



January 9, 2015

Illinois Department of Public Health  
Division of Environmental Health  
525 West Jefferson Street  
Springfield, Illinois 62761

**Subject: Groundwater Monitoring Well Construction Report  
Roxana, Illinois**

To whom it may concern:

AECOM (formerly URS Corporation), on behalf of Shell Oil Products US (SOPUS), is submitting the boring logs and well construction diagrams for four replacement groundwater monitoring wells installed at the Wood River Refinery in Roxana, Illinois. Enclosed are the boring logs and well completion diagrams for the following wells recently installed at the site:

- P-57
- P-92C
- P-93A
- P-93C

If you have any questions or require further information, please contact Bob Billman at (314) 429-0100 or [bob.billman@aecom.com](mailto:bob.billman@aecom.com).

Sincerely,

Wendy Pennington  
Project Engineer

Bob Billman  
Senior Project Manager

cc: Kevin Dyer (SOPUS)  
Eric Petersen (Phillips 66)  
Shannon Haney (Greensfelder, Hemker & Gale P.C.)  
Repositories (Village Hall, Library, Website)

AECOM (EVIRO) LOG (EPA FORM) 1 WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB 1/9/15

## LOG OF BORING AND WELL CONSTRUCTION DETAIL

### P-57 (replacement)

Starting Date: 12/6/14	Quadrangle Sec: 35
Completion Date: 12/8/14	T: 5N
	R: 9W
Casing Elevation: 446.96	UTM (or State Plane) Coord
Ground Elevation: 445.00	N: (X): 792297.86
	E: (Y): 2322319.47

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5				1.1		X X X X	FILL ASPHALT	Gravel [FILL] ASPHALT with gravel	Airknife to 10 ft bgs to clear utilities and other underground obstructions.
				1.5		X X X X	FILL	Medium stiff, moist, brown, Sandy CLAY [FILL]	
				23.7		X X X X		Medium dense, moist, brown, Clayey SAND [FILL]	
10				109.3		X X X X		Loose, moist, brown, fine grained SAND (SP), trace clay	
				43.5		X X X X		Clay grades out	
15		120	108	41.3		X X X X		Becomes fine to medium gravel	
				24.2		X X X X	SP		
				63.1		X X X X		Trace clay	
20				4.0		X X X X		Clay grades out	
		120	120	20.4		X X X X			
				4.4		X X X X			

Completion Depth: 54.0 Ft bgs

Project No.: 21563721

Project Name: WRR Well Replacement

Drilling Contractor: Cascade Drilling LP

Driller Name: Dale Duscher

Drilling Method: Sonic

Drill Rig Type: Sonic

Logged by: M. Miller

County: Madison

Site ID No.: 1191150002

Federal ID No.: ILD 080 012 305

Water Depth: 44 ft., After ATD hrs.

Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.

Water level at time of drilling  
 Water level after drilling

ATD - At time of drilling  
 NE - None Encountered  
 NA - Not Applicable

Air Knife  
 Sonic  
 Concrete  
 Cement/Bentonite Grout  
 Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

AECOM (E/IRON) LOG (EPA FORMAT)+1 WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\21563721 WRR WELL REPLACEMENT GPJ P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

## LOG OF BORING AND WELL CONSTRUCTION DETAIL

### P-57 (replacement)

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				4.3				SAME: Loose, moist, brown, fine grained SAND (SP), trace clay  Trace clay  Clay grades out  SP  Becomes gray brown  Trace clay  Becomes wet  Becomes moist  Becomes wet	
				4.8					
				4.9					
30				39.1					
				637.5					
35		120	108	18.4					
				109.7					
40				1049					
				69.5					
45		120	96	310.3			▽		
				296.7					
				376.9					
				1479					

Completion Depth: <u>54.0 Ft bgs</u> Project No.: <u>21563721</u> Project Name: <u>WRR Well Replacement</u> Drilling Contractor: <u>Cascade Drilling LP</u> Driller Name: <u>Dale Duscher</u> Drilling Method: <u>Sonic</u> Drill Rig Type: <u>Sonic</u> Logged by: <u>M. Miller</u> County: <u>Madison</u> Site ID No.: <u>1191150002</u> Federal ID No.: <u>ILD 080 012 305</u>	Water Depth: <u>44</u> ft., After <u>ATD</u> hrs. Water Depth: _____ ft., After _____ hrs. ▽ Water level at time of drilling ▼ Water level after drilling ATD - At time of drilling NE - None Encountered NA - Not Applicable
[Air Knife] Air Knife [Sonic] Sonic [Concrete] Concrete [Cement/Bentonite Grout] Cement/Bentonite Grout [Bentonite Seal] Bentonite Seal [Filter Sand] Filter Sand [Screen] Screen [Filter Sand - No Screen] Filter Sand - No Screen	USC based on field visual observations



