Recovery Well Installation Report

Prepared for:

El Dorado Chemical Company
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Prepared by:

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Bryant, AR 72022

January 29, 2007

CONTENTS

APPENDICES

1.0 Introduction

El Dorado Chemical Company (EDCC) has installed a groundwater recovery system at their facility located in El Dorado, Arkansas for the purpose of nitrate remediation of the groundwater. The groundwater recovery system has been installed as required by the Consent Administrative Order (CAO) issued and signed on November 16, 2006. The purpose of this report is to present the information required by the CAO (Item number 5 of the Order and Agreement), including location and construction specifications, well construction logs, volumes treated and recycled, methods for recycling groundwater, equipment specifications, and maintenance schedule of the system.

2.0 Recovery Well Construction

Recovery well construction was started in June 2006. Installation of the required equipment and instrumentation for operation of the recovery wells was completed on November 2, 2006, which is also the startup date for operation of the recovery well system.

2.1 Installation of Recovery Wells

Arkansas water well regulations were adhered to and followed concerning well installation activities. The wells were installed using a sonic drilling technique. This method was advantageous since it results in a reduction of waste generated over the mud rotary drilling method of approximately 80% to 90%. Samples were collected continuously until the total depth of the borehole was reached. The depths were previously set to encounter the Cook Mountain Formation at that depth. The total depths reached are listed in Table 1 and well installation diagrams and boring logs are provided in Appendix A. The location of the recovery wells are shown on the site maps provided in Appendix B.

The recovery wells were constructed of 6-inch PVC well materials placed within a 9-inch borehole. A sump and bottom cap (five-foot long on ECRW-1 and six-foot long on ECRW-2) was placed below the base of the well screen. Above the sump, PVC slotted well screen with a slot opening of 0.01 inch was installed. Above the well screen, PVC flush threaded well casing was installed to approximately 2 feet of casing extending above ground surface.

Table 1. Recovery well screened interval and total depth.

Well ID	Screened Interval (ft, bgs)	Depth of Well (ft, bgs)
ECRW-1	10 to 25	30
ECRW-2	13.5 to 33.5	39.5

* Depths measured relative to ground surface, bgs indicates "below ground surface".

A filter pack composed of 20/40 graded silica sand was placed around well screen. The filter pack extends from the base of the borehole to approximately 2 feet above the top of the well screen. After measurement of the filter pack depth, bentonite pellets were manually placed in the borehole to a thickness of 5 to 9 feet and allowed to hydrate overnight to provide a seal above the filter pack. The depth of the filter pack and the bentonite seal are recorded on the well construction diagrams included in Appendix A. Subsequent to bentonite hydration, the

remaining borehole annulus was grouted from the bottom up to minimize voids and bridging, issuing a cement/bentonite slurry mix. Subsequent to grout curing and settling, additional grout mixture was placed to fill the annular space to the ground surface. Drill cuttings consisting of cores and drilling fluids were not generated during the sonic drilling process. Soil cores were placed in drums and disposed in an appropriate manner.

2.2 Recovery Well Development

After installation of each well and allowing time for grout curing, the recovery wells were developed. Well development was performed by using an airlift system with a surge block to clear wells of residual drilling mud, solids, and water from the installation process. An in-flow of ground water across the entire screened interval was achieved. Development materials and water were placed in drums and disposed of properly.

2.3 Piping and Instrumentation

Each well was equipped with Grundfos environmental submersible pumps. The pump in ECRW-1 was set at approximately 21 ft below the top of casing and the pump in ECRW-2 was set at approximately 29.5 ft below the top of casing. These depths resulted in the pumps being located approximately 6 ft above the bottom of the screened interval. Sub-surface piping used in the wells was 1-inch welded 304 stainless steel. Continuous 1-inch poly-pipe was used for piping from well sites to the delivery point. This delivery piping was installed approximately 18 inches below grade to prevent freezing during winter operation of the wells. The piping again transitioned to 1-inch stainless steel when it resumed an above grade run to the delivery point. Above grade piping, at the well site and at the delivery point, were heat traced and insulated for freeze protection. The delivery point at the DV sump allows this produced water from the recovery wells to be introduced into the chemical condensate system of the DSN unit.

Both wells were equipped with Foxboro model I/A series magnetic flowmeters with flow totalizers. During startup phase of the wells these production numbers were taken and recorded by operational personnel. Current status is that the totalizers transmit these readings to a PLC for record archive purposes.

Appendix C contains documents related to the recovery well piping and instrumentation, including wellhead piping details, pump specifications, flow meter specifications, and pump protector specifications.

3.0 Recovery Well Operation and Maintenance

3.1 Operation

As noted previously, operation of the recovery wells started on November 2, 2006. From the startup date to January 19, 2007 a total of approximately 106,000 gallons and 109,000 gallons of water have been recovered from ECRW-1 and ECRW-2, respectively. During the operational period from November 2, 2006 through January 19, 2007, the groundwater recovery rates are at an average of approximately 1,340 gallons/day at ECRW-1 and 1,380 gallons/day at ECRW-2. Due to a mechanical issue, both recovery wells were offline for approximately 3 days beginning

on December 12, 2007. Appendix D contains a table showing the recovery well operational data, including daily readings from the recovery well systems, gallons per day from each recovery well, and combined total daily flow from both recovery wells. Appendix D includes graphs showing the gallons per day produced from each recovery well during the month of November, December, and January. Note that the goal for the recovery wells has been set at 1,440 gallons per day.

Groundwater from the recovery wells is recycled into the plant process. The piping from the wellhead leads to the DV sump and allows the produced water from the recovery wells to be introduced into the chemical condensate system of the DSN unit. Utilization of the recovered water in the production process at the DSN unit results in no discharge of recovered groundwater.

3.2 Maintenance

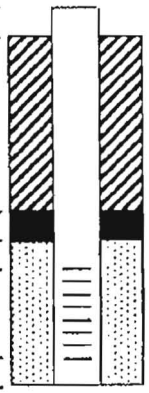
Both the well sites and the well delivery piping systems will be routinely monitored by operations personnel to detect any leaks or piping failures. One feature of the PLC capture of the production numbers is that any failure of the pumping system will trigger an automated e-mail being sent to the environmental department and reacted to no later than the next business day. The flow totalizers will be annually zeroed and spanned to ensure continued reliability and accuracy.

Appendix A
Well Installation Diagrams & Boring Logs

ENVIRONMENTAL
MANAGEMENT SERVICES, INC.

