ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 FACILITY IDENTIFICATION

Name: WRB Refining LLC - Wood River Refinery

County: Madison

Street Address: 900 South Central Ave.

Site No. (IEPA): 1191150002

City: Roxana, IL 62084

Site No. (USEPA): ILD 080 012 305

2.0 OWNER INFORMATION

Name: Not Applicable

Mailing Address:

3.0 OPERATOR INFORMATION

Equilon Enterprises LLC d/b/a Shell Oil Products US

17 Junction Drive, PMB #399

Glen Carbon, IL 62034

Contact Name:

Kevin Dyer

Contact Title:

Principal Program Manager

Phone No.:

618-288-7237

4.0 TYPE OF SUBMISSION (check applicable item and provide requested information, as applicable)

☐ RFI Phase I Workplan/Report
☐ RFI Phase II Workplan/Report
☐ CMP Report; Phase _____
☒ Other (describe):
Construction Completion Report for Well P-60

IEPA Permit Log No. _____
Date of Last IEPA Letter on Project 8/5/10
Log No. of Last IEPA Letter on Project B-43-CA-16, BA-43-CA-18

Date of Submittal November 24, 2010

Does this submittal include groundwater information: ☐ Yes ☒ No

5.0 DESCRIPTION OF SUBMITTAL: (briefly describe what is being submitted and its purpose)

Design documentation and operation and maintenance details for the well construction and LNAPL removal system at the referenced well.

6.0 DOCUMENTS SUBMITTED (identify all documents in submittal, including cover letter; give dates of all documents)

RCRA Corrective Action Certification and Construction Completion Report for Well P-60, dated November 24, 2010

7.0 CERTIFICATION STATEMENT - ***(This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below).*** The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7.1 **OWNER/OPERATOR CERTIFICATION** (Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice-president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ _____ (Date)

Title: _____

Operator Signature: Kevin E Dugan 11/23/10 (Date)

Title: Principal Program Manager

7.2 **PROFESSIONAL CERTIFICATION** ***(if necessary)*** - Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

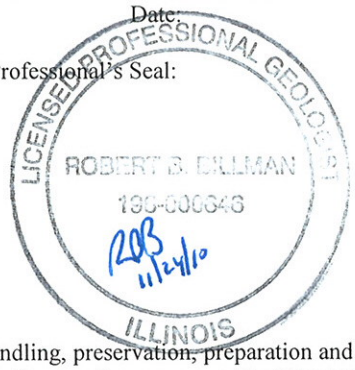
Professional's Signature: Robert B Billman 11/24/10 Date

Professional's Name: Robert B. Billman

Professional's Address: URS Corporation
1001 Highlands Plaza Drive West
St. Louis, MO 63110

Professional's Phone No.: 314-743-4108

Professional's Seal:



7.3 **LABORATORY CERTIFICATION** ***(if necessary)*** - The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory _____

_____
Signature of Laboratory Responsible Officer — Date

Mailing Address of Laboratory

_____

_____

_____

_____
Name and Title of Laboratory Responsible Officer

URS

November 24, 2010

Mr. Steven F. Nightingale, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794

Subject: **Construction Completion Report for Well P-60**
Equilon Enterprises
Roxana, Illinois
1191150002 -- Madison County
ILD080012305
Log No. B-43-CA-16; B-43-CA-18

Dear Mr. Nightingale:

URS Corporation (URS), on behalf of Shell Oil Products US (SOPUS), is submitting this Construction Completion Report for the existing product removal system at Well P-60 and the new potential recovery Well P-60-11, both of which are located along the west fenceline on the North Property of the WRB Refining LLC Wood River Refinery (WRR). Refer to the figure in **Attachment A** for the general location of these two monitoring wells. This information is being submitted in response to *Comment 16* of the Agency's letter dated August 5, 2010 and is prepared in accordance with guidance document provided as Attachment D of that letter.

INTRODUCTION/PURPOSE

Well P-60 has exhibited light non-aqueous phase liquid (LNAPL) and previous efforts have been conducted to recover product, as well as better understand this situation. In 2006, it was thought that the well integrity was compromised, allowing product at shallow depths in the subsurface to enter the well. In the Spring of 2006, investigation activities were performed in the vicinity of Well P-60 to better assess the nature and extent of hydrocarbons present.

In 2006, Cone Penetrometer Testing (CPT) and Rapid Optical Screening Tool (ROST) probes were performed to gather a soil stratigraphic profile and information on the presence of hydrocarbons in the soil. The ROST identified impacts were primarily diesel range hydrocarbons with some gasoline, jet fuel, and heavy end hydrocarbons also observed. The percent fluorescence indicated by the ROST unit ranged from non-detect to about 190. Possible zones of LNAPL or residual hydrocarbon are indicated by ROST responses greater than 100% fluorescence. Soil borings were advanced for visual observation at locations where the CPT/ROST logs indicated potential hydrocarbon presence and temporary piezometers (including P-60-11) were installed for subsequent gauging at locations where visual observation of soil cores noted potential separate phase hydrocarbon impact.

1001 Highland Plaza Drive West, Suite 300
St. Louis, MO 63110
Phone: 314.429.0100
Fax: 314.429.0462

Since it was suspected that Well P-60 was compromised, in 2006 it was plugged and abandoned, and a new replacement monitoring well was installed (also called P-60). Free-phase product was still present after the installation of the new P-60 well; therefore it is believed that the LNAPL is present on the water table.

A Xitech Instruments Inc. (Xitech) ADJ 200 Smart Skimmer pump system was installed and started up in Well P-60 in May 2008 to conduct a field evaluation of the technology. The skimmer pump system was previously installed and operated on a limited basis several years prior. The intent of this evaluation was to gather data that may be used in designing any potential product recovery system installed at the site in the future. The current system is not necessarily intended to be a stand-alone remediation system. In a letter dated March 27, 2009 URS, on behalf of SOPUS, sent a letter to IEPA requesting the ability to adjust the pumping frequency and duration based on information collected during this field evaluation. In a letter dated April 21, 2009 the IEPA granted the request.

Historically, product thickness in Piezometer P-60-11 that is located approximately 130 feet north of Well P-60 has been on the order of 1 to 1.5 feet between June 2007 and May 2010[1]. As part of ongoing investigation activities performed during the Summer of 2010, this previously installed piezometer was removed and replaced with a monitoring well (same identification number) to allow for potential product recovery.

Well P-60-11 has been gauged weekly since installation. A clear bailer was used periodically in an attempt to confirm the presence of product; however, a bio-film material is all that has been observed. For this reason, no product recovery system has been installed at P-60-11.

WELL P-60

Final Design Documentation

The replacement Well P-60 is constructed of a four-inch diameter stainless steel casing with a twenty-foot section of 0.010-inch slotted stainless steel well screen installed to a total depth of about 65 feet bgs. A sand filter pack consisting of silica sand was installed through the augers to the base of the well and extended to approximately three feet above the top of the well screen. During placement of the sand pack, the height was checked periodically to ensure that the volume placed within the annulus correlates to the calculated volume required to fill the annular space. A four-foot thick bentonite seal was installed directly above the filter pack. The borehole annulus was then backfilled with bentonite chips and high solids bentonite grout to approximately one-foot below the ground surface. The well was completed with an above ground well protector, locking cap and surrounding bumper posts. The monitoring well construction diagram for Well P-60 is included in **Attachment B**.

The soil cuttings from the installation of this well were managed by refinery personnel and the water generated during development activities was managed via the refinery Wastewater Treatment Plant.

[1] Water levels were observed to be above the top of the screen in the P-60-11 piezometer during the gauging events since August 2008.

The Xitech skimmer pump system is a pre-manufactured system designed and manufactured by Xitech Instruments, Inc. The system includes: an intrinsically safe pneumatic skimmer which is designed to remove product to a sheen, a three-function electronic controller (Model 2500ES) that operates the skimmer intermittently, and has a high level tank shut-off assembly. Ancillary equipment includes tubing, 12-volt battery, cylinders of nitrogen, and a solar panel. **Attachment C** provides a plan view of the skimmer pump system setup and **Attachment D** provides a schematic of the skimmer pump system. The air source, power source, solar panel, electronic controller, and product holding tank are all located in close proximity to Well P-60. Detailed steps for the installation, operation, and troubleshooting of this product recovery system can be found in the *ADJ 200 Smart Skimmer and 2500ES Electronic Timer Operations Manual* included in **Attachment E**.

In general, a float within the skimmer unit locates the petroleum product on groundwater within a recovery well. The float has a 24-inch travel path to account for minor groundwater fluctuations. The controller, which is powered by the 12-volt battery/solar panel, is utilized to control the frequency of skimming for the system. Nitrogen is utilized to activate a piston within the system. The floating hydrocarbon is pumped through nylon tubing to the 500-gallon recovery tank located within a secondary containment system when the piston is activated. An automatic shut-off system is used to prevent overfilling. The recovered petroleum is planned to be managed on an as needed basis. The recovery system is rated for Class I, Division I environments and is intrinsically safe.

Due to higher groundwater levels, the screen of Well P-60 has been completely saturated since May of 2009. The skimmer pump system was shut off on February 3, 2010, at which time about 0.26 feet of product was still present within the well. On August 27, 2010, the product remaining in Well P-60 was removed via a bailer down to a product thickness of 0.01 feet. The product recovered to a thickness of about 0.03 to 0.04 feet and has remained at that thickness.

Operation and Maintenance Plan

The following items are checked on a weekly basis while the pump system is recovering product from the well. These items are described in more detail below:

- Depth to product and depth to water in the well;
- Manifold pressure of the bank of nitrogen cylinders;
- Air supply line between the cylinder bank and the controller for leaks; and
- Electronic controller to verify pump is running and for total pump run time.

Product depth and thickness are monitored and recorded on a weekly basis in Well P-60 (refer to the gauging table in **Attachment F**). Based on these measurements along with consultation with Xitech (personnel and manual in **Attachment E**), the depth to pump, cycles per day, and run-time per cycle were periodically adjusted to determine the optimal operation for this unit. The initial number of cycles per day and run-time per cycle were based on recommendations from Xitech based on the initial product thickness, subsurface lithology, and apparent product recovery rates.

The bank of nitrogen cylinders used in the product recovery system at Well P-60 is checked on a weekly basis when the system is running. The manifold gauge is checked to determine the amount of pressure still available to run the system and the air supply is checked for leaks. The bank of nitrogen cylinders is switched out for a new bank as needed (typically every 30 to 45 days).

The skimmer pump system electronic controller is also checked on a weekly basis. Personnel verify that the controller is on the pump system is running, and the total pump run time is recorded.

Based on the results of the weekly gauging, the position of the skimmer pump intake is evaluated to make sure that it straddles the product/water interface. When water levels fluctuate more than the range of the intake, the skimmer pump depth is adjusted accordingly.

The product level and water level within the product recovery tank are gauged approximately every month in an effort to keep track of how much product is being collected.

Since the skimmer pump system is no longer running, the only items currently monitored on a weekly basis are the product and water levels within the well.

