037	23.15	"	"	
MW104	4-3-03	1041	20.18	"	"	

*All measurements from top of casing.

RECORDED BY: [signature] 4-3-03
(Signature and Date)

QA CHECK BY: _____
(Signature and Date)