WELL INSTALLATION AND DEVELOPMENT REPORT

Site: El Dorado Chemical — Well No.: ECRW-1
Installation Date: 6-19-06 — Field Rep.: R. Durham
Weather: Partly Cloudy/Warm — Signature: R. Durham



	Depth		Elevation:
Stickup:			Stickup:
Grade:	0'		Grade:
Top of Bentonite Pellets:	3		Top of Bentonite Pellets:
Top of Sand:	8		Top of Sand:
Top of Screen:	10		Top of Screen
Bottom of Screen:	25		Bottom of Screen
Bottom of Well:	30		Bottom of Well:

Well Development Information

Date: _____ Field Rep.: _____
Well Stickup: _____ Top Elevation: _____
Depth to Water: _____ Water Elevation: _____
Depth to Bottom: _____ Bottom Elevation: _____
Well Diameter: _____ Estimate Water Volume: _____ gal.

Well Casing Volumes [gal/ft]			
1 1/4" = 0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6"=1.46

Pumping/Purging

Beginning Time: _____ Flow Rate: _____ gal/min
Ending Time: _____ Estimate Water Volume: _____ gal.

Time	pH	Temp (°C)	Conductivity (µS)	Dissolved Oxygen (mg/l)	Turbidity (NTU)

After Pumping/Purging

Depth to Water: _____ Water Elevation: _____
Depth to Bottom: _____ Bottom Elevation: _____

Project No: 6BR040 Northing: _____ Geologist: R. DURHAM

Project: RECOVERY WELL Easting: _____ Drill Method: PROSONIC

Location: ELDO CHEM Elevation: _____ Driller: _____

Date: 6-19-06 Total Depth (ft. bls) _____ Checked By: _____

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Boring No: EDRW-1

ENVIRONMENTAL

12232 Industriplex Blvd. Suite 27
Baton Rouge, Louisiana 70809

Depth (ft.)	USCS	Description/Unified Soil Classification	SAMPLE: Laboratory Sample No.	SAMPLE: PID / FID ppm
		Ground Surface		
5		RED/ORANGE SANDY CLAY		
8		TAN CLAY		
13		HEAVY TAN/BROWN CLAY		
18		STIFF GRAY/TAN SLITTY SAND		
23		TAN SLIT		
28		GRAY/TAN SLIT		
30		LIGNITE		
37		COOK MTN.		
38		COOK MTN.		
40				

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

WELL INSTALLATION AND DEVELOPMENT REPORT

Site: EL DORADO CHEMICAL Well No.: EC RIW-2
Installation Date: 6-20-06 Field Rep.: R. DURHAM
Weather: CLEAR / WARM Signature: R. Durham

	Depth		Elevation:
Stickup:			Stickup:
Grade:	0'		Grade:
Top of Bentonite Pellets:	2		Top of Bentonite Pellets:
Top of Sand:	4		Top of Sand:
Top of Screen:	13-6"		Top of Screen:
Bottom of Screen:	33-6"		Bottom of Screen
Bottom of Well:	39-6"		Bottom of Well:

Well Development Information

Date: _____ Field Rep.: _____
Well Stickup: _____ Top Elevation: _____
Depth to Water: _____ Water Elevation: _____
Depth to Bottom: _____ Bottom Elevation: _____
Well Diameter: _____ Estimate Water Volume: _____ gal.

Well Casing Volumes [gal/ft]			
1 1/4" = 0.077	2"=0.16	3"=0.37	4"=0.65
1 1/2" = 0.10	2 1/2" = 0.24	3 1/2" = 0.50	6"=1.46

Pumping/Purging

Beginning Time: _____ Flow Rate: _____ gal/min
Ending Time: _____ Estimate Water Volume: _____ gal.

Time	pH	Temp (°C)	Conductivity (µS)	Dissolved Oxygen (mg/l)	Turbidity (NTU)

After Pumping/Purging

Depth to Water: _____ Water Elevation: _____
Depth to Bottom: _____ Bottom Elevation: _____

Project No: 6BR040 Northing: _____ Geologist: R. DURHAM
Project: RECOVERY WELL Easting: _____ Drill Method: SONIC
Location: EDDO CHEM Elevation: _____ Driller: _____
Date: 6-14-06 Total Depth (ft. bls) _____ Checked By: _____
Page: of

Boring No: EDRW-2

ENVIRONMENTAL

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Baton Rouge, Louisiana 70809

SUBSURFACE PROFILE			SAMPLE	
Depth (ft.)	USCS	Description/Unified Soil Classification	Laboratory Sample No.	PID / FID
		Ground Surface		
0		TIGHT TAN CLAY		
13		TIGHT TAN CLAY		
18		FINE TAN SAND		
20		SAND SLIT INTERFACE		
23		DARK BROWN SLIT		
28		GRAY SLIT		
30		LIGNITE		
33		GRAY SAND		
35		SAND/CLAY INTERFACE		
38		COOK MTN.		

Appendix B
Recovery Well Location Map

El Dorado Chemical Company location of groundwater recovery wells.

Appendix C

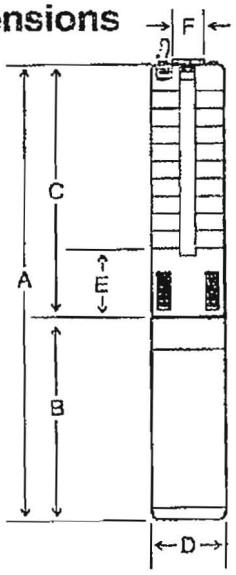
Piping & Instrumentation Details

Submittal Data 3450 RPM 60 Hertz

JOB or CUSTOMER:	
ENGINEER:	
CONTRACTOR:	
SUBMITTED BY:	DATE:
APPROVED BY:	DATE:
ORDER NO:	DATE:
SPECIFICATION REF:	

QUANTITY	TAG NO.	MODEL NO.	GPM	FEET	VOLT	PHASE	COMMENTS

Dimensions



Technical Data

FLOW RANGE: 1.2 to 7 U.S. GPM

MOTORS: Grundfos MS402E Environmental Submersible Motor (Standard)
Maximum Operating Temperature: 104°F (40°C)
Maximum Submergence Pressure: 220 PSI
Maximum Number of Starts Per Hour: 100
Minimum Recommended Flow Past Motor: 0.25 ft./sec.

(NOTE: Franklin Pollution Recovery motor is optional.)