WELL P-60-11

Final Design Documentation

The new Well P-60-11 is constructed of a four-inch diameter Schedule 40 PVC casing with a 30-foot section of 0.010-inch slotted PVC well screen (to account for groundwater fluctuations) installed to a total depth of about 60 feet bgs. A sand filter pack, consisting of a combination of placed and native sand in the annular space, extended to approximately two feet above the top of the well screen. During placement of the sand pack, the height was checked periodically to ensure that the volume placed within the annulus correlates to the calculated volume required to fill the annular space. A 2.5-foot thick bentonite seal was placed directly above the sand pack. The borehole annulus was then grouted to near the surface with cement/bentonite grout. A surface completion, included a locking expandable cap, stick-up protector and bumper posts, was added. The monitoring well construction diagram for Well P-60-11 is included in **Attachment G**.

The soil cuttings from the installation of this well were managed by refinery personnel and the water generated during development activities was managed via the refinery Wastewater Treatment Plant.

A product recovery system has not been installed at Well P-60-11 because no product has been present since its installation. Portions of the well screen extend above the water table, so LNAPL in the well area would be observable.

Operation and Maintenance Plan

Well P-60-11 is gauged on a weekly basis to check for the presence of LNAPL. No product has been observed in this well since its installation.

If you have any questions concerning this request, please contact Kevin Dyer, SOPUS project manager at (618) 288-7237 or Kevin.dyer@shell.com or me at (314) 743-4108 or bob_billman@urscorp.com.

Sincerely,

Robert B. Billman
Senior Project Manager

Attachments:

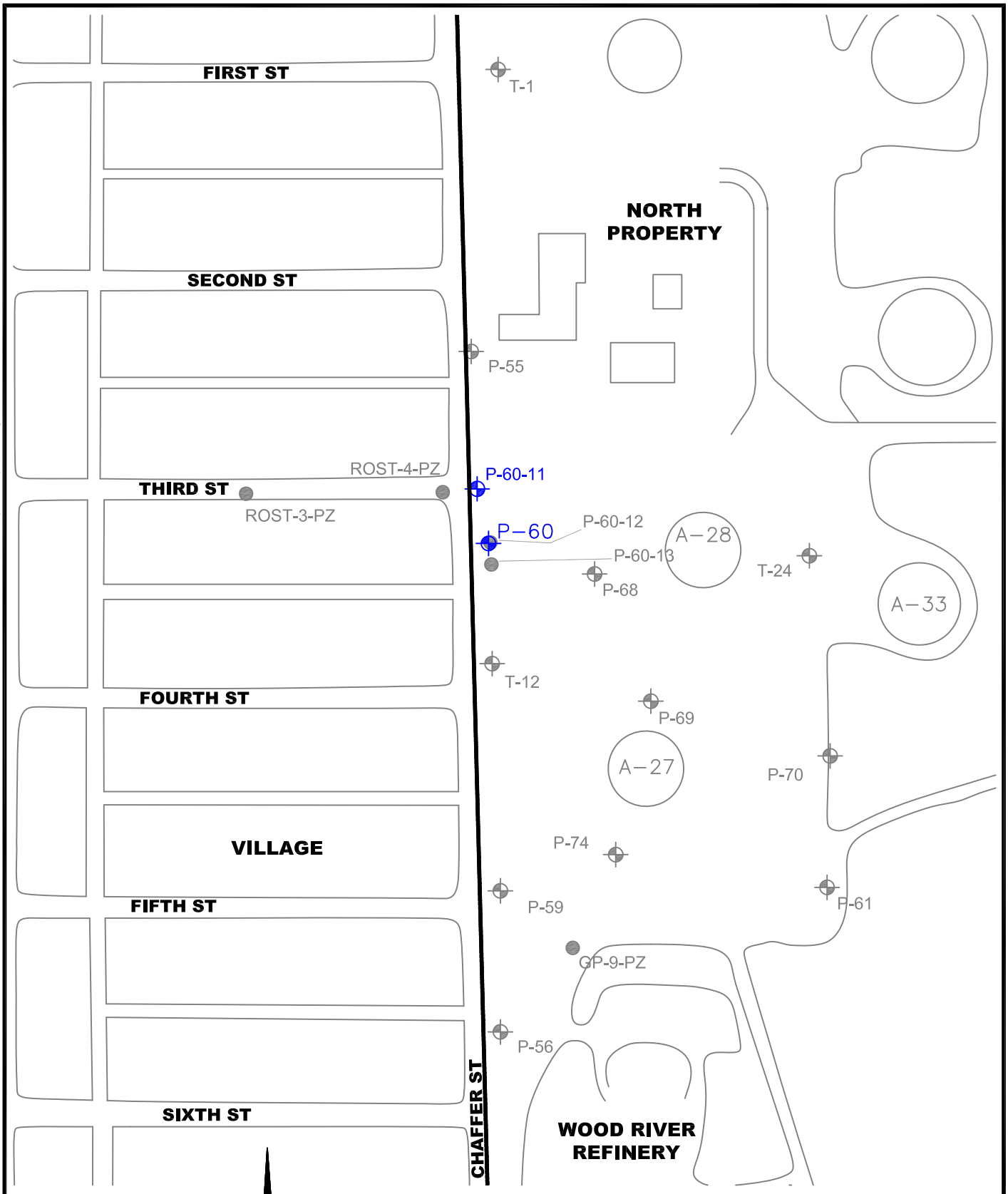
Attachment A – Location of P-60 and P-60-11
Attachment B – P-60 Well Completion Diagram
Attachment C – P-60 Skimmer Pump Setup Plan View
Attachment D – P-60 Skimmer Pump System Schematic
Attachment E – ADJ 200 Smart Skimmer and 2500ES Electronic Timer Operations Manual
Attachment F – Well P-60 Pilot Test Weekly Gauging Results
Attachment G – P-60-11 Well Completion Diagram

Cc: Kevin Dyer, SOPUS
Eric Petersen, ConocoPhillips

URS

ATTACHMENT A

Location of P-60 and P-60-11



SHELL OIL PRODUCTS US ROXANA, ILLINOIS		PROJECT NO. 21562289
URS		
DRN. BY: wmp 11/16/10 DSGN. BY: b3 CHKD. BY:	Location of P–60 and P–60–11	FIG. NO. A

File: C:\DOCUMENTS AND SETTINGS\WENDY_PENNINGTON\DESKTOP\P-60\FIGURE A LOCATION OF P-60 AND P-60-11.DWG Last edited: NOV. 19, 10 @ 2:34 p.m. by: wendy_pennington

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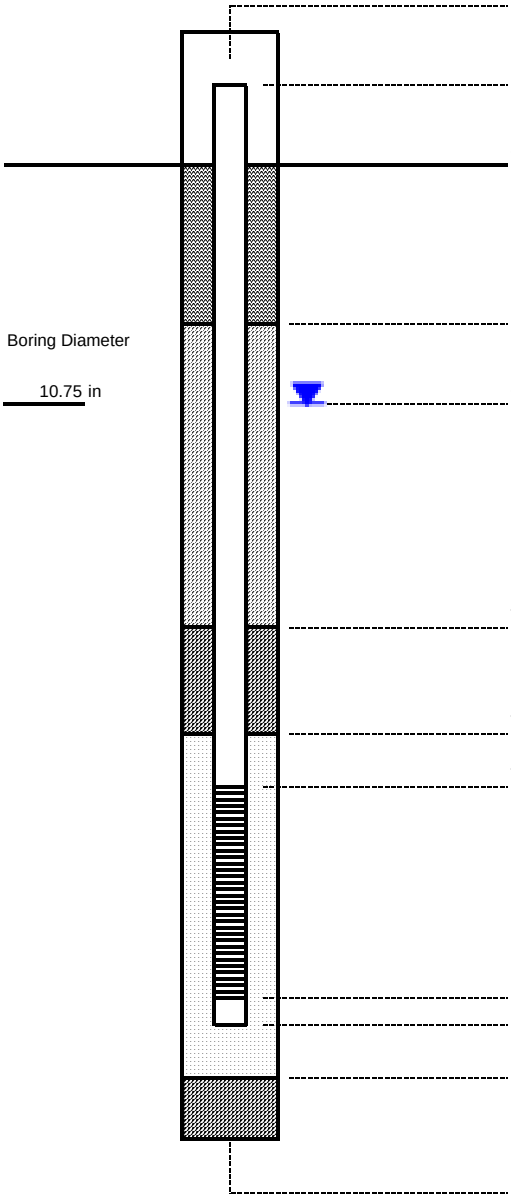
ATTACHMENT B

P-60 Well Completion Diagram

Monitoring Well Installation Details
Stick Up Monitoring Well Construction Diagram

URS Corporation

Project:	West Fenceline P-60 Free Phase Product Delineation			Well ID:	P-60
Project Location:	Roxana, Illinois	Date Started:	4/19/2006		
Well Location:	Wood River Refinery	Date Completed:	4/19/2006	Boring ID:	P-60-12
Drilling Contractor:	Roberts Environmental Drilling, Inc.	Time Seal Set:		Northing:	793522.10
Driller:		Type of Rig:	CME-75	Easting:	2322297.30
Consulting Firm:	URS Corporation	Drilling Method:	Hollow Stem Auger	Elevation Datum:	443.61
Geologist:	M. Miller	Completion Zone:	Main Sand		