Monitoring Well Installation Details  
Stick Up Monitoring Well Construction Diagram



Project:	WRR Well Replacement			Well ID:	P-57
Project Location:	Wood River Refinery; Roxana, IL	Date Started:	12/6/2014		
Well Location:	North Property - West Fenceline	Date Completed:	12/9/2014	Boring ID:	P-57 replacement
Drilling Contractor:	Cascade Drilling LP	Time Seal Set:	1120 (12/8/14)	Northing:	792297.86
Driller:	D. Duscher	Type of Rig:	Sonic	Easting:	2322319.47
Consulting Firm:	URS Corporation	Drilling Method:	Sonic	Elevation Datum:	445.00
Geologist:	M. Miller, B. Koca	Owner:	Equilon Enterprises LLC dba Shell Oil Products US	Township:	35
				Range:	5N
				Section:	9W

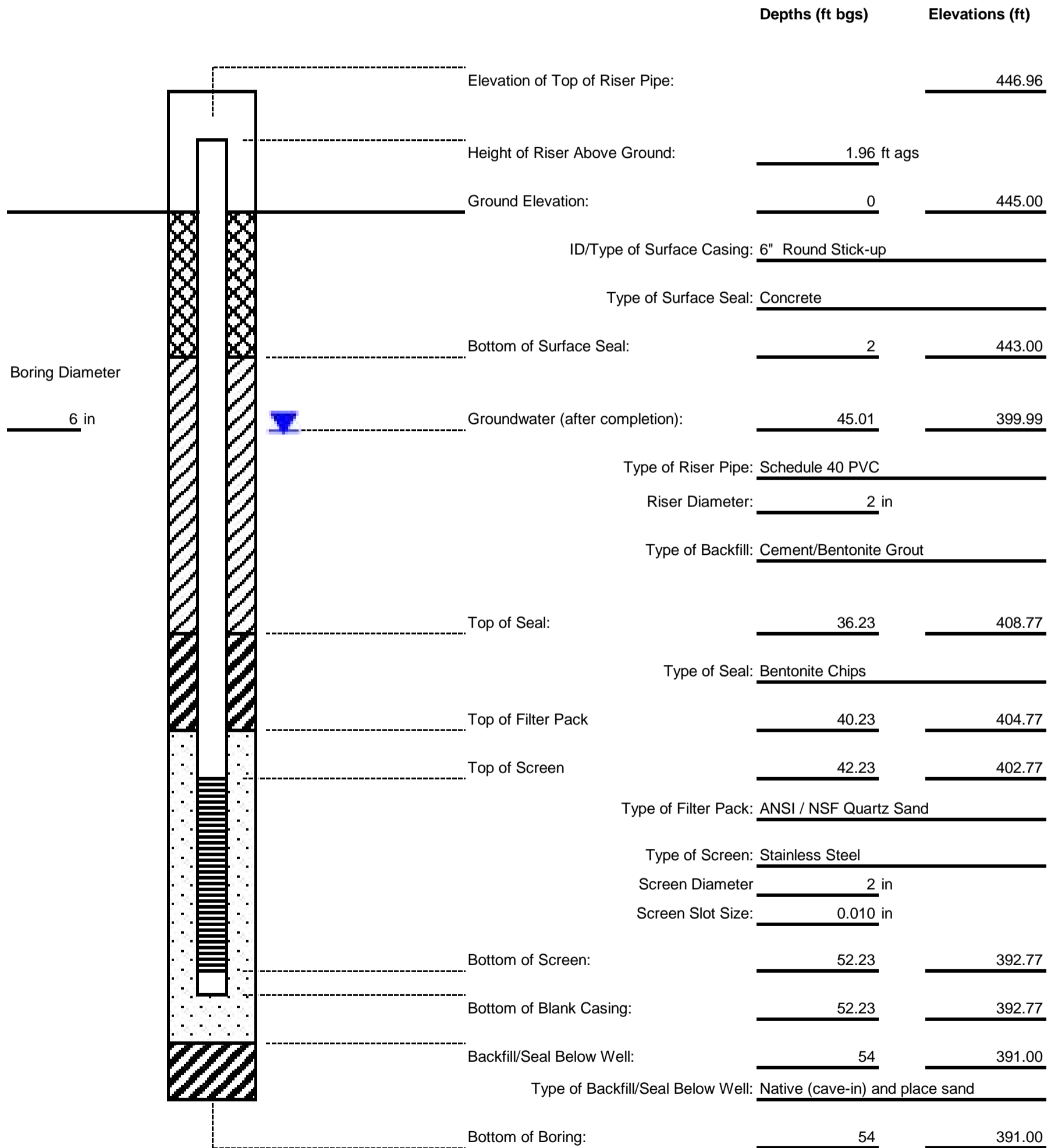


DIAGRAM IS NOT TO SCALE

AECOM (EVIRON) LOG (EPA FORMAT)-1 WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