DISCHARGE SIZE: 1" NPT

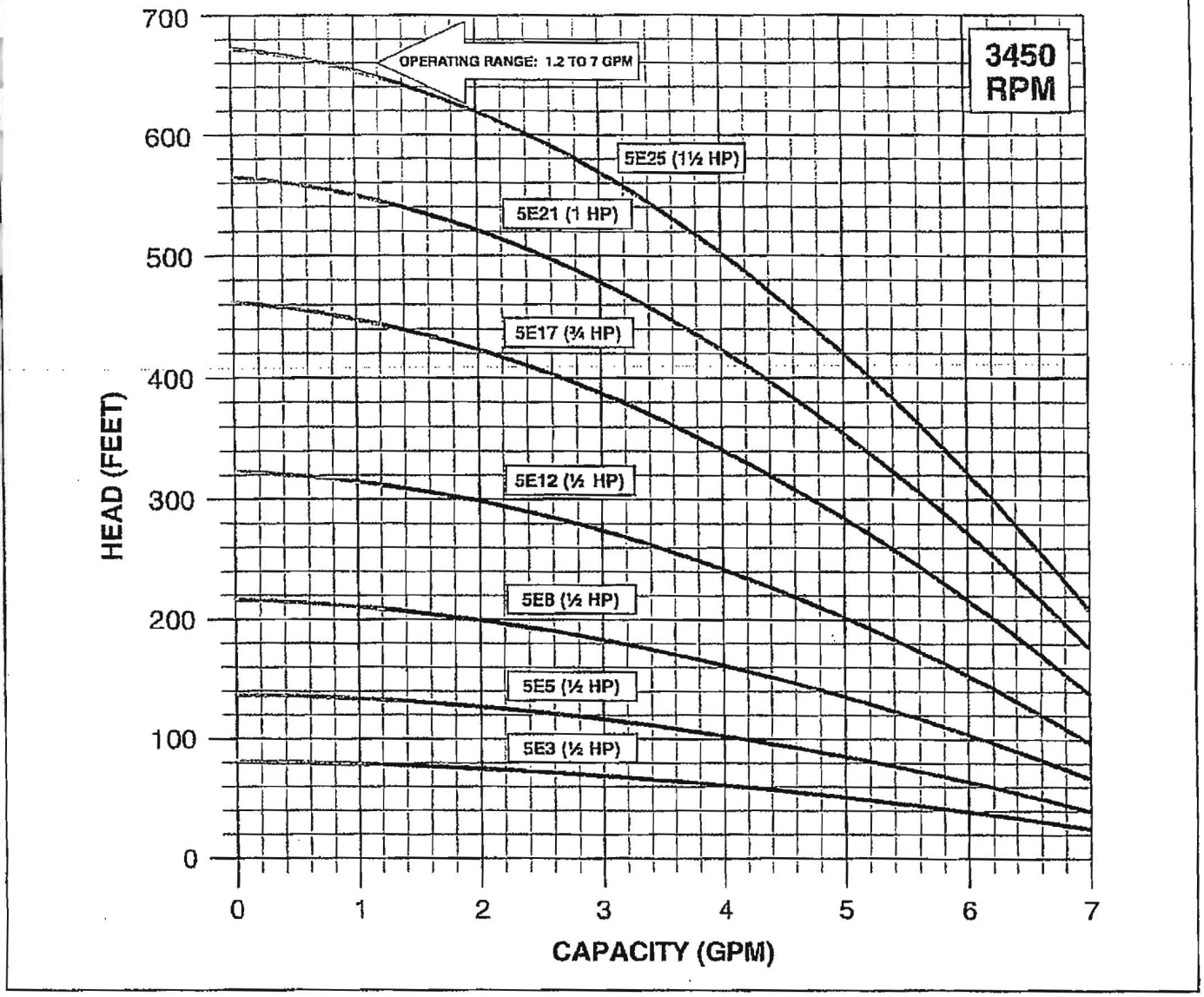
MATERIALS OF CONSTRUCTION: See reverse side.

INSTALLATION: Unit to be installed vertically for submerged operation.

Electrical Data, Dimensions, and Weights ①

Pump Type	Motors				DIMENSIONS IN INCHES							
	HP	SF	PH	Volts	Overall Length A	Motor Length B	Pump End Length C	Max. Dia. D	Inlet E	Disch. Pipe Size (NPT) F	Net Weight (Lbs.)②	Ship. Weight (Lbs.)②
5E3	½	1.60	1	230	19 3/8	10 13/16	8 5/16	3 31/32	3 ¼	1	24	26
5E5	½	1.60	1	230	21 1/8	10 13/16	10 5/16	3 31/32	3 ¼	1	25	27
5E8	½	1.60	1	230	23 9/16	10 13/16	12 ¾	3 31/32	3 ¼	1	27	28
5E12	½	1.60	1	230	26 13/16	10 13/16	16	3 31/32	3 ¼	1	28	29
5E17	¾	1.50	1	230	31 7/16	11 3/8	20 3/16	3 31/32	3 ¼	1	31	32
5E21	1	1.40	1	230	35 7/16	12	23 7/16	3 31/32	3 ¼	1	33	35
5E25	1½	1.30	1	230	40 5/16	13 9/16	26 ¾	3 31/32	3 ¼	1	35	37

① Data for Grundfos MS402E motors. ② Does not include motor leads.



Materials of Construction

REDI-FLO4 PUMP END

Description	Material
Check Valve Housing, Check Valve, Diffuser Chamber, Impeller, Suction Interconnector, Inlet Screen, Pump Shaft, Straps, Cable Guard, Priming Inducer	304 SS
Check Valve Seat	304 SS & Teflon®
Impeller Seal Ring	Teflon®
Coupling	329/420/431 SS
Intermediate Bearings	Teflon®

GRUNDFOS ENVIRONMENTAL MOTOR

Description	Material
NEMA Top, Studs & Fasteners, Stator Housing, Fill Plug Screw	304 SS
Nuts	316 SS
Sand Slinger	FPM
Shaft Extension	431 SS
Diaphragm	FPM
Fill Plug Washer	Teflon®

GRUNDFOS ENVIRONMENTAL MOTOR LEADS

Description	Material
Connector Sleeve	304 SS
Connector Potting	Scotch Cast #4® Epoxy w/FPM Cap
Connector Plug	FPM
Lead Insulation	Teflon®
Conductor	Stranded Copper, 12 AWG

NOTES: Specifications are subject to change without notice.
Teflon® is a registered trademark of DuPont.
Scotch Cast #4® is a registered trademark of 3M Company.