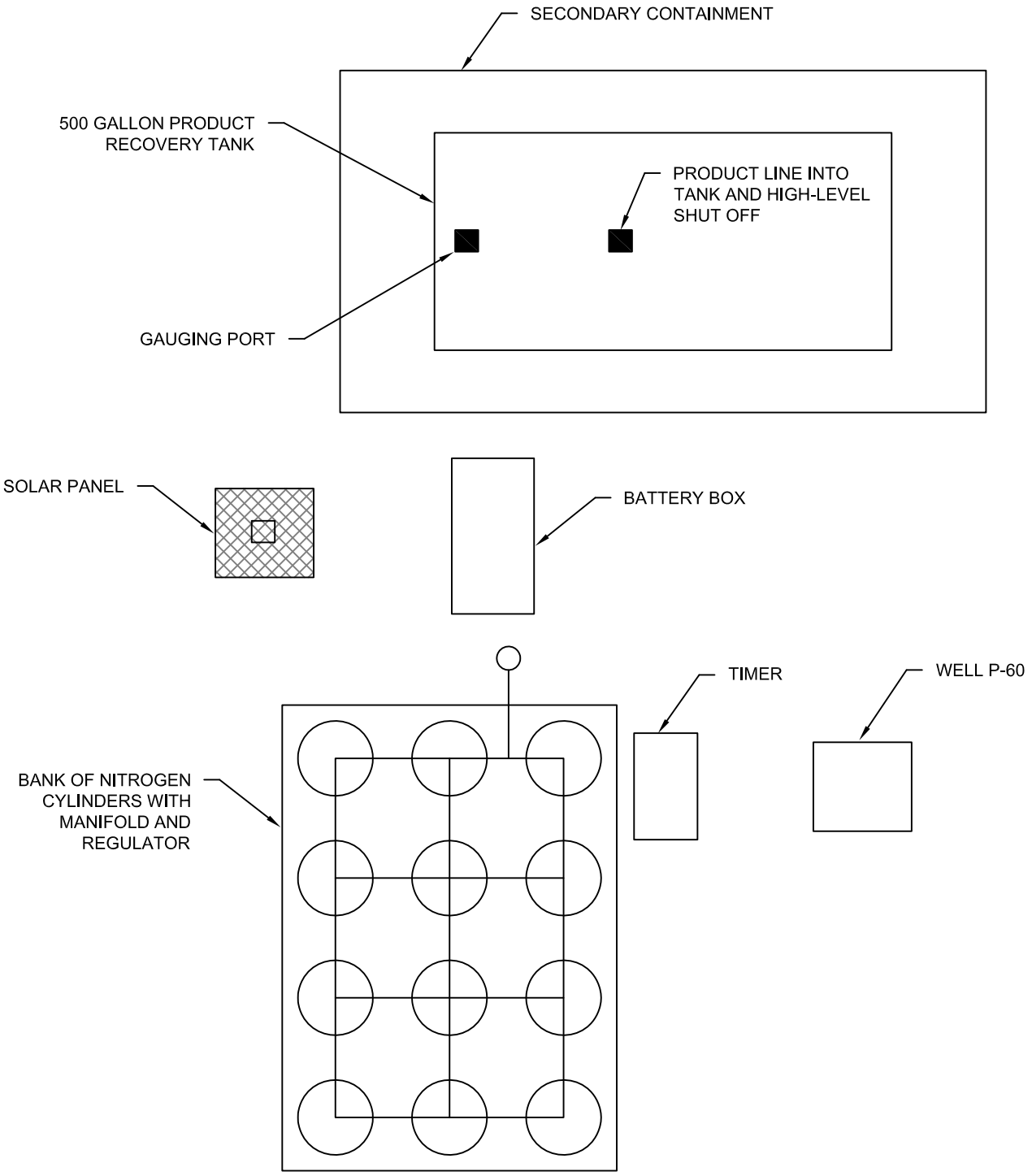
	Depths (ft bgs)	Elevations (ft)
Elevation of Top of Riser Pipe:		446.58
Height of Riser Above Ground:	2.97 ft ags	
Ground Elevation:		443.61
ID/Type of Surface Casing:	6" Square Stick-up	
Type of Surface Seal:	Concrete	
Bottom of Surface Seal:	1.00	442.61
Boring Diameter		
10.75 in		
Groundwater (after completion):	46.07	397.54
Type of Riser Pipe:	Stainless Steel (304)	
Riser Diameter:	4 in	
Type of Backfill:	High Solids Bentonite Grout	
Top of Seal:	37.00	406.61
Type of Seal:	Bentonite Chips	
Top of Filter Pack	41.00	402.61
Top of Screen	45.00	398.61
Type of Filter Pack:	Colorado Silica 814	
Type of Screen:	Stainless Steel (304)	
Screen Diameter	4 in	
Screen Slot Size:	0.010 in	
Bottom of Screen:	65.00	378.61
Bottom of Blank Casing:	65.00	378.61
Backfill/Seal Below Well:	N/A	N/A
Type of Backfill/Seal Below Well:	N/A	
Bottom of Boring:	65.00	378.61

DIAGRAM IS NOT TO SCALE

URS

ATTACHMENT C

P-60 Skimmer Pump Setup Plan View



NOT TO SCALE

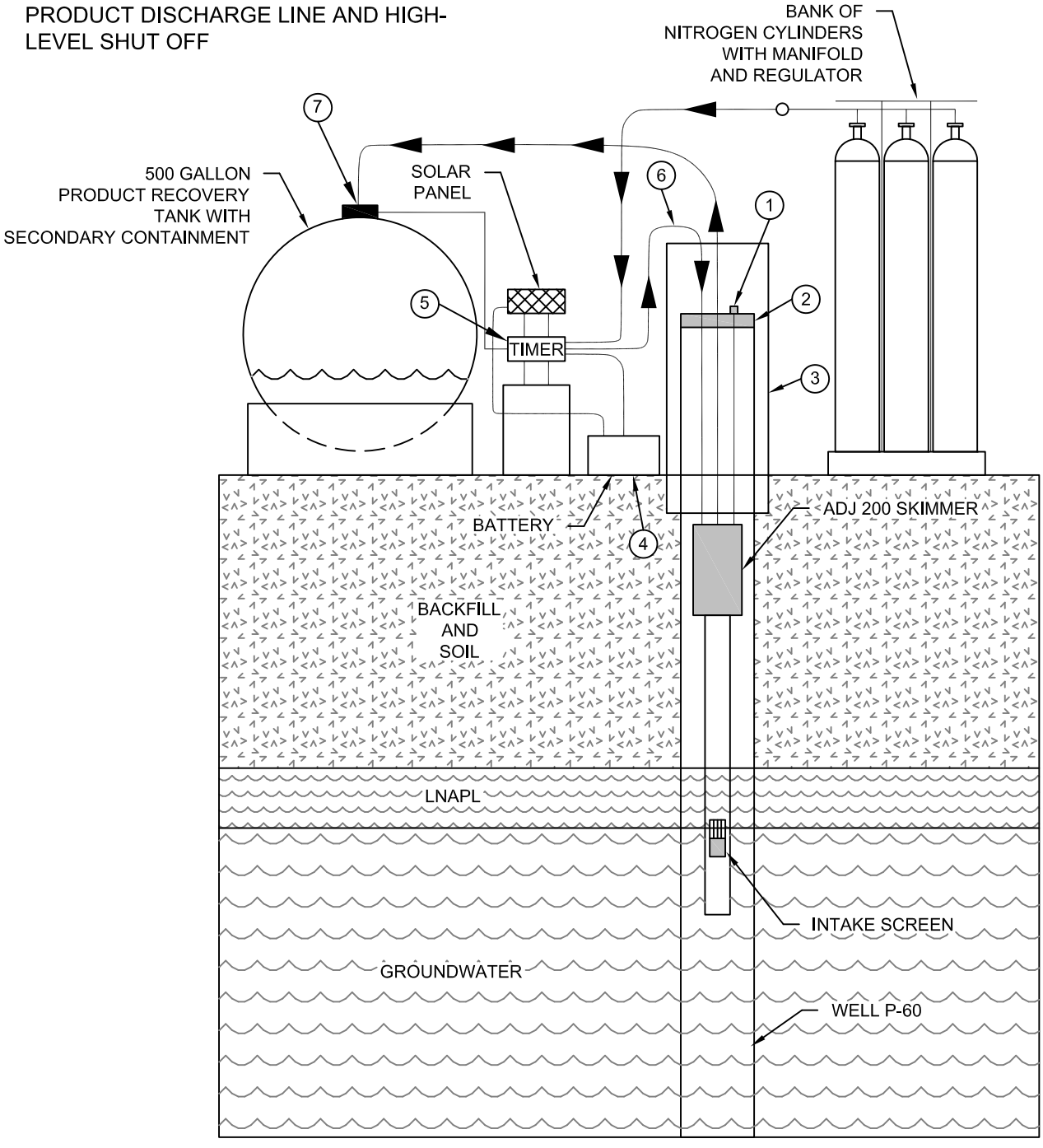
SHELL OIL PRODUCTS US ROXANA, IL		PROJECT NO. 21562289
URS		
DRN. BY: djd 11/5/10 DSGN. BY: wmp CHKD. BY: b3	P-60 Skimmer Pump Setup Plan View	FIG. NO. C

URS

ATTACHMENT D

P-60 Skimmer Pump System Schematic

1. AIR EXHAUST
2. WELL CAP
3. WELL PROTECTIVE CASING
4. BATTERY BOX
5. ELECTRONIC CONTROLLER MODEL 2500ES WITH TANK SHUT OFF
6. NITROGEN SUPPLY
7. PRODUCT DISCHARGE LINE AND HIGH-LEVEL SHUT OFF



NOT TO SCALE

SHELL OIL PRODUCTS US ROXANA, IL		PROJECT NO. 21562289
URS		
DRN. BY: djd 11/4/10 DSGN. BY: wmp CHKD. BY: b3	Free Phase Hydrocarbon Recovery Schematic Well P-60	FIG. NO. D

File: C:\DOCUMENTS AND SETTINGS\WENDY_PENNINGTON\DESKTOP\P-60\FIGURE D P-60 SKIMMER PUMP SYSTEM SCHEMATIC.DWG Last edited: NOV. 16, 10 @ 4:13 p.m. by: wendy_pennington

URS

ATTACHMENT E

ADJ 200 Smart Skimmer and 2500ES Electronic Timer Operations Manual

ADJ200 Smart Skimmer and 2500ES Electronic Controller Single Skimmer Operations Manual

Caution:
Read rules for safe operation and instructions carefully.

XITECH
Instruments, Inc.

06 Camino De Los Desmontes, Placitas, New Mexico 87043
Phone: 505-867-0008 Fax: 505-867-0212
Web site: www.xitechinc.com
E-mail: xitechinc@xitechinc.com

3 YEAR WARRANTY

This product is warranted to the original purchaser to be free from defective materials and workmanship. Under this warranty the product will be repaired or replaced at our option, without charge for parts or labor.

This warranty does not apply to the skimmer hydrophobic filter or air logic valve.

The period of this warranty covers 3 years on parts and labor from date of original purchase.

This warranty entitles the original purchaser to have the warranted parts and labor rendered at no cost for the period of the warranty described above when the instrument is carried or shipped, pre-paid, to our factory, together with proof of purchase.

RULES FOR SAFE OPERATION

1. **Please review carefully and abide by the maximum limits placed on each type of equipment.**
2. **Please follow standard electrical practices and safety precautions when installing AC or DC power to our products.**

Product Recovery System Installation

The system (Figure 1) relates to floating hydrocarbon recovery in wells two inches in diameter and larger. This system includes: an intrinsically safe ADJ200 pneumatic Smart Skimmer (Figure 2) which removes only the product to a sheen down to 200 feet deep; and a three function programmable Controller Model 2500ES which operates the skimmer intermittently, records run time, and has a high level tank shutoff.

STEP 1. Mount electronic Controller Model 2500ES (Figure 3) in a vertical position near the air source, power source, and holding tank if possible. **CAUTION:** The standard electronic controller is NOT intrinsically safe. If this controller must operate in a CLASS I area, the XITECH Model 2550ES CLASS I controller will be required. Air supply needs to be free of WATER and OIL to have minimum maintenance. **NOTE:** The ON/OFF switch inside the controller is for AC and DC power.

STEP 2. Install holding tank shutoff assembly into holding tank (a 2" standard pipe inlet will be required in the holding tank). The level of product in the holding tank can be set by raising or lowering the liquid level float switch rod. Wire the shutoff switch cable into the controller (Figure 3). **NOTE:** If additional signal cable is needed to position the holding tank assembly further away from the controller, use 18 gauge 2-conductor wire.

STEP 3. Attach power line from the AC or DC power source to the controller (Figure 3). Turn on the controller power switch. If the red "Product Tank Full" light stays on, you have a problem with tank shutoff wiring. Turn off the power switch and re-check the tank shutoff wiring. If the light continues to stay on, call the factory.

If you plan to operate this controller for a long period of time on a DC power source, we suggest you use a solar panel (see page 9 for installation) to maintain power in the battery.