## LOG OF BORING AND WELL CONSTRUCTION DETAIL

### P-92C (replacement)

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	LOG OF BORING AND WELL CONSTRUCTION DETAIL	
								DESCRIPTION	NOTES
								Starting Date: 12/3/14	Quadrangle Sec: 35
								Completion Date: 12/3/14	T: 5N R: 9W
								Casing Elevation: 446.17	UTM (or State Plane) Coord
								Ground Elevation: 445.00	N: (X): 792752.50 E: (Y): 2324200.00
5	Wavy pattern			15.1	●	Cross-hatch	FILL	Soft, moist to wet, brown, low plastic silty CLAY [FILL], trace sand	Airknife to 10 ft bgs to clear utilities and other underground obstructions.
								With gray mottles	
								Becomes wet, gray, silt grades out	
								Becomes sandy	
								Becomes gray brown Trace sand	
								Becomes sandy	
10	Wavy pattern			0.4	●	Cross-hatch	FILL	Loose, wet, brown, fine grained, clayey SAND (SC)	
15	Wavy pattern	120	108	0.2	●	Diagonal lines	SC	Loose, moist, gray brown, fine to medium grained SAND (SP)	
20	Wavy pattern			11.2	●	Dotted	SP		
25	Wavy pattern			9.7	●	Dotted	SP		
30	Wavy pattern			3.2	●	Dotted	SP		
35	Wavy pattern			6.8	●	Dotted	SP		

Completion Depth: 96.0 Ft bgs  
 Project No.: 21563721  
 Project Name: WRR Well Replacement  
 Drilling Contractor: Cascade Drilling LP  
 Driller Name: Dale Duscher  
 Drilling Method: Sonic  
 Drill Rig Type: Sonic  
 Logged by: M. Miller  
 County: Madison  
 Site ID No.: 1191150002  
 Federal ID No.: ILD 080 012 305

Water Depth: 55 ft., After ATD hrs.  
 Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.  
 Water level at time of drilling  
 Water level after drilling  
 ATD - At time of drilling  
 NE - None Encountered  
 NA - Not Applicable

Air Knife  
 Sonic  
 Concrete  
 Cement/Bentonite Grout  
 Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

AECOM (E/IRON) LOG (EPA FORMAT) - WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

**LOG OF BORING AND WELL CONSTRUCTION DETAIL**  
**P-92C (replacement)** Page 2 Of 4

Starting Date: 12/3/14	Quadrangle Sec:35 T:5N R:9W
Completion Date: 12/3/14	UTM (or State Plane) Coord
Casing Elevation: 446.17	N: (X):792752.50
Ground Elevation: 445.00	E: (Y):2324200.00

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30				24.2				SAME: Loose, moist, gray brown, fine to medium grained SAND (SP)	
				3.6					
				9.2					
35		120	108	42.8			SP		
				27.7					
				4.7					
				4.6					
40				8.6					Becomes medium dense, medium grained, trace silt
				6.8					
				8.5					
45		120	120	28					
				107.2					
				587.1					

Completion Depth: 96.0 Ft bgs  
 Project No.: 21563721  
 Project Name: WRR Well Replacement  
 Drilling Contractor: Cascade Drilling LP  
 Driller Name: Dale Duscher  
 Drilling Method: Sonic  
 Drill Rig Type: Sonic  
 Logged by: M. Miller  
 County: Madison  
 Site ID No.: 1191150002  
 Federal ID No.: ILD 080 012 305

Water Depth: 55 ft., After ATD hrs.  
 Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.  
 Water level at time of drilling  Air Knife  
 Water level after drilling  Sonic  
 ATD - At time of drilling  Concrete  
 NE - None Encountered  Cement/Bentonite Grout  
 NA - Not Applicable  Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

AECOM (E/IRON) LOG (EPA FORM) 1 - WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\21563721 WRR WELL REPLACEMENT.GPJ P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

**LOG OF BORING AND WELL CONSTRUCTION DETAIL**  
**P-92C (replacement)** Page 3 Of 4

Starting Date: 12/3/14	Quadrangle Sec: 35 T: 5N R: 9W
Completion Date: 12/3/14	UTM (or State Plane) Coord
Casing Elevation: 446.17	N: (X): 792752.50
Ground Elevation: 445.00	E: (Y): 2324200.00

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55		120	100	527.0				SAME: Medium dense, moist, gray brown, medium grained SAND (SP), trace silt	
				503.4				Becomes loose	
				638.4				Becomes wet	▽
				656.2					
60				650.4					
				600.2			SP		
				624.1					
65		120	108	168.7					
				615.3					
				667.9					
70				710.1					
		120	48						