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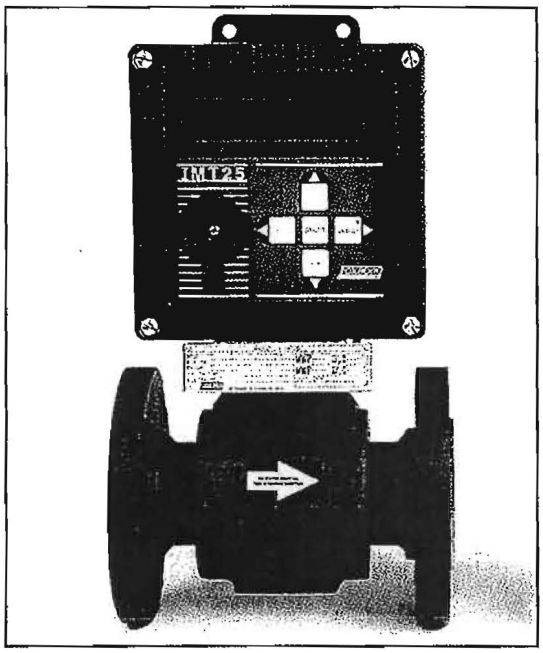
I/A SERIES MAGNETIC FLOWMETERS WITH PULSED DC EXCITATION



If you need a magnetic flowmeter that performs well, can be applied widely, and has a low total cost of ownership, you'll find it in our versatile I/A Series Magnetic Flowmeter with dc excitation.

It consists of an 8300 or 9300A Series (flanged body) or an 8000A Series (wafer body) magnetic flowtube coupled to an IMT20 or IMT25 Series magnetic flow transmitter. In this system, line voltage is the power source for the transmitter, but a circuit in the transmitter sends low frequency pulses to energize the electromagnetic coils in the flowtube. This on/off pulsation of the coils eliminates any zero shift from the flow signal, and therefore any need for manual zero adjustments.

The magnetic flowmeter is a true volumetric device, gives accurate measurement for all conductive liquids, regardless of the presence of secondary phases, and variations in mixture, conductivity, density or viscosity. The ability to measure flow corresponding to very low fluid velocities (wide rangeability) coupled with an obstructionless design (low pressure loss) and high insensitivity to piping effects makes the magnetic flowmeter an ideal choice for many applications. The lightweight, compact flowtube design of the 8000A/9300A series, coupled with their rugged durability also means a very competitive installed cost.

8300 Series flanged flowtubes are available in sizes ranging from 1/2 to 36 in. (15 to 900 mm), and numerous configurations are possible for compatibility with a wide variety of fluids. 9300A Series flanged flowtubes are available from 1/2 to 6 in. (15 to 150 mm) and have face to face dimensions that meet ISO/CD Standard 13359. 8000A Series wafer flowtubes are available in sizes ranging from 1/10 to 6 in. (1.6 to 150 mm). 8300 and 8000A Series Sanitary flowtubes are available in sizes from 1/2 to 3 in. (15 to 80 mm). The Intelligent IMT20 and IMT25 Series transmitters can be integrally mounted to the 8000A and 9300A flowtubes, or mounted on pipes and flat surfaces, and can provide accuracy to ±0.25% of rate.

FEATURES AND BENEFITS

- Flanged (ANSI and Metric options), wafer body and sanitary (Tri-Clamp ends) flowtubes
- Accuracy to ±0.25% of rate
- PTFE, PFA, Polyurethane, Neoprene and Ceramic liner options
- Standard and conical electrodes in wide variety of materials
- Intelligent micro-processor based transmitter featuring Foxboro's Noise Reduction Algorithm
- Process pressure limits from full vacuum to 740 psi
- Process temperature limits to 400°F (204°C)
- NEMA 4X/IEC IP66 environmental rating
- Optional Accidental and Total submergence protection
- Electrode Cleaning Options available
- Liner protectors, grounding rings and other options available
- Optional 24 V dc input power (IMT25)

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SUMMARY SPECIFICATIONS

(For detailed specifications, refer to 1-6F2B, 1-6F2C, 1-6F3B, 1-6F2A, 1-6F4A, and 1-6F5A)

Minimum Conductivity Requirement: 5µS/cm

Table 1. Maximum Pressure and Temperature Ratings.

LINER MATERIAL	MAXIMUM PRESSURE RATING AT AMBIENT TEMPERATURE	MAXIMUM TEMPERATURE RATING
PTFE (8300)	Up to 240 psi (16 Bar)	350°F (175°C)
Polyurethane (8300)	Up to 700 psi (48 Bar)	160°F (70°C)
Neoprene (8300)	Up to 200 psi (14 Bar)	180°F (80°C)
Ceramic (8000A)	Up to 740 psi (51 Bar)	400°F (204°C)
PFA (8000A/9300A)	Up to 740 psi (51 Bar)	356°F (180°C)

Table 2. Upper Range Limits and Accuracy

Flowtube Size (Nominal)		MODEL	UPPER RANGE LIMITS*						ACCURACY
Inch	mm		g pm			L pm			
1/16	1.6	8000A	0.03	to	0.3	0.10	to	1.0	±0.5% of rate or ±0.03% of URL (whichever is greater)
1/8	3	8000A	0.07	to	1.3	0.26	to	5	
1/4	6	8000A	0.18	to	3.6	0.68	to	13.6	
1/2	15	8000A	1.0	to	20	3.8	to	80	±0.25% of rate or ±0.015% of URL (whichever is greater)
		9300A	1.0	to	20	3.8	to	80	
		8300	1.0	to	20	3.8	to	80	
1	25	8000A	3.5	to	73	13.2	to	265	
		9300A	3.5	to	73	13.2	to	265	
		8300	3.8	to	76	14.5	to	290	
1-1/2	40	8000A	9	to	170	34.1	to	644	
		9300A	9	to	170	34.1	to	644	
		8300	10	to	195	37	to	740	
2	50	8000A	13	to	250	49	to	946	
		9300A	13	to	250	49	to	946	
		8300	8	to	335	30	to	1260	
3	80	8000A	31	to	625	117	to	2366	
		9300A	31	to	625	117	to	2366	
		8300	25	to	770	96	to	2900	
4	100	8000A	55	to	1100	208	to	4164	
		9300A	55	to	1100	208	to	4164	
		8300	43	to	1350	162	to	5100	
6	150	8000A	122	to	2440	462	to	9236	
		9300A	122	to	2440	462	to	9236	
		8300	115	to	3000	440	to	11400	
8	200	8300	220	to	5150	820	to	19500	
10	250	8300	360	to	8200	1350	to	31000	
12	300	8300	525	to	11700	1980	to	44200	
14	350	8300	720	to	14400	2725	to	54500	
16	400	8300	950	to	19000	3600	to	72000	
18	450	8300	1200	to	2400	4550	to	91000	
20	500	8300	1630	to	30000	6170	to	114000	±0.5% of rate or ±0.03% of URL (whichever is greater)
24	600	8300	2780	to	43000	10500	to	162000	
30	750	8300	6000	to	68000	22700	to	258000	
36	900	8300	10000	to	99000	37800	to	374000	