ADJ200 Smart Skimmer and 2500ES Electronic Controller with Tank Shutoff

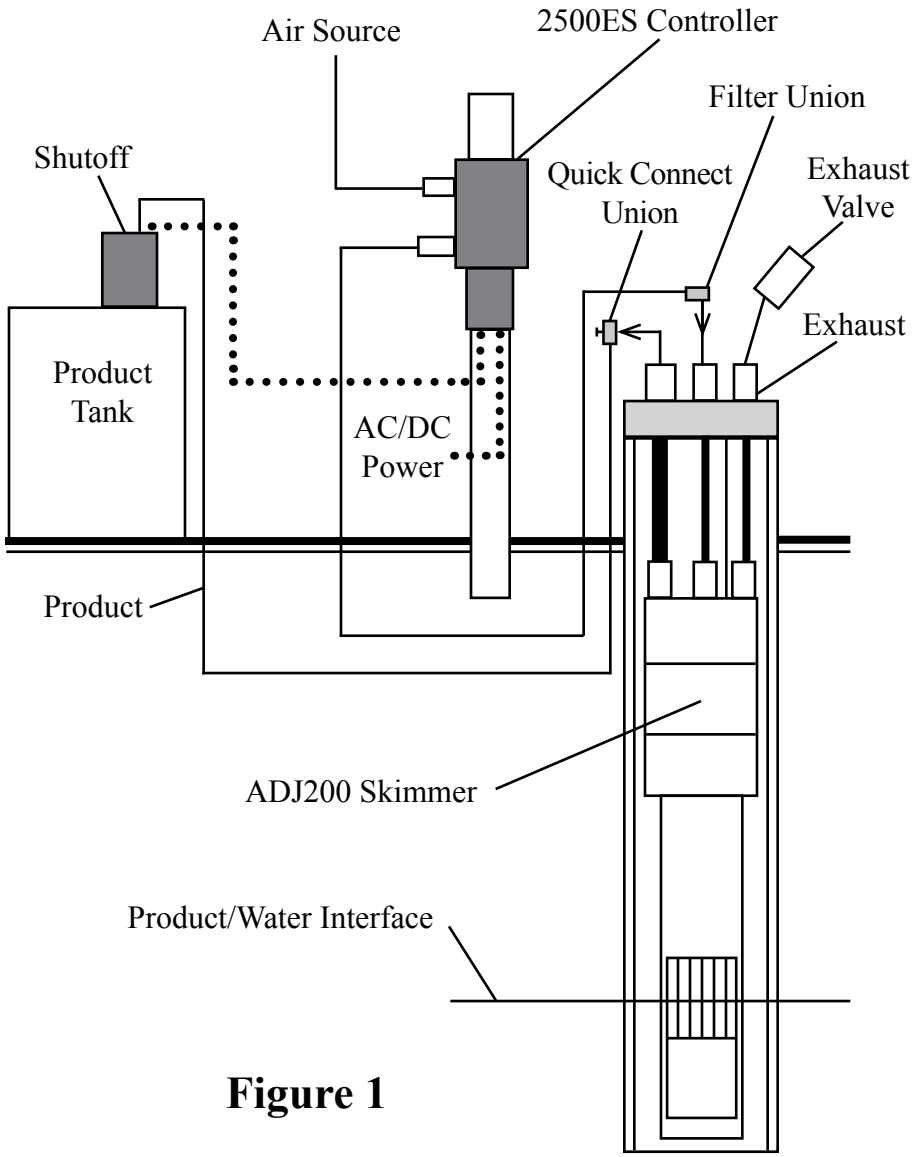


Figure 1

STEP 4. Install 3/8" OD air supply tubing from the main air source to the INLET of the Controller. Do NOT apply air pressure YET.

STEP 5. Install horizontal air supply line to the well. Use 3/8" OD tubing for the horizontal run. **CAUTION:** Please keep dirt from getting into these lines! Attach a filter union onto the end of this line at the well vault.

STEP 6. Install horizontal product return line to the well. Use 1/2" OD tubing for the horizontal run. Attach a quick connect union onto the end of this line at the well vault.

STEP 7. Position the skimmer and well cap on the ground near the well. Cut a length of 1/4" OD air supply tubing to cover the distance from the top of the well down to water/product interface, plus 5 feet. **NOTE:** If the skimmer is over 70 feet deep, use 3/8" OD air supply tubing in stead of 1/4" OD tubing. Slide enough tubing through the well cap and attach the end of the tubing to the top of the skimmer tube fitting labeled "G" (Figure 2). If the product thickness is greater than 1 foot, position the skimmer's "Black Reference Line" on skimmer well screen 1 foot below top of product. If the product thickness is less than 1 foot, position the skimmer's "Black Reference Line" on skimmer well screen at the water/product interface.

STEP 8. Cut a length of 5/16" OD product tubing same length as the air supply line. Install 5/16" OD product tubing through the well cap tube fitting labeled "P" (Figure 2). Slide enough tubing through the well cap and attach the end of the tubing to the top of the skimmer tube fitting labeled "P". **CAUTION:** Do not kink the tubing.

STEP 9. Cut another length of 1/4" OD air exhaust tubing same length as air supply line. Install 1/4" OD air exhaust tubing through the well cap tube fitting labeled "E". Slide enough tubing through the well cap and attach the end of the tubing to the top of the skimmer tube fitting labeled "E".

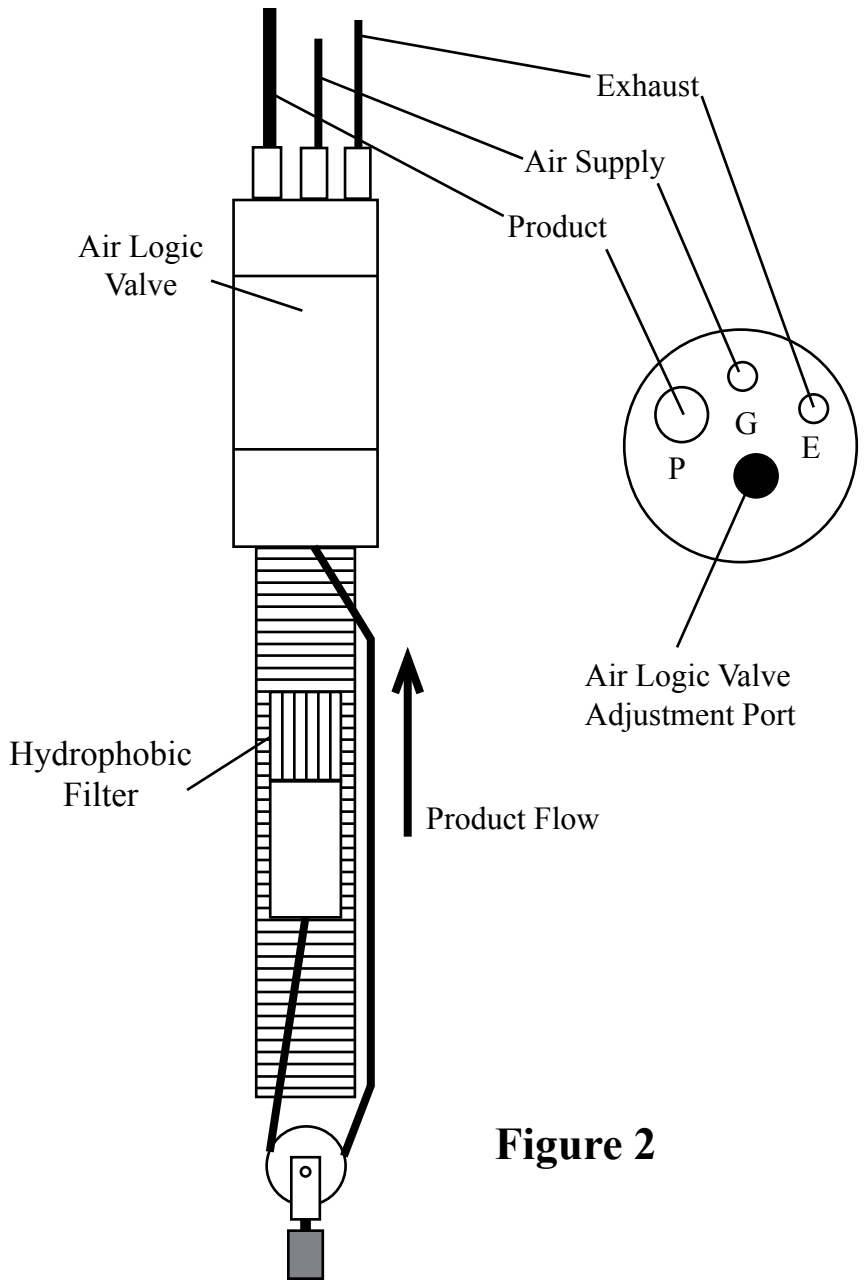


Figure 2

2500ES Electronic Controller

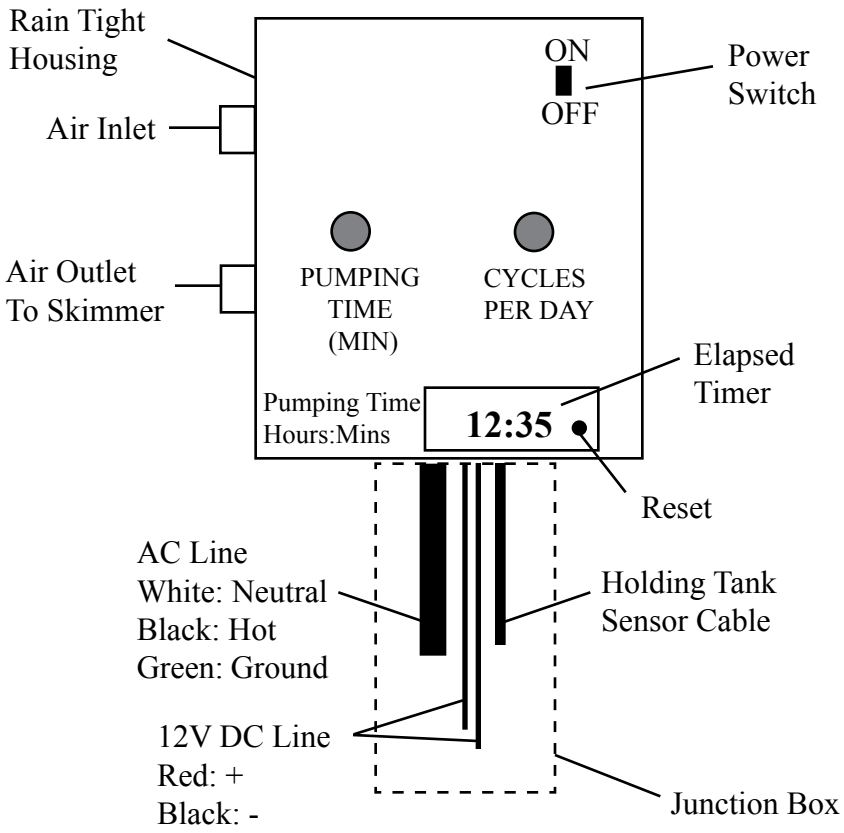


Figure 3

STEP 10. Cut a length of safety rope same length as air supply line. Attach the safety rope from inside the well cap to the top of the skimmer head. The tubing will carry the weight of the skimmer.

STEP 11. Attach the 3/8"-1/4" filter union onto the 1/4" air supply line coming out of the well cap.

STEP 12. Attach the 5/16" product line coming from the well cap into the inlet of the quick connect union.