Completion Depth: <u>96.0 Ft bgs</u>	Water Depth: <u>55</u> ft., After <u>ATD</u> hrs.
Project No.: <u>21563721</u>	Water Depth: _____ ft., After _____ hrs.
Project Name: <u>WRR Well Replacement</u>	▽ Water level at time of drilling
Drilling Contractor: <u>Cascade Drilling LP</u>	▼ Water level after drilling
Driller Name: <u>Dale Duscher</u>	ATD - At time of drilling
Drilling Method: <u>Sonic</u>	NE - None Encountered
Drill Rig Type: <u>Sonic</u>	NA - Not Applicable
Logged by: <u>M. Miller</u>	▣ Air Knife
County: <u>Madison</u>	■ Sonic
Site ID No.: <u>1191150002</u>	▣ Concrete
Federal ID No.: <u>ILD 080 012 305</u>	▣ Cement/Bentonite Grout
	▣ Bentonite Seal
	▣ Filter Sand
	▣ Screen
	▣ Filter Sand - No Screen



USC based on field visual observations



AECOM (E/IRON) LOG (EPA FORM 1) - WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

## LOG OF BORING AND WELL CONSTRUCTION DETAIL

### P-92C (replacement)

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				630.5				Starting Date: 12/3/14 Completion Date: 12/3/14 Casing Elevation: 446.17 Ground Elevation: 445.00	
80				10.2					
85		180	160	12.2			SP	Becomes red brown, medium to coarse grained  Trace fine gravel	
90				9.7					
95				9.5					Monitoring well installed ~10 feet west of original well locaiton.
				2.6					
				5.6					
				4.3					
								Bottom of boring at 96 ft bgs	

Completion Depth: <u>96.0 Ft bgs</u> Project No.: <u>21563721</u> Project Name: <u>WRR Well Replacement</u> Drilling Contractor: <u>Cascade Drilling LP</u> Driller Name: <u>Dale Duscher</u> Drilling Method: <u>Sonic</u> Drill Rig Type: <u>Sonic</u> Logged by: <u>M. Miller</u> County: <u>Madison</u> Site ID No.: <u>1191150002</u> Federal ID No.: <u>ILD 080 012 305</u>	Water Depth: <u>55</u> ft., After <u>ATD</u> hrs. Water Depth: _____ ft., After _____ hrs. <input type="checkbox"/> Water level at time of drilling <input checked="" type="checkbox"/> Water level after drilling ATD - At time of drilling NE - None Encountered NA - Not Applicable
<input type="checkbox"/> Air Knife <input checked="" type="checkbox"/> Sonic <input type="checkbox"/> Concrete <input type="checkbox"/> Cement/Bentonite Grout <input type="checkbox"/> Bentonite Seal <input type="checkbox"/> Filter Sand <input type="checkbox"/> Screen <input type="checkbox"/> Filter Sand - No Screen	USC based on field visual observations



Monitoring Well Installation Details  
Stick Up Monitoring Well Construction Diagram



Project:	WRR Well Replacement			Well ID:	P-92C
Project Location:	Wood River Refinery; Roxana, IL	Date Started:	12/3/2014		
Well Location:	North Property - West Fenceline	Date Completed:	12/6/2014	Boring ID:	P-92C replacement
Drilling Contractor:	Cascade Drilling LP	Time Seal Set:	1430 (12/3/14)	Northing:	792752.50
Driller:	D. Duscher	Type of Rig:	Sonic	Easting:	2324200.00
Consulting Firm:	URS Corporation	Drilling Method:	Sonic	Elevation Datum:	444.00
Geologist:	M. Miller	Owner:	Equilon Enterprises LLC dba Shell Oil Products US	Township:	35
				Range:	5N
				Section:	9W