* Upper Range Limits may vary with liner option on 8300 flowtubes

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Pump Protectors

Coyote Pump Protectors

The Coyote Pump Protector protects pump motors by automatically shutting them off when they are at risk of low or high voltage, overload, rapid cycling, or running dry. Four models are available to suit your specific needs.

FEATURES

- **Easy to install**
- **Automatically resets itself if turned off**
- **Protects both 2 & 3 wire motors from 1/3 to 2 HP**
- **Protects pumps by shutting them off due to:**
  - Failure to pump fluid due to gas or air lock, clogged inlet, or lack of fluid, low voltage, high voltage, rapid cycling overload
- **Restarts automatically with adjustable timer**
- **Inside wiring is sealed from outside elements**
- **Exceptional flexibility**
  Operates alone, with pressure or float switches, or tank pump-up controls

Coyote Pump Protector Super Model shown with rugged steel enclosure

Control Panel of Coyote Pump Protector Basic Model

Super
115V 1/3-1HP model:
230V 1/3-2HP model:
Protects against running dry, too low or too high of voltage, overload, and rapid cycling. Also allows users to activate an alarm.

Basic
115V 1/3-1HP model:
230V 1/3-2HP model:
Protects against running dry and low voltage.

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email: sales@geotechenv.com website: www.geotechenv.com

Pump Protectors

Coyote Pump Protectors Specifications

Coyote Pump Protector Basic Models: 115 Volt & 230 Volt

Horsepower rating 1/3-1HP (115V)
1/3-2HP (230V)
Trip delay.....1/4 seconds
Reset delay .....adjustable; 5 minutes to 5 hours
Operating temperature.....-20° to 75°
Trip % of normal load .....adjustable
Voltage trip 110V (115V)
190V (230V)
Voltage reset 106V (115V)
202V (230V)

Coyote Pump Protector Super Models: 115 Volt & 230 Volt

Horsepower rating 1/3-1HP (115V)
.....1/3-2HP (230V)

Alarm .....Able to activate a light, bell or most any other alarm desired. The Coyote dry alarm contact is normally open, but will close on any fault condition.

Random start.....When powered at the circuit breaker or fused disconnect, a delay of 4 to 10 seconds occurs before the Coyote turns the pump on. This prevents several pumps served by a single power source from all restarting at the same instant when power is restored after power outage.

Underload or lack of fluid: The Coyote shuts off the pump within one second of running dry and automatically restarts the pump after a designated amount of time (1 minute to 12 hours).
Trip delay.....1 second
Reset delay .....adjustable; 1 minute to 12 hours

Overload: The microprocessor circuit notes the normal running current of the pump motor. If the Coyote shuts the pump down due to excessive current, it will restart it in 60 seconds. If at that time the motor draws normal current, then the Coyote will allow it to run. If however, the motor continues to draw excessive current after two consecutive attempts, one minute apart, the Coyote locks out the pump so as not to burn out a motor winding. The overload light then changes from steady to blinking.
Trip amps.....150% of normal load
Trip delay.....1/4 second
Reset delay .....60 seconds

Voltage Fault: ±2%
Trip delay.....2 seconds (both models)
Reset delay .....60 seconds (both models)
Voltage trip.....95V (115V)
190V (230V)
135V (115V)
270V (230V)
Voltage reset 100V (115V)
200V (230V)
130V (115V)
260V (230V)

CALL GEOTECH TODAY (800) 833-7958

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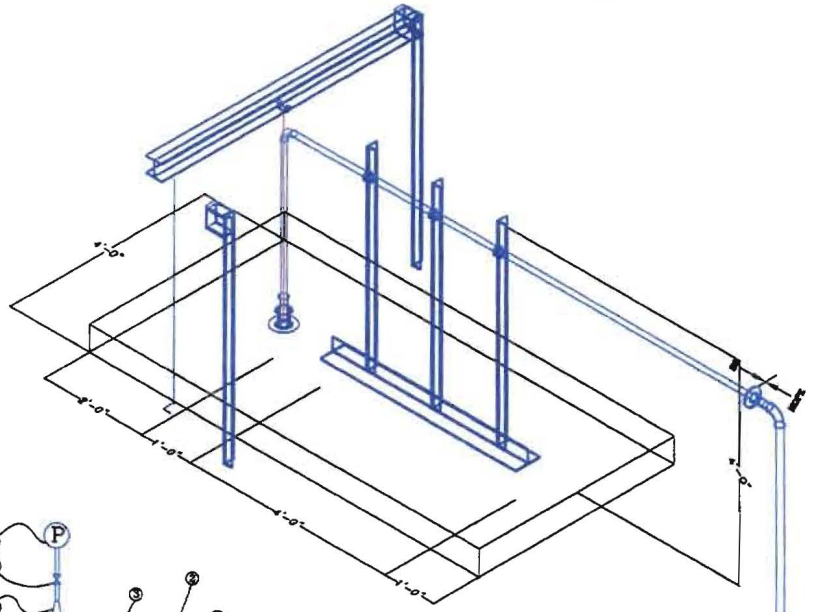
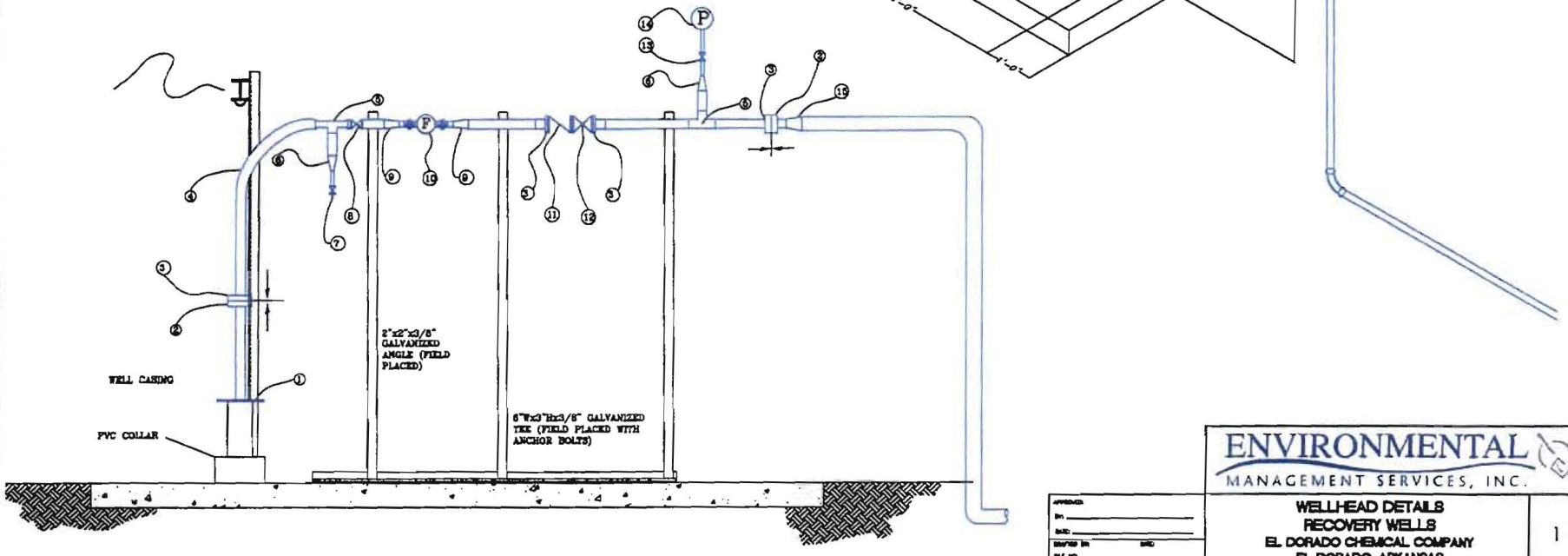
email: sales@geotechenv.com website: www.geotechenv.com