STEP 13. Attach the exhaust check valve onto the end of the 1/4" air exhaust line coming out of the well cap.

STEP 14. Set operating air supply pressure.

$$\text{AIR PRESSURE} = 70 + \frac{\text{Total Vertical Lift}}{2.85}$$

Minimum operating pressure is 70 PSI
Maximum operating pressure is 125 PSI

STEP 15. Go to the controller and turn the Pumping Time knob to the CONT. position, turn on the power switch at the controller to start the skimmer running. The Digital Readout should have a blinking "-" which indicates that the totalizing timer is running. Observe that the skimmer is making a pumping noise. The exhaust check valve should have an intermittent pulsing sound about once every second.

STEP 16. While the skimmer is running at the desired operating air pressure above ground, confirm or adjust skimmer pulse rate. To adjust skimmer pulse rate, remove small plug at the top of the skimmer pump head and insert a small flat-head screwdriver into the air logic valve located inside the pump head. Turn clockwise to decrease pulse rate. **NOTE:** Factory sets skimmer pulse rate to 60 pulses per minute at 70 psi operating pressure. Maximum recommended pulse rate is 100 pulses per minute. Lower pulse rates will consume less air.

STEP 17. You are now ready to install skimmer in the well. **CAUTION:** Please remove skimmer float shipping tie wraps before placing skimmer in well.

Operation of the Product Recovery System

Reset the digital timer on the controller to 0-00.

Turn on the power to the controller and wait for product to come to the surface. If your skimmer is less than 30 feet deep, product should show up above ground in about 2 minutes.

Observe the product being discharged by the skimmer. Be sure no water is being pumped. If water does appear, pull the skimmer out of the well and check to see if the shipping tie wraps have been removed from the skimmer well screen area. If there are no tie wraps, give Xitech a call toll free at 888-867-9483.

Record the amount of time it takes to empty the well of product. When the well is empty of product, turn off the controller power.

If you found it took 10 minutes to pump the product off, set the "pumping time" to 5 minutes (Xitech's 1/2 Rule).

You now have to guess how many times a day to empty the well. A good guess would be once a day for slow recovering product and 3-6 times a day for fast recovering product.

NOTE: Timing begins when power is applied. The settings ending with "D" means days delay. For example: If the "cycles per day" is set to 5D and you turn on the power to the controller, the controller will immediately operate the skimmer for the selected amount of pumping time and then wait 5 days before running the skimmer again.

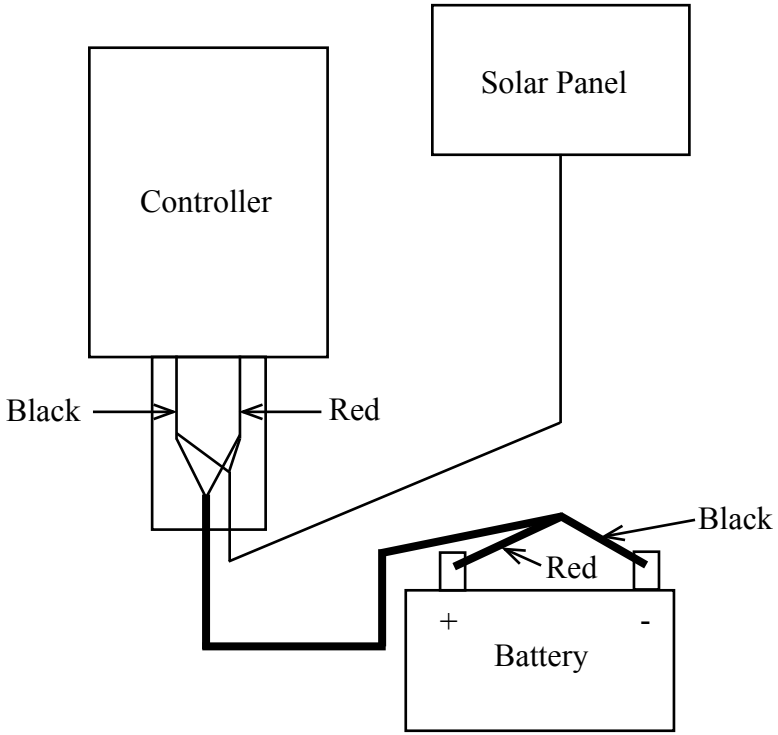
YOU ARE NOW READY TO OPERATE THE SYSTEM! TURN ON THE POWER TO THE CONTROLLER.

PLEASE CALL XITECH FROM THE FIELD IF YOU HAVE ANY TROUBLE WITH YOUR INSTALLATION.

FINAL NOTE: Keep in mind that you are trying to empty the formation of free product over a long period of time. To do this, you must always try to keep some free product thickness in your recovery well at all time while removing free product daily.

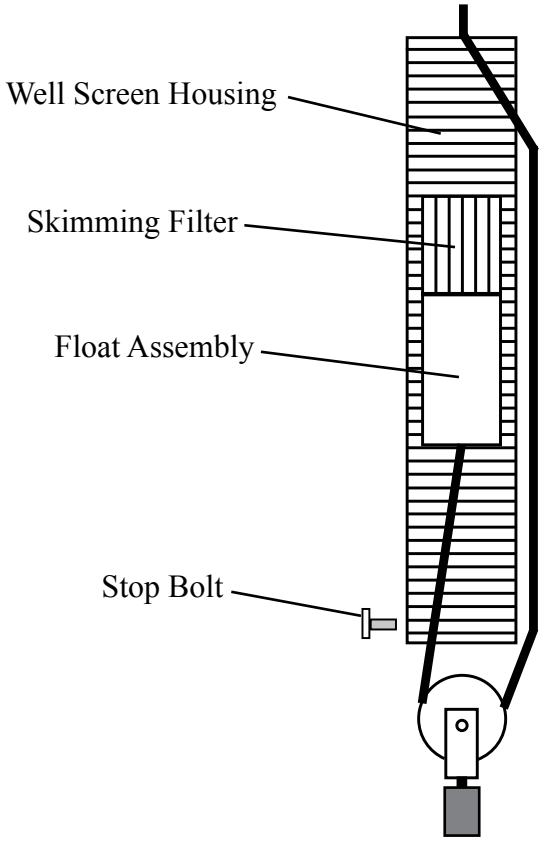
Solar Panel Installation

STEP 1. Attach solar panel to the solar panel bracket and then to pole above the controller.
STEP 2. Disconnect controller power cord from battery.
STEP 3. Remove the lower junction box plate from the controller. Take the solar panel cable and insert through opening in bottom of the controller junction box. Attach red wires from the solar panel cable, battery cable, and the controller together. Attach black wires from the solar panel cable, battery cable, and the controller together.
STEP 4. Attach the red power cable battery clip to the positive terminal on the battery and the black power cable battery clip to the negative terminal on the battery.



Replacing The Skimmer Filter

1. Remove the stop bolt at the bottom of the well screen housing.
2. Remove the skimming assembly from the well screen housing.
3. Remove the skimming filter from the float assembly. No tools required.
4. Push on a new skimming filter onto the float assembly and return skimming assembly to the well screen housing.
5. Secure the stop bolt to the well screen housing.



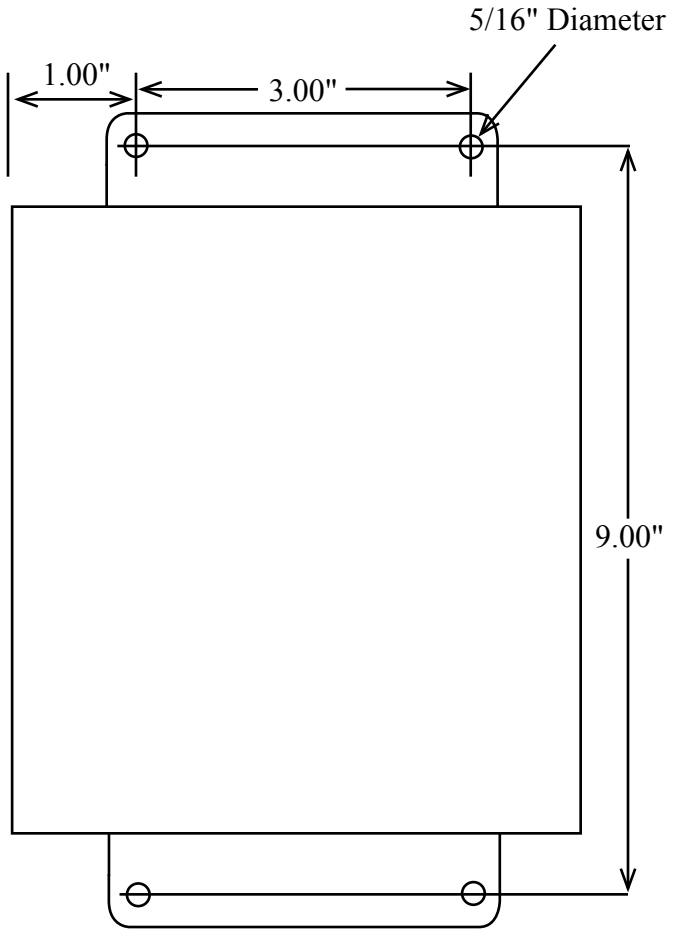
2500ES Controller Fuse Information

Two versions of the 2500 PC Board is currently available.

The older version has two glass fuses on the back side of the PC Board. The AC power glass fuse is next to the transformer and is a 1 amp “Slow-blow” fuse. The other fuse at the edge of the PC Board is for DC power and is a 2 amp “Slowblow” fuse.

The newer version PC Board has only one glass fuse that is next to the transformer. This fuse is for AC power and is a 1 amp “Slowblow” fuse. The DC power fuse is an automatic resettable fuse that does not need changing.

2500ES Controller Mounting



Controller Troubleshooting Guide

XITECH Instruments, Inc.

06 Camino De Los Desmontes
Placitas, New Mexico 87043
Phone: 505-867-0008 Fax: 505-867-0212
Web site: xitechinc.com E-mail: xitechinc@xitechinc.com

Timers & Tank Shut-off

All of the Xitech controllers have the same basic functions. Discovering what function is malfunctioning is the purpose of this guide. If you think you have a skimmer or pump problem please refer to the Skimmer & PumpTrouble Guide.

Trouble Condition: The controller product tank full light does not come on when the controller power switch is turned on.

Possible reasons:
1. Power to the controller is not on or wired correctly.
2. Battery is low.
3. DC or AC fuse has been blown.

Trouble Shooting Procedure:

1. Check out the power source and all wiring.

2. Check the battery water level and recharge the battery

3. If the DC or AC fuses are blown, check out the wiring to the battery or to your AC source very carefully. A blown fuse means you have an electrical short to ground. The fuse For the Model 2500ES the AC & DC fuses are inside on the back for the timer PC Board. The AC fuse is 1-1/4" Long 1amp and the DC fuse is 1-1/4"long 2 amp.

If you can not find the cause call the factory for help (505)867-0008 while you are in front of the controller.

Trouble Condition: The controller product tank full RED light stays on with an empty product tank.

Possible reasons:
1. The wiring contections to your tank shutoff switch has come loose.
2. DC power to the controller is below 12 volts. (older sensors Only)
3. Tank sensor is malfunctioning.