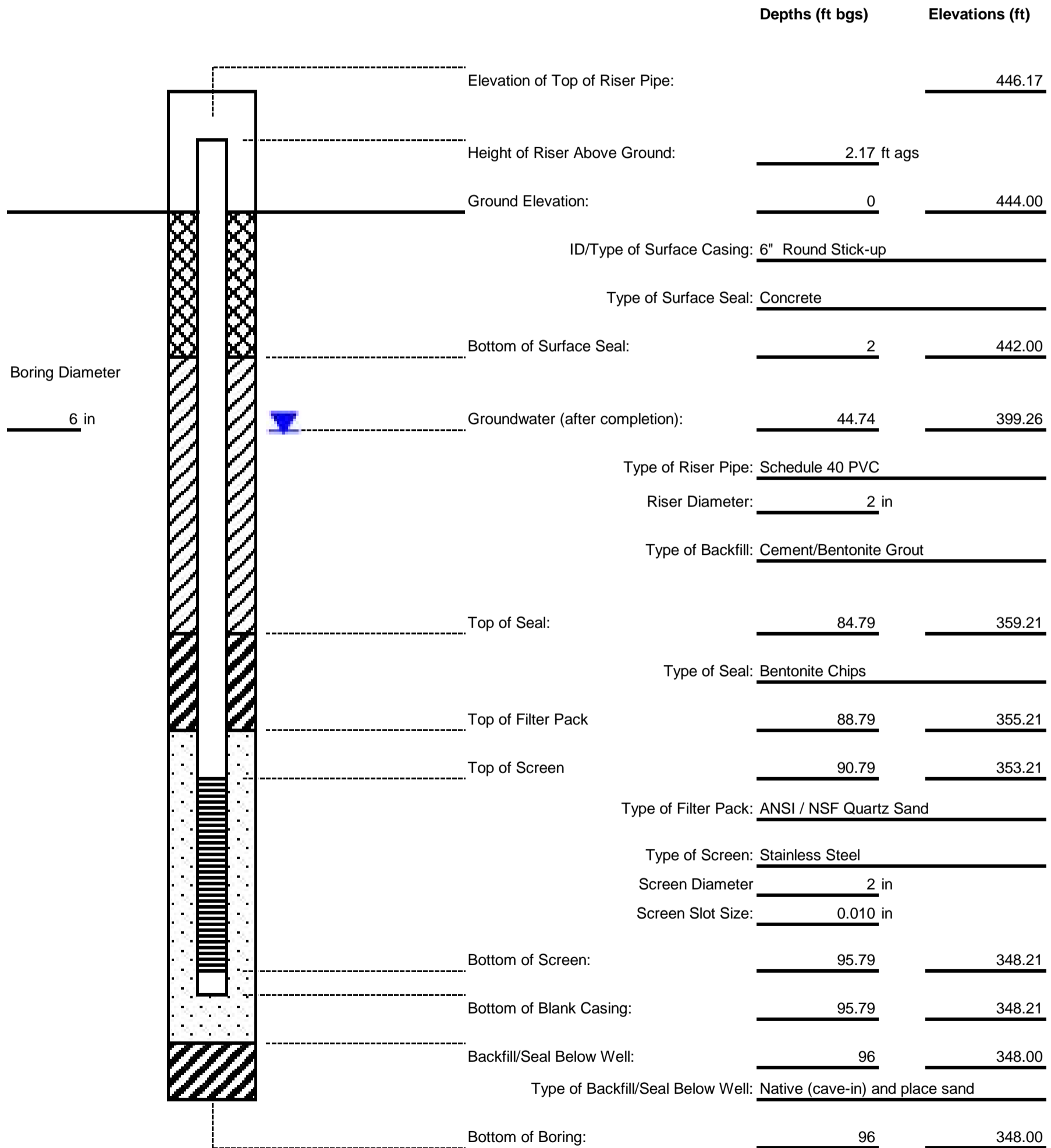


DIAGRAM IS NOT TO SCALE

AECOM (EVI) LOG (EPA FORM) 1 WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

## LOG OF BORING AND WELL CONSTRUCTION DETAIL

### P-93C (replacement)

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
								Starting Date: 12/4/14 Completion Date: 12/4/14 Casing Elevation: 446.28 Ground Elevation: 444.50	
								Quadrangle Sec: 35 T: 5N R: 9W UTM (or State Plane) Coord N: (X): 792177.50 E: (Y): 2322335.96	
5				1.0			FILL	Gravel [FILL]  Loose, moist, dry, dark brown, silty SAND [FILL]	Airknife to 10 ft bgs to clear utilities and other underground obstructions.
				1.5				Loose, moist, brown, fine grained silty SAND (SM)	
				1.2					
				1.5			SM		
10								Trace fine gravel	
				2.7				Loose, moist, light brown, fine to medium grained SAND (SP)	
		120	96	1.5					
				1.8					
15				1.2					
				1.8			SP		
				1.2					
20		120	108	1.0					

Completion Depth: 96.0 Ft bgs  
 Project No.: 21563721  
 Project Name: WRR Well Replacement  
 Drilling Contractor: Cascade Drilling LP  
 Driller Name: Dale Duscher  
 Drilling Method: Sonic  
 Drill Rig Type: Sonic  
 Logged by: M. Miller  
 County: Madison  
 Site ID No.: 1191150002  
 Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.  
 Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.  
 Water level at time of drilling  
 Water level after drilling  
 ATD - At time of drilling  
 NE - None Encountered  
 NA - Not Applicable

Air Knife  
 Sonic  
 Concrete  
 Cement/Bentonite Grout  
 Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

AECOM (E/IRON) LOG (EPA FORM) 1 - WELL P:\RESOURCES\GINT\DATA\GINT\PROJECTS\21563721 WRR WELL REPLACEMENT GPJ P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB 1/9/15