WELL HEAD BILL OF MATERIALS

NO.	QTY	DESCRIPTION
1	1	316SS PLATE WITH 2-1/2" NOTCH
2	2	1-1/2" HDPE SDR-11 STUB-END W/ BACKUP FLANGE
3	4	1-1/2" 150# 316 SS STUB-END (TYPE A) W/ BACKUP FLANGE
4	1	1-1/2" 316SS FLEX HOSE
5	2	1-1/2" 316SS SCH40 TEE, BW
6	2	1-1/2"X1/2 316 SS SWAGE (BLE X TSE)
7	1	316SS 1/2" BALL VALVE WITH LOCK
8	1	1-1/2" 316 SS BALL VALVE, SCRD, V8-6
9	2	1-1/2"X1" 316SS CONC. RED., BW
10	1	1" ABB FLOWMETER, OR EQUIV.
11	1	1-1/2" 316 SS 150# FLANGED CHECK VALVE, (V3-11F)
12	1	1-1/2" 316 SS FLANGED (150#) BALL VALVE (V8-6F)
13	1	1/2" 316SS BALL VALVE, SCRD, V8-6
14	1	1/2" MNPT BOTTOM MOUNT 316SS GAUGE, 0-160 psi, LIQUID FILLED
15	1	1-1/2"X 2" HDPE SDR-11 CONC RED





ENVIRONMENTAL MANAGEMENT SERVICES, INC.

WELLHEAD DETAILS
RECOVERY WELLS
EL DORADO CHEMICAL COMPANY
EL DORADO, ARKANSAS

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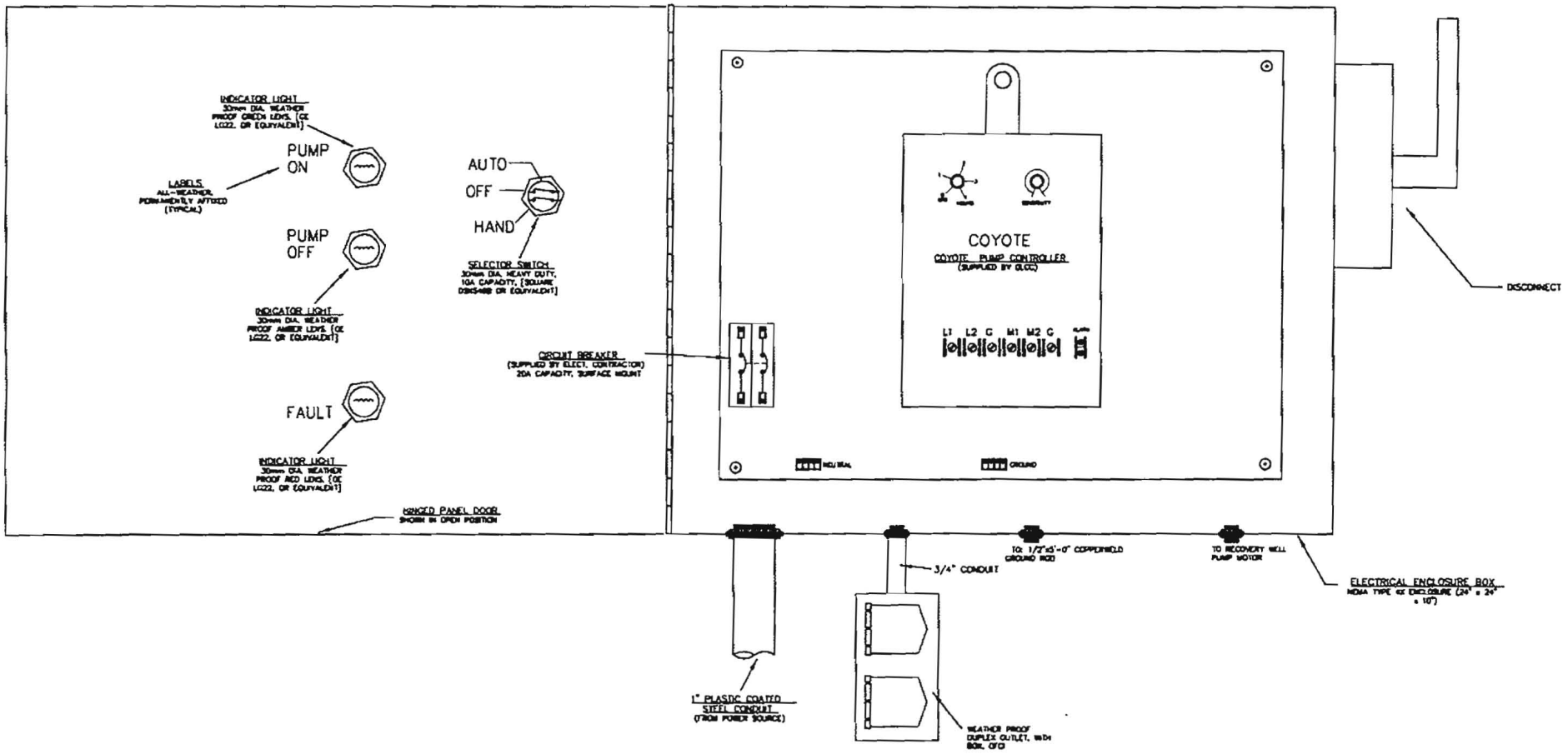