Trouble Shooting Procedure:
1. Disconnect controller from power source. Check wire nuts in the power junction box and try again. If the red light is still on go to step 2.

2. If your controller power source is DC (i.e. Battery), Try hooking up jumper cables from a car to the battery. If the red light goes off check the battery water level and recharge the battery. If the red light is still on go to step 3.

3. Connect the tank shutoff cable wires blue and black or red and black wires together in the power junction box. Apply power to timer. If the Red light on the front panel goes off it means that the problem is with the tank shutoff level switch or cable. Call the factory while you are in the field for assistance.

If you can not find the cause call the factory for help (505)867-0008 while you are in front of the controller.

Trouble Condition: The controller's digital clock is not accumulating time when the skimmer is running(2500ES & REM2500ES Only).

Possible reasons:
1. The operating pressure to the controller is below 35 psi.
2. The wiring from the pressure switch to the digital timer is faulty.
3. The pressure switch inside the controller is faulty.

Trouble Shooting Procedure:

1. The digital timer receives a signal from a pressure switch inside the timer when the timer solenoid is activated and the operating pressure is above 35psi. Check out the operating pressure being delivered to the timer. Watch out for bad pressure gauges at the air source. If the operating pressure is OK, go to step 2.

2. Check the wire connector plunged into the back of the digital timer for being lose or lose wires coming out of the connector. If everything looks OK, go to step 3.

3. The pressure switch inside the timer closes an electrical contact inside the switch when the switch is exposed to 35psi. To check out the pressure switch, remove the front control panel, turn on the power switch on the front control panel, and turn the pumping time in minutes knob to the Cont. position. First check to see if the pressure switch is leaking air or has come disconected from the solenoid valve fitting. Next check the electrical contacts at the pressure switch. The contacts should be shorted.

If you can not find the cause call the factory for help (505)867-0008 while you are in front of the controller.

Trouble Condition: The 2500ES digital elasped timer has a lot more time than was expected.

Possible reasons:

1. The length of air supply tubing from the 2500ES controller to the skimmer is over 50 feet. The longer the suppy tubing the longer the skimmer will keep runing after the 2500ES timer turns off the air supply to the skimmer.

2. Timer solinoid valve inside timer is not shutting off properly.

Trouble Shooting Procedure:

1. The solenoid is a spring loaded normally closed valve. It is possible that some debris has found its way into the valve which could cause the valve not to close completely. To resolve this problem you can return the timer to the factory or disassemble and clean the valve yourselves.

2. If your controller power source is DC (i.e. Battery), Try hooking up jumper cables from a car to the battery. Check the battery water level and recharge the battery.

If you can not find the cause call the factory for help (505)867-0008 while you are in front of the controller.

Trouble Condition: The 5000ES or 5500ES controllers are not controlling the pumps according to the program settings.

Possible reasons:

1. The program start date and time settings were programed behind the current real time clock.

2. The programer did not return to the status window after programing.

3. The PLC is not operating properly.

Trouble Shooting Procedure:

1. Write down the program values. Push the DEL key one time. Now go to the Status window in the Direct Mode and reset the elapsed time on all stations. Next go to the program window and reprogram all of your active stations. After programing you MUST go to the Status window BEFORE the real time PLC clock time catches up to your earliest start time. When you reach the Status window the status for all stations should be "Active". If any say "Running" repeat step 1.

2. Same as #1.

3. Call the factory for help (505)867-0008 while you are in front of the controller.

URS

ATTACHMENT F

Well P-60 Pilot Test Weekly Gauging Results

WELL P-60 PILOT TEST WEEKLY GAUGING RESULTS
WEST FENCELINE INVESTIGATION

TOC Elev. = 446.57 ***Screen Elev. = 398.61 -- 378.61***

Date	Time	Total Run Time Displayed on Controller	Cycles per Day	Run Time per Cycle	DTP (ft btoc)	Product Elevation	Unsaturated Screen	DTW (ft btoc)	Water Elevation	Product Thickness	DTP Change Since Previous Gauging	DTW Change Since Previous Gauging	Product Thickness Change Since Previous Gauging	Notes
5/8/2008	1130	^	^	^	52.38	394.19	4.42	59.16	387.41	6.78	na	na	na	Set pump
6/17/2008	1200	^	^	^	50.66	395.91	2.70	59.42	387.15	8.76	1.72	-0.26	1.98	Troubleshooting timer
6/20/2008	1200	^	^	^	50.54	396.03	2.58	59.51	387.06	8.97	0.12	-0.09	0.21	Troubleshooting timer
6/23/2008	1140	^	3	10	50.37	396.2	2.41	59.61	386.96	9.24	0.17	-0.1	0.27	Started Pump
6/24/2008	1500	0:40	3	10	50.39	396.18	2.43	59.30	387.27	8.91	-0.02	0.31	-0.33	
6/25/2008	1310	1:11	3	10	50.24	396.33	2.28	59.46	387.11	9.22	0.15	-0.16	0.31	
6/26/2008	1135	1:31	3	10	50.16	396.41	2.20	59.64	386.93	9.48	0.08	-0.18	0.26	
6/27/2008	1235	2:12	3	10	50.06	396.51	2.10	59.54	387.03	9.48	0.10	0.10	0.00	
6/30/2008	1245	3:44	3	10	50.05	396.52	2.09	59.33	387.24	9.28	0.01	0.21	-0.20	
7/1/2008	1205	4:34	6	10	49.93	396.64	1.97	59.39	387.18	9.46	0.12	-0.06	0.18	Changed # of cycles per day the pump operates from 3 to 6
7/2/2008	1115	5:35	6	10	49.84	396.73	1.88	59.36	387.21	9.52	0.09	0.03	0.06	
7/3/2008	1105	6:36	6	10	49.95	396.62	1.99	59.24	387.33	9.29	-0.11	0.12	-0.23	
7/7/2008	1250	10:49	6	10	49.71	396.86	1.75	59.14	387.43	9.43	0.24	0.10	0.14	
7/8/2008	1225	11:50	6	10	49.62	396.95	1.66	59.07	387.50	9.45	0.09	0.07	0.02	
7/9/2008	1130	12:51	6	10	49.71	396.86	1.75	58.98	387.59	9.27	-0.09	0.09	-0.18	
7/11/2008	800	14:42	6	10	49.57	397	1.61	58.91	387.66	9.34	0.14	0.07	0.07	
7/17/2008	1140	20:58	6	10	49.56	397.01	1.60	57.89	388.68	8.33	0.01	1.02	-1.01	
7/25/2008	1150	29hr 8min	6	10	50.35	396.22	2.39	54.68	391.89	4.33	-0.79	3.21	-4.00	Water level reading assumed to be false.
8/1/2008	1340	36hr 28min	6	10	48.49	398.08	0.53	58.72	387.85	10.23	1.86	-4.04	5.90	
8/8/2008	1153	43hr 26min	6	10	48.37	398.2	0.41	58.4	388.17	10.03	0.12	0.32	-0.20	
8/15/2008	1315	50hr 45min	6	10	48.28	398.29	0.32	57.74	388.83	9.46	0.09	0.66	-0.57	Control box re-started to determine the approx change in gauging levels after a run.
8/15/2008	1325	50hr 55min	6	10	48.28	398.29	0.32	57.71	388.86	9.43	0	0.03	-0.03	
8/22/2008	1425	58hr 03min	6	10	48.15	398.42	0.19	57.36	389.21	9.21	0.13	0.35	-0.22	
8/29/2008	1310	65hr 02min	6	10	48.10	398.47	0.14	57.19	389.38	9.09	0.05	0.17	-0.12	
9/5/2008	1328	72hr 21min	6	10	48.14	398.43	0.18	56.64	389.93	8.50	-0.04	0.55	-0.59	
9/12/2008	1050	79hr 19min	6	10	47.94	398.63	**-0.02**	56.4	390.17	8.46	0.2	0.24	-0.04	
9/19/2008	1425	86hr 38min	6	10	47.84	398.73	**-0.12**	56.21	390.36	8.37	0.1	0.19	-0.09	
9/26/2008	930	93hr 37min	6	10	47.90	398.67	**-0.06**	55.87	390.70	7.97	-0.06	0.34	-0.40	
10/2/2008	1345	99hr 56min	6	10	47.95	398.62	**-0.01**	54.97	391.60	7.02	-0.05	0.90	-0.95	
10/9/2008	1340	107hr 06min	6	10	48.02	398.55	0.06	54.64	391.93	6.62	-0.07	0.33	-0.40	
10/16/2008	1225	114hr 04min	6	10	47.92	398.65	**-0.04**	54.75	391.82	6.83	0.1	-0.11	0.21	
10/22/2008	1238	120hr 13min	6	10	47.83	398.74	**-0.13**	54.4	392.17	6.57	0.09	0.35	-0.26	
10/31/2008	1145	129hr 25min	6	10	48.09	398.48	0.13	53.53	393.04	5.44	-0.26	0.87	-1.13	
11/6/2008	1325	135hr 42min	6	10	48.26	398.31	0.30	52.64	393.93	4.38	-0.17	0.89	-1.06	
11/13/2008	1330	142hr 52min	6	10	48.23	398.34	0.27	52.02	394.55	3.79	0.03	0.62	-0.59	
11/19/2008	745	148h 41min	6	10	48.54	398.03	0.58	51.52	395.05	2.98	-0.31	0.50	-0.81	
11/19/2008	825	149h 05min	12	10	48.70	397.87	0.74	51.06	395.51	2.36	-0.16	0.46	-0.62	
11/19/2008	1628	149h 46min	12	10	48.82	397.75	0.86	50.86	395.71	2.04	-0.12	0.20	-0.32	
11/20/2008	1508	151h 39min	12	10	49.37	397.2	1.41	49.93	396.64	0.56	-0.55	0.93	-1.48	
11/21/2008	950	153h 12min	12	10	49.33	397.24	1.37	50.41	396.16	1.08	0.04	-0.48	0.52	
11/25/2008	1245	161h 45min	12	10	49.24	397.33	1.28	50.01	396.56	0.77	0.09	0.40	-0.31	
11/26/2008	1335	163h 47min	12	10	48.74	397.83	0.78	50.99	395.58	2.25	0.5	-0.98	1.48	
12/4/2008	1335	169h 10min	12	10	47.82	398.75	**-0.14**	54.03	392.54	6.21	0.92	-3.04	3.96	Nitrogen cylinders empty. Pumping ceased 11/29 @ approximately 0615
12/11/2008	930	169h 10min	^	^	47.60	398.97	**-0.36**	54.39	392.18	6.79	0.22	-0.36	0.58	Pump still not operating.
12/11/2008	1015	0h 0min	12	10	^	^	^	^	^	^	^	^	^	New nitrogen bank of cylinders delivered. Pump re-started and timer reset.
12/11/2008	1225	0h 20min	12	10	47.72	398.85	**-0.24**	53.97	392.60	6.25	-0.12	0.42	-0.54	Well re-gauged after 2 pump cycles after pump re-started.
12/17/2008	1035	0h 20min	^	^	47.86	398.71	**-0.10**	51.24	395.33	3.38	-0.14	2.73	-2.87	Pressure gauge at cyliders on line to control box read 0 psi. Adjusted to 75 psi. Pump restarted. Water level reading assumed to be false.
12/17/2008	1150	0h 30min	12	10	47.90	398.67	**-0.06**	54.01	392.56	6.11	-0.04	-2.77	2.73	