**LOG OF BORING AND WELL CONSTRUCTION DETAIL**  
**P-93C (replacement)** Page 2 Of 4

Starting Date: 12/4/14	Quadrangle Sec: 35 T: 5N R: 9W
Completion Date: 12/4/14	UTM (or State Plane) Coord
Casing Elevation: 446.28	N: (X): 792177.50
Ground Elevation: 444.50	E: (Y): 2322335.96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30				0.6				SAME: Loose, moist, light brown, fine to medium grained SAND (SP)	
				1.1					
				0.9					
35		120	108	1.5			SP	6-inch Clayey layer	
				0.9					
				1.8					
40				1.8			SP	Becomes medium dense to dense, brown, medium grained	
				1.9					
				13.4					
45		120	108	42.0			SP	Trace fine gravel	
				170.8					
				1564					
				2654				Gravel grades out	
								Becomes brownish gray	Strong hydrocarbon odor

Completion Depth: 96.0 Ft bgs  
 Project No.: 21563721  
 Project Name: WRR Well Replacement  
 Drilling Contractor: Cascade Drilling LP  
 Driller Name: Dale Duscher  
 Drilling Method: Sonic  
 Drill Rig Type: Sonic  
 Logged by: M. Miller  
 County: Madison  
 Site ID No.: 1191150002  
 Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.  
 Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.  
 Water level at time of drilling  
 Water level after drilling  
 ATD - At time of drilling  
 NE - None Encountered  
 NA - Not Applicable

Air Knife  
 Sonic  
 Concrete  
 Cement/Bentonite Grout  
 Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

AECOM (EVI) LOG (EPA FORM) 1 - WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB - 1/9/15

**LOG OF BORING AND WELL CONSTRUCTION DETAIL**  
**P-93C (replacement)** Page 3 Of 4

Starting Date: 12/4/14	Quadrangle Sec: 35
Completion Date: 12/4/14	T: 5N
	R: 9W
Casing Elevation: 446.28	UTM (or State Plane) Coord
Ground Elevation: 444.50	N: (X): 792177.50
	E: (Y): 2322335.96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55		120	108	189.0 648.7 3447 6333 4374				SAME: Loose, moist, brownish gray, fine to medium grained SAND (SP) Becomes wet	
60				1611			SP		
65		120	108	2815 9588 7737 4003					
70				551.0					
		120	108	559.9					

Completion Depth: 96.0 Ft bgs  
 Project No.: 21563721  
 Project Name: WRR Well Replacement  
 Drilling Contractor: Cascade Drilling LP  
 Driller Name: Dale Duscher  
 Drilling Method: Sonic  
 Drill Rig Type: Sonic  
 Logged by: M. Miller  
 County: Madison  
 Site ID No.: 1191150002  
 Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.  
 Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.  
 Water level at time of drilling  Air Knife  
 Water level after drilling  Sonic  
 ATD - At time of drilling  Concrete  
 NE - None Encountered  Cement/Bentonite Grout  
 NA - Not Applicable  Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

AECOM (EVIRO) LOG (EPA FORM) 1 - WELL P:\RESOURCES\GINT\DATA\GINT\ENVIRONMENTAL\URSTLEV.GLB 1/9/15

**LOG OF BORING AND WELL CONSTRUCTION DETAIL**  
**P-93C (replacement)**

Starting Date: 12/4/14  
 Completion Date: 12/4/14  
 Casing Elevation: 446.28  
 Ground Elevation: 444.50

Quadrangle Sec: 35 T: 5N R: 9W  
 UTM (or State Plane) Coord  
 N: (X): 792177.50  
 E: (Y): 2322335.96

Depth In feet	Well Construction	Inches Driven	Inches Recovered	PID/FID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
80				339.8				SAME: Loose, wet, brownish gray, fine to medium grained SAND (SP)  Becomes medium to course grained	
				559.3					
				238.7					
				111.5					
85		180	180	150.6			SP		
				37.4					
				2.1				Monitoring well P-93C installed ~7 feet northeast of original well locaiton. This boring log was also used for installaionn of replacement monitoring well P-93A, which is ~7 feet east of this boring and ~6 feet north of its original well location.	
90				3.5					
				1.7					
				3.0			Trace fine to medium gravel		
95								Bottom of boring at 95.5 ft.	

Completion Depth: 96.0 Ft bgs  
 Project No.: 21563721  
 Project Name: WRR Well Replacement  
 Drilling Contractor: Cascade Drilling LP  
 Driller Name: Dale Duscher  
 Drilling Method: Sonic  
 Drill Rig Type: Sonic  
 Logged by: M. Miller  
 County: Madison  
 Site ID No.: 1191150002  
 Federal ID No.: ILD 080 012 305

Water Depth: 50 ft., After ATD hrs.  
 Water Depth: \_\_\_\_\_ ft., After \_\_\_\_\_ hrs.  
 Water level at time of drilling  
 Water level after drilling  
 ATD - At time of drilling  
 NE - None Encountered  
 NA - Not Applicable

Air Knife  
 Sonic  
 Concrete  
 Cement/Bentonite Grout  
 Bentonite Seal  
 Filter Sand  
 Screen  
 Filter Sand - No Screen