INDICATOR LIGHT
30mm DIA. WEATHER PROOF GREEN LENS, (GE LC22, OR EQUIVALENT)
PUMP ON
LABELS
ALL-WEATHER, PERMANENTLY AFFIXED (TYPICAL)
PUMP OFF
INDICATOR LIGHT
30mm DIA. WEATHER PROOF AMBER LENS (GE LC22, OR EQUIVALENT)
FAULT
INDICATOR LIGHT
30mm DIA. WEATHER PROOF RED LENS, (GE LC22, OR EQUIVALENT)
AUTO
OFF
HAND
SELECTOR SWITCH
30mm DIA. HEAVY DUTY, 10A CAPACITY, (SQUARE D9BG488 OR EQUIVALENT)
CIRCUIT BREAKER
(SUPPLIED BY ELECT. CONTRACTOR)
20A CAPACITY, SURFACE MOUNT
HINGED PANEL DOOR
SHOWN IN OPEN POSITION
COYOTE
COYOTE PUMP CONTROLLER
(SUPPLIED BY GLCC)
L1 L2 G M1 M2 G
NEUTRAL
GROUND
DISCONNECT
TO 1/2"x5'-0" COPPERFIELD GROUND ROD
TO RECOVERY WELL PUMP MOTOR
ELECTRICAL ENCLOSURE BOX
NEMA TYPE 4X ENCLOSURE (24" x 24" x 10")
3/4" CONDUIT
1" PLASTIC COATED STEEL CONDUIT
(FROM POWER SOURCE)
WEATHER PROOF DUPLEX OUTLET, with BOX, GFCI

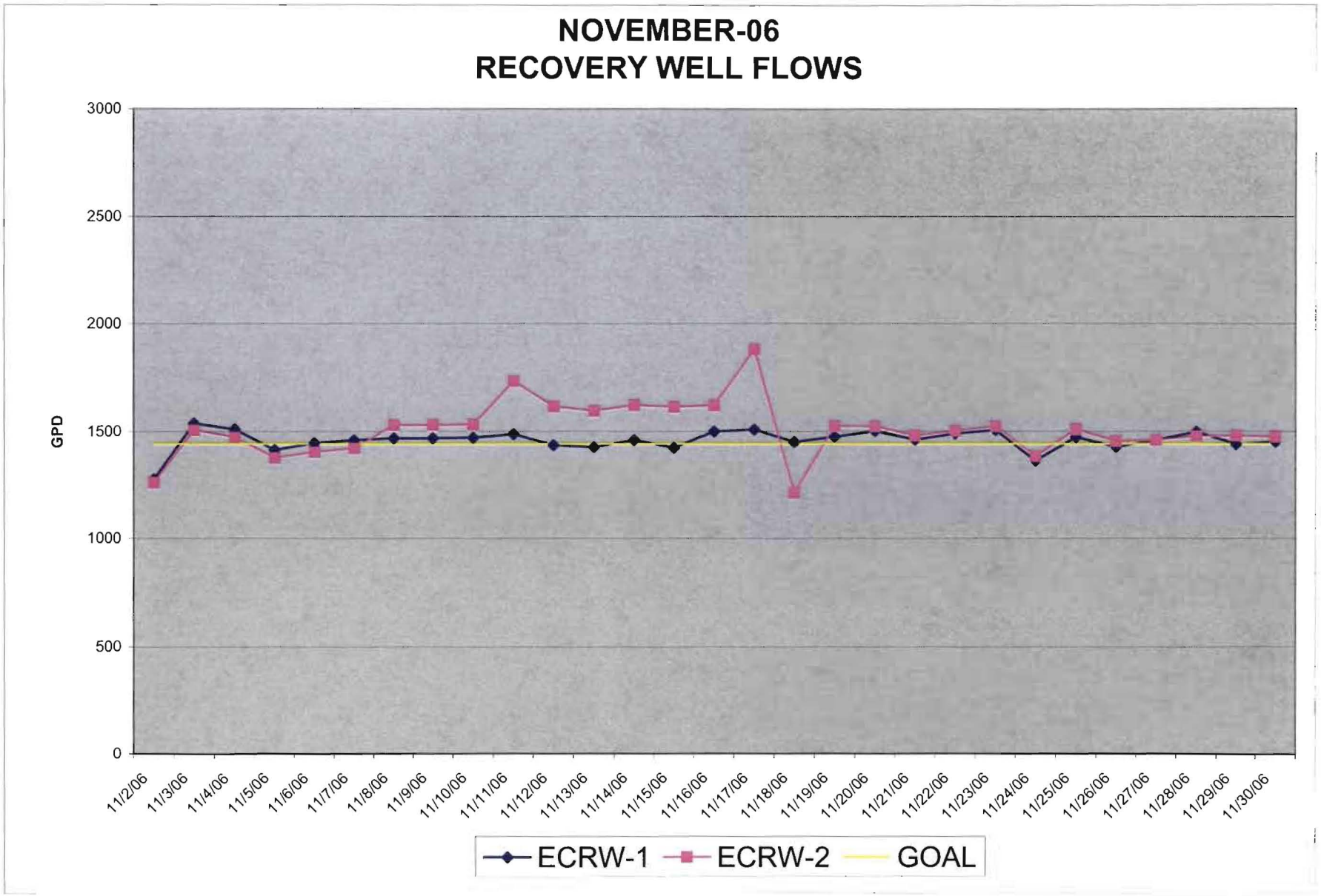
Appendix D
Recovery Well Operational Data