WELL P-60 PILOT TEST WEEKLY GAUGING RESULTS
WEST FENCELINE INVESTIGATION

TOC Elev. = 446.57 ***Screen Elev. = 398.61 -- 378.61***

Date	Time	Total Run Time Displayed on Controller	Cycles per Day	Run Time per Cycle	DTP (ft btoc)	Product Elevation	Unsaturated Screen	DTW (ft btoc)	Water Elevation	Product Thickness	DTP Change Since Previous Gauging	DTW Change Since Previous Gauging	Product Thickness Change Since Previous Gauging	Notes
12/19/2008	1350	4h 46min	12	10	48.12	398.45	0.16	51.00	395.57	2.88	-0.22	3.01	-3.23	Manifold pressure = 1900 psi; Pumping pressure = 75 psi
12/24/2008	815	14h 24min	12	10	48.03	398.54	0.07	53.02	393.55	4.99	0.09	-2.02	2.11	
12/31/2008	835	14h 39min	12	10	48.18	398.39	0.22	54.29	392.28	6.11	-0.15	-1.27	1.12	System pressure was again found to be 0 psi. Adjusted to 70 psi and restarted control box. Temperature fluctuations likely causing the system pressure issues (range of 60s to 10s over the last 3 weeks (since new nitrogen bank delivered).
12/31/2008	1000	14h 49min	12	10	48.18	398.39	0.22	54.21	392.36	6.03	0.00	0.08	-0.08	
1/9/2009	1345	33h 34min	12	10	49.29	397.28	1.33	49.65	396.92	0.36	-1.11	4.56	-5.67	Control box turned off, nitrogen regulator turned off. Regulator replaced with new (DRY) one. [Control box turned back on and system re-started at 1415]
1/14/2009	1050	43h 38min	12	10	49.00	397.57	1.04	50.95	395.62	1.95	0.29	-1.30	1.59	
1/23/2009	1258	62h 19min	12	10	48.53	398.04	0.57	52.23	394.34	3.70	0.47	-1.28	1.75	
1/30/2009	1420	76h 46min	12	10	48.38	398.19	0.42	52.46	394.11	4.08	0.15	-0.23	0.38	
2/6/2009	1350	90h 51min	12	10	48.93	397.64	0.97	50.56	396.01	1.63	-0.55	1.90	-2.45	
2/13/2009	1325	105h 10min	12	10	48.95	397.62	0.99	50.92	395.65	1.97	-0.02	-0.36	0.34	
2/17/2009	920	113h 01min	12	10	48.54	398.03	0.58	51.86	394.71	3.32	0.41	-0.94	1.35	
2/27/2009	1345	133h 45min	12	10	48.07	398.5	0.11	54.08	392.49	6.01	0.47	-2.22	2.69	
3/3/2009	1510	142h 18min	12	10	47.80	398.77	**-0.16**	54.34	392.23	6.54	0.27	-0.26	0.53	
3/10/2009	1145	156h 17min	12	10	48.34	398.23	0.38	52.34	394.23	4.00	-0.54	2.00	-2.54	
3/19/2009	955	174h 30min	12	10	49.12	397.45	1.16	51.11	395.46	1.99	-0.78	1.23	-2.01	
3/26/2009	940	188h 55min	12	10	48.00	398.57	0.04	53.51	393.06	5.51	1.12	-2.40	3.52	New nitrogen bank of cylinders delivered. Pump re-started (1005).
4/3/2009	1330	205h 34min	12	10	48.29	398.28	0.33	52.78	393.79	4.49	-0.29	0.73	-1.02	
4/8/2009	910	215h 26min	12	10	48.03	398.54	0.07	51.59	394.98	3.56	0.26	1.19	-0.93	
4/14/2009	1510	215h 26min	12	10	47.88	398.69	**-0.08**	53.52	393.05	5.64	0.15	-1.93	2.08	Low pressure gauge was found reading 0psi and crank found to be loose. Crank tightened till low pressure gauge reset to 70psi.
4/22/2009	750	231h 01min	12	10	47.82	398.75	**-0.14**	53.47	393.10	5.65	0.06	0.05	0.01	Low pressure gauge was found reading 50psi. Readjusted to 70psi.
4/28/2009	1145	243h 33min	12	10	49.29	397.28	1.33	49.59	396.98	0.30	-1.47	3.88	-5.35	
5/6/2009	1325	260h 12min	12	10	48.26	398.31	0.30	51.47	395.10	3.21	1.03	-1.88	2.91	
5/6/2009	1330	0h 0min	6	30	^	^	^	^	^	^	^	^	^	Pumping rate readjusted. Tried to measure amount of product removed during 1 cycle, but only trace amount removed. Called Xitech to troubleshoot - Pump has been exhausting into well, which fouls up the pump and explains the gradual slowing of the product.
5/20/2009	1125	pump not installed	^	^	47.56	399.01	**-0.40**	51.57	395.00	4.01	0.70	-0.10	0.80	
6/2/2009	810	pump not installed	^	^	47.53	399.04	**-0.43**	50.67	395.90	3.14	0.03	0.90	-0.87	Immediately prior to pump installation.
6/2/2009	1015	0h 30min	6	30	47.44	399.13	**-0.52**	50.78	395.79	3.34	0.09	-0.11	0.20	Pump reinstalled and started at 0944.
6/3/2009	915	3h 0min	6	30	47.53	399.04	**-0.43**	50.73	395.84	3.20	-0.09	0.05	-0.14	
6/5/2009	1420	10h 1min	6	30	47.39	399.18	**-0.57**	50.46	396.11	3.07	0.14	0.27	-0.13	Pump depth reset to about 50 ft btoc.
6/9/2009	1501	22h 4min	6	30	47.63	398.94	**-0.33**	49.54	397.03	1.91	-0.24	0.92	-1.16	
6/19/2009	1145	51h 44min	6	30	47.52	399.05	**-0.44**	49.46	397.11	1.94	0.11	0.08	0.03	Pump restarted at 1150.
6/24/2009	1103	66h 49min	6	30	47.57	399	**-0.39**	49.21	397.36	1.64	-0.05	0.25	-0.30	
6/30/2009	1435	85h 25min	6	30	47.30	399.27	**-0.66**	48.98	397.59	1.68	0.27	0.23	0.04	
7/8/2009	1310	109h 34min	6	30	47.60	398.97	**-0.36**	48.37	398.20	0.77	-0.30	0.61	-0.91	New nitrogen bank of cylinders delivered. Pump re-started (1410)
7/13/2009	1525	125h 8min	6	30	47.31	399.26	**-0.65**	48.28	398.29	0.97	0.29	0.09	0.20	
7/21/2009	1140	148h 42min	6	30	47.25	399.32	**-0.71**	48.26	398.31	1.01	0.06	0.02	0.04	
7/28/2009	1130	169h 47min	6	30	47.12	399.45	**-0.84**	48.12	398.45	1.00	0.13	0.14	-0.01	
8/13/2009	1120	196h 18min	6	30	46.96	399.61	**-1.00**	48.14	398.43	1.18	0.16	-0.02	0.18	
8/17/2009	1150	196h 18min	6	30	46.89	399.68	**-1.07**	48.02	398.55	1.13	0.07	0.12	-0.05	New nitrogen bank of cylinders delivered. Pump not restarted - leak found in air supply tubing for the pump.
8/19/2009	840	0h 0min	6	30	^	^	^	^	^	^	^	^	^	Pump restarted after leaky tubing fixed.