USC based on field visual observations

Monitoring Well Installation Details  
Stick Up Monitoring Well Construction Diagram



Project:	WRR Well Replacement			Well ID:	P-93A
Project Location:	Wood River Refinery; Roxana, IL	Date Started:	12/5/2014		
Well Location:	North Property - West Fenceline	Date Completed:	12/6/2014	Boring ID:	P-93C replacement
Drilling Contractor:	Cascade Drilling LP	Time Seal Set:	1000 (12/5/14)	Northing:	792173.65
Driller:	D. Duscher	Type of Rig:	Sonic	Easting:	2322340.87
Consulting Firm:	URS Corporation	Drilling Method:	Sonic	Elevation Datum:	444.50
Geologist:	M. Miller	Owner:	Equilon Enterprises LLC dba Shell Oil Products US	Township:	35
				Range:	5N
				Section:	9W

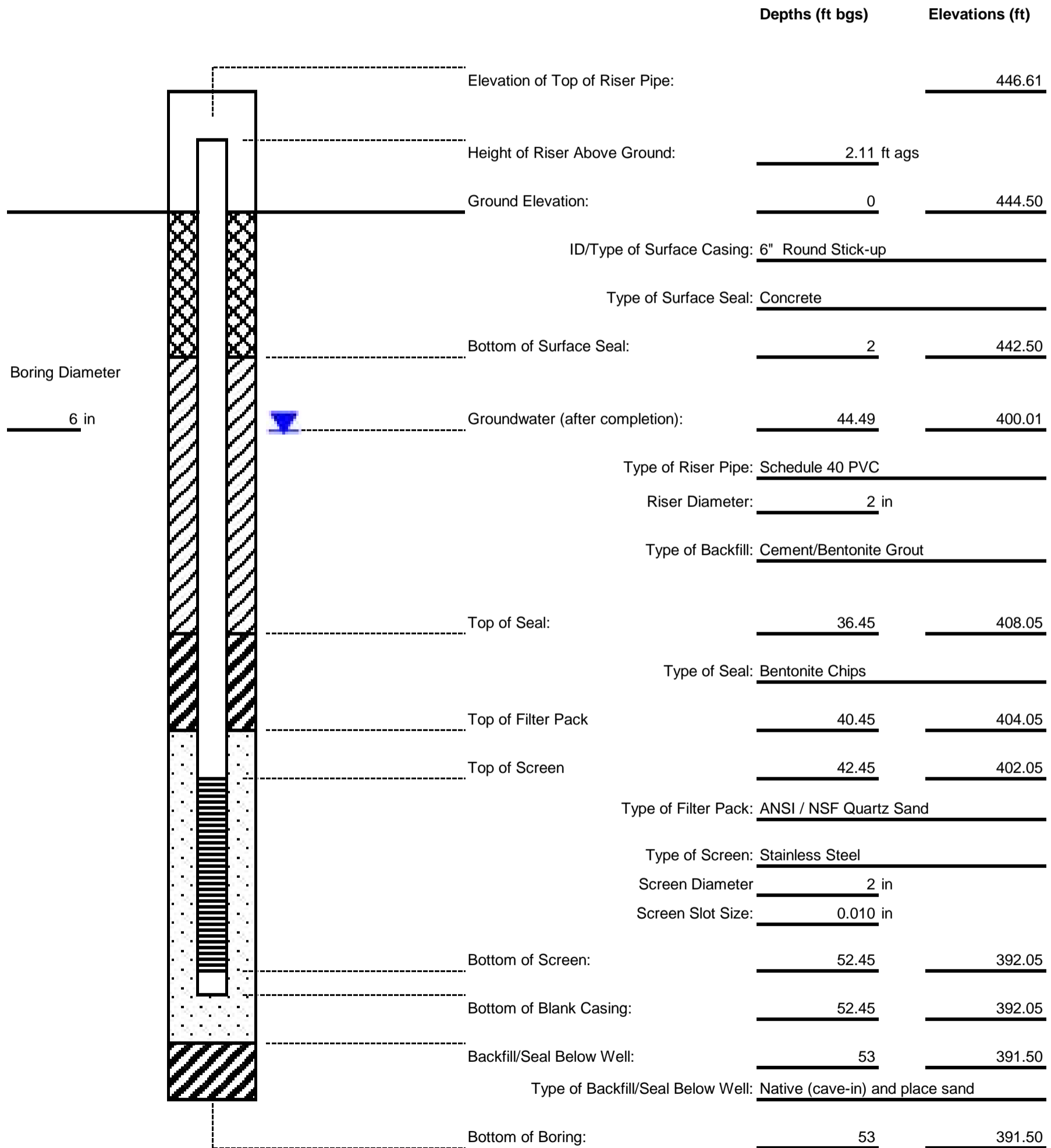


DIAGRAM IS NOT TO SCALE

Monitoring Well Installation Details  
Stick Up Monitoring Well Construction Diagram