WELL P-60 PILOT TEST WEEKLY GAUGING RESULTS
WEST FENCELINE INVESTIGATION

TOC Elev. = 446.57 ***Screen Elev. = 398.61 -- 378.61***

Date	Time	Total Run Time Displayed on Controller	Cycles per Day	Run Time per Cycle	DTP (ft btoc)	Product Elevation	Unsaturated Screen	DTW (ft btoc)	Water Elevation	Product Thickness	DTP Change Since Previous Gauging	DTW Change Since Previous Gauging	Product Thickness Change Since Previous Gauging	Notes
8/19/2009	1500		6	30	^	^	^	^	^	^	^	^	^	Another leak found and fixed in air supply tubing. Estimate nitrogen has been leaking for ~1.5 hours (since last dose).
8/28/2009	840	27h 35min	6	30	46.91	399.66	**-1.05**	47.95	398.62	1.04	-0.02	0.07	-0.09	
9/3/2009	1240	46h 9min	6	30	46.60	399.97	**-1.36**	47.87	398.70	1.27	0.31	0.08	0.23	
9/16/2009	1010	84h 46min	6	30	46.60	399.97	**-1.36**	47.86	398.71	1.26	0.00	0.01	-0.01	
9/18/2009	1405	0h 0min	6	30	^	^	^	^	^	^	^	^	^	New nitrogen bank of cylinders delivered. Pump restarted.
9/23/2009	1436	15h 33min	6	30	46.61	399.96	**-1.35**	47.84	398.73	1.23	-0.01	0.02	-0.03	
10/9/2009	1335	63h 12min	6	30	46.56	400.01	**-1.40**	47.59	398.98	1.03	0.05	0.25	-0.20	
10/15/2009	1427	81h 43min	6	30	46.41	400.16	**-1.55**	47.3	399.27	0.89	0.15	0.29	-0.14	
10/19/2009		92h 57min	6	30	46.48	400.09	**-1.48**	47.35	399.22	0.87	-0.07	-0.05	-0.02	
10/30/2009	905	125h 54min	6	30	46.33	400.24	**-1.63**	47.11	399.46	0.78	0.15	0.24	-0.09	
11/4/2009	1345	141h 58min	6	30	46.34	400.23	**-1.62**	47.03	399.54	0.69	-0.01	0.08	-0.09	
11/13/2009	945	168h 33min	6	30	46.04	400.53	**-1.92**	46.63	399.94	0.59	0.30	0.40	-0.10	
11/18/2009	1025	170h 3min	6	30	45.97	400.6	**-1.99**	46.53	400.04	0.56	0.07	0.10	-0.03	
11/20/2009	1235	0h 0min	6	30	^	^	^	^	^	^	^	^	^	New nitrogen bank of cylinders delivered. Pump restarted
11/25/2009	1000	15h 3min	6	30	45.88	400.69	**-2.08**	46.28	400.29	0.40	0.09	0.25	-0.16	
12/2/2009	1054	36h 8min	6	30	45.40	401.17	**-2.56**	45.86	400.71	0.46	0.48	0.42	0.06	
12/9/2009	1130	51h 12min	6	30	45.51	401.06	**-2.45**	45.92	400.65	0.41	-0.11	-0.06	-0.05	
12/17/2009	1342	81h 49min	6	30	45.03	401.54	**-2.93**	45.33	401.24	0.30	0.48	0.59	-0.11	
12/22/2009	1047	96h 23min	6	30	45.03	401.54	**-2.93**	45.3	401.27	0.27	0.00	0.03	-0.03	
12/28/2009	1254	114h 56min	6	30	45.02	401.55	**-2.94**	45.16	401.41	0.14	0.01	0.14	-0.13	Took depths five minutes after a completed pumping cycle
1/6/2010	1205	141h 38min	6	30	44.68	401.89	**-3.28**	44.84	401.73	0.16	0.34	0.32	0.02	
1/13/2010	1017	162h 45min	6	30	44.68	401.89	**-3.28**	44.71	401.86	0.03	0.00	0.13	-0.13	
1/15/2010	820	0h 0min	6	30	^	^	^	^	^	^	^	^	^	New nitrogen bank of cylniders delivered. Pump restarted.
1/20/2010	1249	15h 41min	6	30	44.49	402.08	**-3.47**	50.01	396.56	5.52	^	^	^	Water level reading thought to be false.
PUMP SHUT DOWN TO PERFORM A PRODUCT RECOVERY TEST - Well screen fully saturated so recovery test stopped. Skimmer pump left off.														
2/3/2010	945	--	--	--	44.69	401.88	**-3.27**	44.95	401.62	0.26	^	^	^	
2/10/2010	1340	--	--	--	44.51	402.06	**-3.45**	44.78	401.79	0.27	0.18	0.17	0.01	
2/17/2010	1330	--	--	--	44.35	402.22	**-3.61**	44.61	401.96	0.26	0.16	0.17	-0.01	
2/24/2010	1240	--	--	--	44.35	402.22	**-3.61**	44.61	401.96	0.26	0.00	0.00	0.00	
3/11/2010	1035	--	--	--	44.13	402.44	**-3.83**	44.39	402.18	0.26	0.22	0.22	0.00	
3/19/2010	1120	--	--	--	44.09	402.48	**-3.87**	44.36	402.21	0.27	0.04	0.03	0.01	
3/23/2010	1125	--	--	--	44.10	402.47	**-3.86**	44.37	402.20	0.27	-0.01	-0.01	0.00	
4/7/2010	1100	--	--	--	43.82	402.75	**-4.14**	44.10	402.47	0.28	0.28	0.27	0.01	
4/15/2010	1300	--	--	--	43.79	402.78	**-4.17**	44.09	402.48	0.30	0.03	0.01	0.02	
4/21/2010	1320	--	--	--	43.60	402.97	**-4.36**	43.87	402.70	0.27	0.19	0.22	-0.03	
4/28/2010	1340	--	--	--	43.71	402.86	**-4.25**	43.99	402.58	0.28	-0.11	-0.12	0.01	
5/5/2010	935	--	--	--	43.50	403.07	**-4.46**	43.80	402.77	0.30	0.21	0.19	0.02	
5/21/2010	1345	--	--	--	43.26	403.31	**-4.70**	43.54	403.03	0.28	0.24	0.26	-0.02	
5/26/2010	1430	--	--	--	43.04	403.53	**-4.92**	43.33	403.24	0.29	0.22	0.21	0.01	
6/3/2010	1230	--	--	--	42.88	403.69	**-5.08**	43.16	403.41	0.28	0.16	0.17	-0.01	
6/10/2010	1415	--	--	--	43.21	403.36	**-4.75**	43.49	403.08	0.28	-0.33	-0.33	0.00	
6/17/2010	1350	--	--	--	42.89	403.68	**-5.07**	43.18	403.39	0.29	0.32	0.31	0.01	
6/23/2010	1048	--	--	--	43.28	403.29	**-4.68**	43.56	403.01	0.28	-0.39	-0.38	-0.01	
7/2/2010	1345	--	--	--	43.06	403.51	**-4.90**	45.55	401.02	2.49	0.22	-1.99	2.21	
7/9/2010	1435	--	--	--	42.61	403.96	**-5.35**	43.18	403.39	0.57	0.45	2.37	-1.92	
7/14/2010	935	--	--	--	42.96	403.61	**-5.00**	43.35	403.22	0.39	-0.35	-0.17	-0.18	
7/22/2010	1115	--	--	--	42.65	403.92	**-5.31**	42.93	403.64	0.28	0.31	0.42	-0.11	
7/30/2010	1120	--	--	--	42.55	404.02	**-5.41**	42.84	403.73	0.29	0.10	0.09	0.01	

WELL P-60 PILOT TEST WEEKLY GAUGING RESULTS
WEST FENCELINE INVESTIGATION

TOC Elev. = 446.57 ***Screen Elev. = 398.61 -- 378.61***

Date	Time	Total Run Time Displayed on Controller	Cycles per Day	Run Time per Cycle	DTP (ft btoc)	Product Elevation	Unsaturated Screen	DTW (ft btoc)	Water Elevation	Product Thickness	DTP Change Since Previous Gauging	DTW Change Since Previous Gauging	Product Thickness Change Since Previous Gauging	Notes
8/4/2010	820	--	--	--	42.26	404.31	**-5.70**	42.54	404.03	0.28	0.29	0.30	-0.01	
8/12/2010	1115	--	--	--	42.25	404.32	**-5.71**	42.53	404.04	0.28	0.01	0.01	0.00	
8/20/2010	1040	--	--	--	42.13	404.44	**-5.83**	42.41	404.16	0.28	0.12	0.12	0.00	Use bailer to remove product trapped within well while screen is saturated.
8/20/2010	1120	--	--	--	42.13	404.44	**-5.83**	42.36	404.21	0.23	0.00	0.05	-0.05	
8/27/2010	910	--	--	--	42.07	404.5	**-5.89**	42.28	404.29	0.21	0.06	0.08	-0.02	Pump removed. Use bailer to remove product from well.
8/27/2010	1125	--	--	--	42.08	404.49	**-5.88**	42.09	404.48	0.01	-0.01	0.19	-0.20	
9/3/2010	740	--	--	--	41.97	404.6	**-5.99**	42.01	404.56	0.04	0.11	0.08	0.03	
9/9/2010	1235	--	--	--	41.80	404.77	**-6.16**	41.83	404.74	0.03	0.17	0.18	-0.01	
9/15/2010	1540	--	--	--	41.75	404.82	**-6.21**	41.80	404.77	0.05	0.05	0.03	0.02	
9/22/2010	1402	--	--	--	41.82	404.75	**-6.14**	41.86	404.71	0.04	-0.07	-0.06	-0.01	
9/29/2010	1410	--	--	--	41.69	404.88	**-6.27**	41.72	404.85	0.03	0.13	0.14	-0.01	
10/7/2010	1420	--	--	--	41.72	404.85	**-6.24**	41.76	404.81	0.04	-0.03	-0.04	0.01	
10/13/2010	948	--	--	--	41.87	404.7	**-6.09**	41.91	404.66	0.04	-0.15	-0.15	0.00	
10/20/2010	1450	--	--	--	41.64	404.93	**-6.32**	41.67	404.90	0.03	0.23	0.24	-0.01	
10/26/2010	1056	--	--	--	41.69	404.88	**-6.27**	41.73	404.84	0.04	-0.05	-0.06	0.01	
11/4/2010	1502	--	--	--	41.48	405.09	**-6.48**	41.52	405.05	0.04	0.21	0.21	0.00	
11/11/2010	914	--	--	--	41.40	405.17	**-6.56**	41.44	405.13	0.04	0.08	0.08	0.00	
11/17/2010	1054	--	--	--	41.87	404.7	**-6.09**	41.92	404.65	0.05	-0.47	-0.48	0.01	

URS

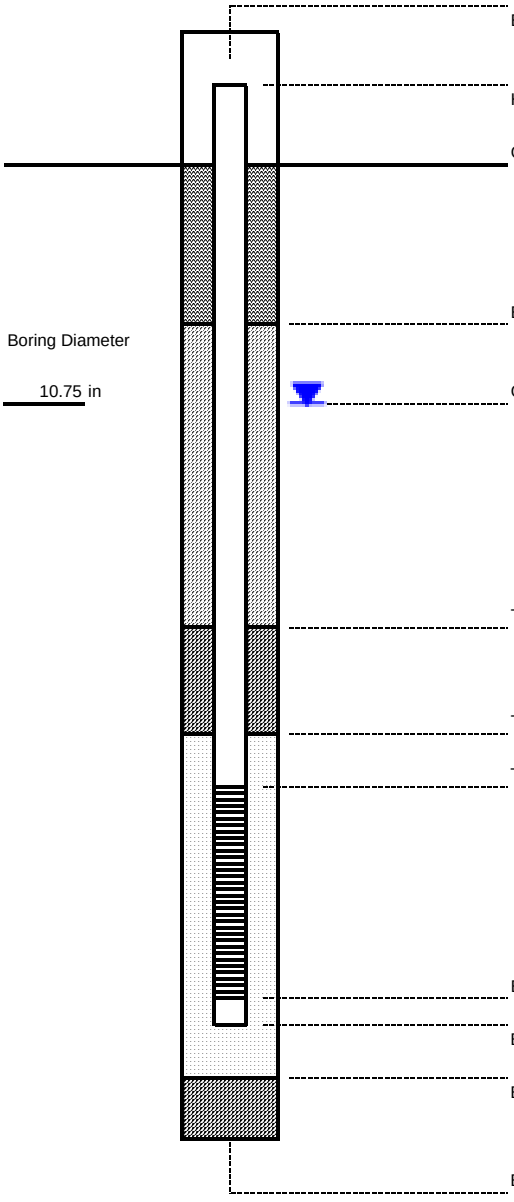
ATTACHMENT G

P-60-11 Well Completion Diagram

Monitoring Well Installation Details
Stick Up Monitoring Well Construction Diagram

URS Corporation

Project:	Route 111/Rand Avenue Vicinity Supplemental Investigation			Well ID:	P-60-11
Project Location:	Roxana, Illinois	Date Started:	6/3/2010		
Well Location:	Wood River Refinery	Date Completed:	6/3/2010	Boring ID:	P-60-11
Drilling Contractor:	Roberts Environmental Drilling, Inc.	Time Seal Set:	1605	Northing:	793601.82
Driller:	P. Seymour	Type of Rig:	CME-75	Easting:	2322280.72
Consulting Firm:	URS Corporation	Drilling Method:	Hollow Stem Auger	Elevation Datum:	443.70
Geologist:	W. Pennington	Completion Zone:	Main Sand		



Boring Diameter

10.75 in

	Depths (ft bgs)	Elevations (ft)
Elevation of Top of Riser Pipe:		446.41
Height of Riser Above Ground:	2.71 ft ags	
Ground Elevation:		443.70
ID/Type of Surface Casing:	6" Square Stick-up	
Type of Surface Seal:	Concrete	
Bottom of Surface Seal:	1.00	442.70
Groundwater (after completion):	42.40	401.30
Type of Riser Pipe:	Schedule 40 PVC	
Riser Diameter:	4 in	
Type of Backfill:	Cement/Bentonite Grout	
Top of Seal:	25.50	418.20
Type of Seal:	Bentonite Chips	
Top of Filter Pack	28.00	415.70
Top of Screen	30.00	413.70
Type of Filter Pack:	ANSI/NSF Quartz Sand (#1)	
Type of Screen:	Schedule 40 PVC	
Screen Diameter	4 in	
Screen Slot Size:	0.010 in	
Bottom of Screen:	60.00	383.70
Bottom of Blank Casing:	60.25	383.45
Backfill/Seal Below Well:	60.25	383.45
Type of Backfill/Seal Below Well:	Native Sand (blow-in)	
Bottom of Boring:	62.00	381.70

DIAGRAM IS NOT TO SCALE