Project:	WRR Well Replacement			Well ID:	P-93C
Project Location:	Wood River Refinery; Roxana, IL	Date Started:	12/4/2014		
Well Location:	North Property - West Fenceline	Date Completed:	12/6/2014	Boring ID:	P-93C replacement
Drilling Contractor:	Cascade Drilling LP	Time Seal Set:	1345 (12/4/14)	Northing:	792177.50
Driller:	D. Duscher	Type of Rig:	Sonic	Easting:	2322335.96
Consulting Firm:	URS Corporation	Drilling Method:	Sonic	Elevation Datum:	444.50
Geologist:	M. Miller	Owner:	Equilon Enterprises LLC dba Shell Oil Products US	Township:	35
				Range:	5N
				Section:	9W

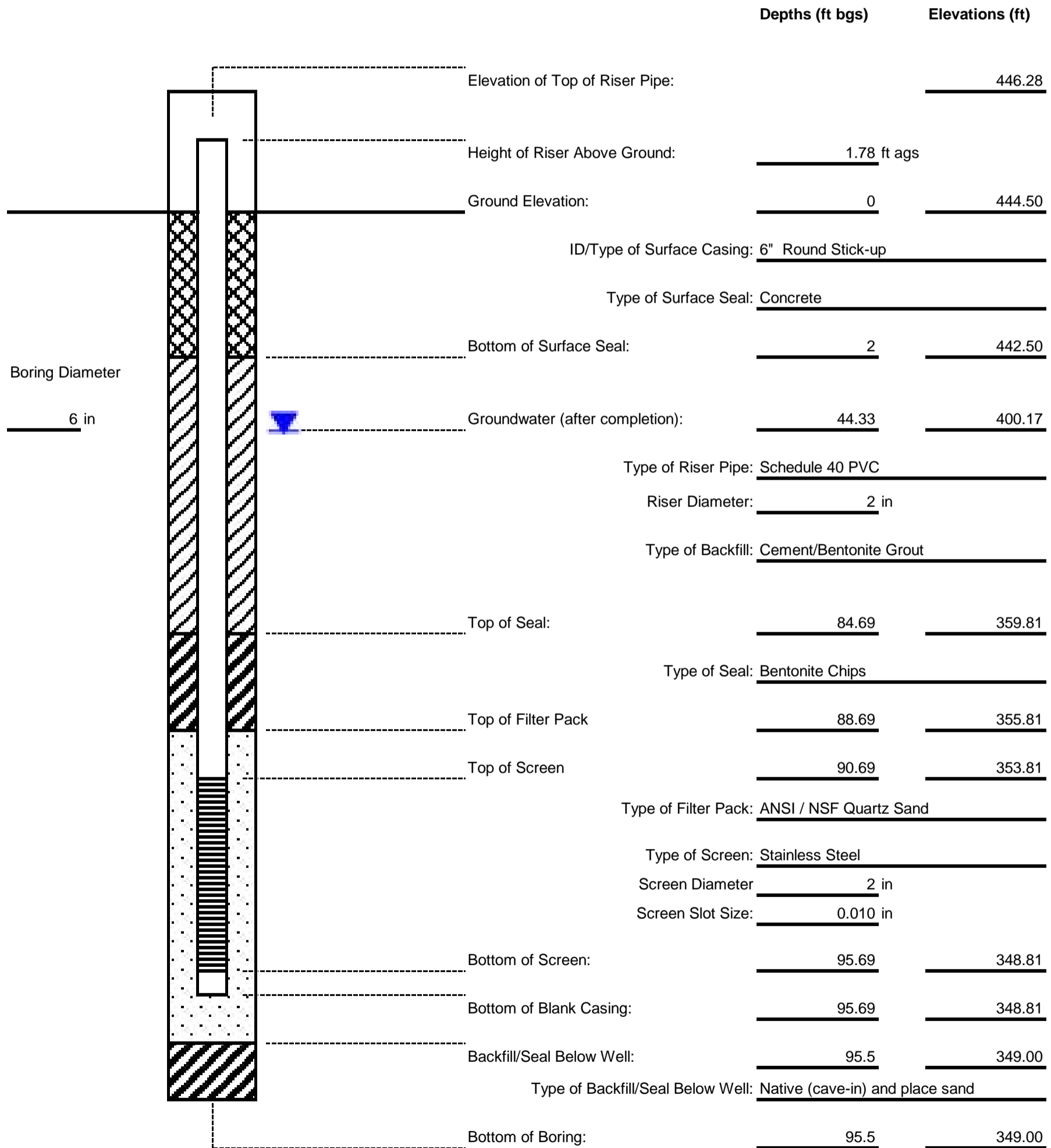


DIAGRAM IS NOT TO SCALE