Recovery Well Flows
ECRW-1 and ECRW-2

DATE	TIME	ECRW-1 READING (Gal)	ECRW-1 Gal /Day	ECRW-2 READING (Gal)	ECRW-2 Gal /Day	Total Daily Flow
11/2/06	6:00 A.M.	1274	1274	1259	1259	2533
11/3/06	6:00 A.M.	2809	1535	2762	1503	3038
11/4/06	6:00 A.M.	4316	1507	4232	1470	2977
11/5/06	6:00 A.M.	5728	1412	5606	1374	2786
11/6/06	6:00 A.M.	7171	1443	7007	1401	2844
11/7/06	6:00 A.M.	8628	1457	8426	1419	2876
11/8/06	missed	10094	1466	9952	1526	2992
11/9/06	missed	11560	1466	11478	1526	2992
11/10/06	6:00 A.M.	13028	1468	13006	1528	2996
11/11/06	6:00 a.m.	14513	1485	14736	1730	3215
11/12/06	6:00a.m.	15947	1434	16349	1613	3047
11/13/06	6:00a.m.	17372	1425	17941	1592	3017
11/14/06	6:00a.m.	18830	1458	19560	1619	3077
11/15/06	6:00a.m.	20252	1422	21170	1610	3032
11/16/06	6:00 A.M.	21749	1497	22787	1617	3114
11/17/06	6:00 A.M.	23255	1506	24664	1877	3383
11/18/06	6:00A.M.	24703	1448	25874	1210	2658
11/19/06	6:00am	26175	1472	27395	1521	2993
11/20/06	6:00AM	27674	1499	28915	1520	3019
11/21/06	6:00AM	29133	1459	30391	1476	2935
11/22/06	6:00am	30620	1487	31890	1499	2986
11/23/06	6:00a.m.	32124	1504	33410	1520	3024
11/24/06	6:00a.m.	33485	1361	34791	1381	2742
11/25/06	6:00a.m.	34956	1471	36297	1506	2977
11/26/06	6:00a.m.	36382	1426	37748	1451	2877
11/27/06	6:00A.M.	37839	1457	39205	1457	2914
11/28/06	missed	39334	1495	40680	1475	2970
11/29/06	6:00AM	40772	1438	42156	1476	2914
11/30/06	6:00am	42221	1449	43628	1472	2921
12/1/06	11:30a.m.	43985	1764	45396	1768	3532
12/2/06	10:00a.m.	45294	1309	46671	1275	2584
12/3/06	9:00a.m.	46685	1391	48017	1346	2737
12/4/06	6:00a.m.	47939	1254	49200	1183	2437
12/5/06	6:00a.m.	49354	1415	50571	1371	2786
12/6/06	6:00A.M.	50763	1409	51955	1384	2793
12/7/06	6:00 AM	52112	1349	53136	1181	2530
12/8/06	10:20 AM	53795	1683	54887	1751	3434
12/9/06	6:00 AM	54995	1200	56025	1138	2338
12/10/06	6:00 AM	56349	1354	57331	1306	2660
12/11/06	6AM	57717	1368	58665	1334	2702
12/12/06	6AM	57717	0	58665	0	0
12/13/06	6AM	57717	0	58665	0	0
12/14/06	6AM	57717	0	58665	0	0
12/15/06	6 a.m.	58253	536	59185	520	1056
12/16/06	6:00A.M.	59257	1004	59942	757	1761
12/17/06	6:00A.M.	60359	1102	60869	927	2029
12/18/06	6:00 AM	61671	1312	63419	2550	3862

Recovery Well Flows
ECRW-1 and ECRW-2

DATE	TIME	ECRW-1 READING (Gal)	ECRW-1 Gal /Day	ECRW-2 READING (Gal)	ECRW-2 Gal /Day	Total Daily Flow
12/19/06	6:00 AM	63258	1587	65004	1585	3172
12/20/06	6:00 A.M.	64784	1526	66564	1560	3086
12/21/06	6:00 A.M.	66272	1488	68201	1637	3125
12/22/06	6:00 A.M.	67770	1498	69484	1283	2781
12/23/06	6:00am	69279	1509	70987	1503	3012
12/24/06	6:00am	70690	1411	72402	1415	2826
12/25/06	6:00am	72180	1490	73880	1478	2968
12/26/06	6:00am	73652	1472	75320	1440	2912
12/27/06	6:00 AM	75059	1407	76790	1470	2877
12/28/06	6:00 AM	76472	1413	78100	1310	2723
12/29/06	6:00 AM	77892	1420	79495	1395	2815
12/30/06	6:00 AM	79358	1466	80953	1458	2924
12/31/06	6:00 A.M.	80800	1442	82389	1436	2878
1/1/07	6:00 A.M.	82370	1570	84008	1619	3189
1/2/07	6:00a.m.	83475	1105	85169	1161	2266
1/3/07	6:00a.m.	84804	1329	86581	1412	2741
1/4/07	6:00A.M.	86141	1337	88021	1440	2777
1/5/07	6:00AM	87581	1440	89522	1501	2941
1/6/07	6:00am	88998	1417	90983	1461	2878
1/7/07	6:00am	90430	1432	92460	1477	2909
1/8/07	6:00 AM	91692	1262	93745	1285	2547
1/9/07	6:00 AM	93000	1308	95088	1343	2651
1/10/07	6:00 A.M.	94313	1313	96450	1362	2675
1/11/07	6:00 A.M.	95669	1356	97850	1400	2756
1/12/07	6:00 A.mM.	97028	1359	99248	1398	2757
1/13/07	6:00am	98344	1316	100655	1407	2723
1/14/07	6:00a.m.	99699	1355	102051	1396	2751
1/15/07	6:00AM	101052	1353	103478	1427	2780
1/16/07	6:00am	102355	1303	104868	1390	2693
1/17/07	6:00 AM	103633	1278	106235	1367	2645
1/18/07	6:00 AM	104867	1234	107570	1335	2569
1/19/07	6:00 a.m.	106170	1303	108962	1392	2695


NOVEMBER-06
RECOVERY WELL FLOWS
GPD
3000
2500
2000
1500
1000
500
0
11/2/06
11/3/06
11/4/06
11/5/06
11/6/06
11/7/06
11/8/06
11/9/06
11/10/06
11/11/06
11/12/06
11/13/06
11/14/06
11/15/06
11/16/06
11/17/06
11/18/06
11/19/06
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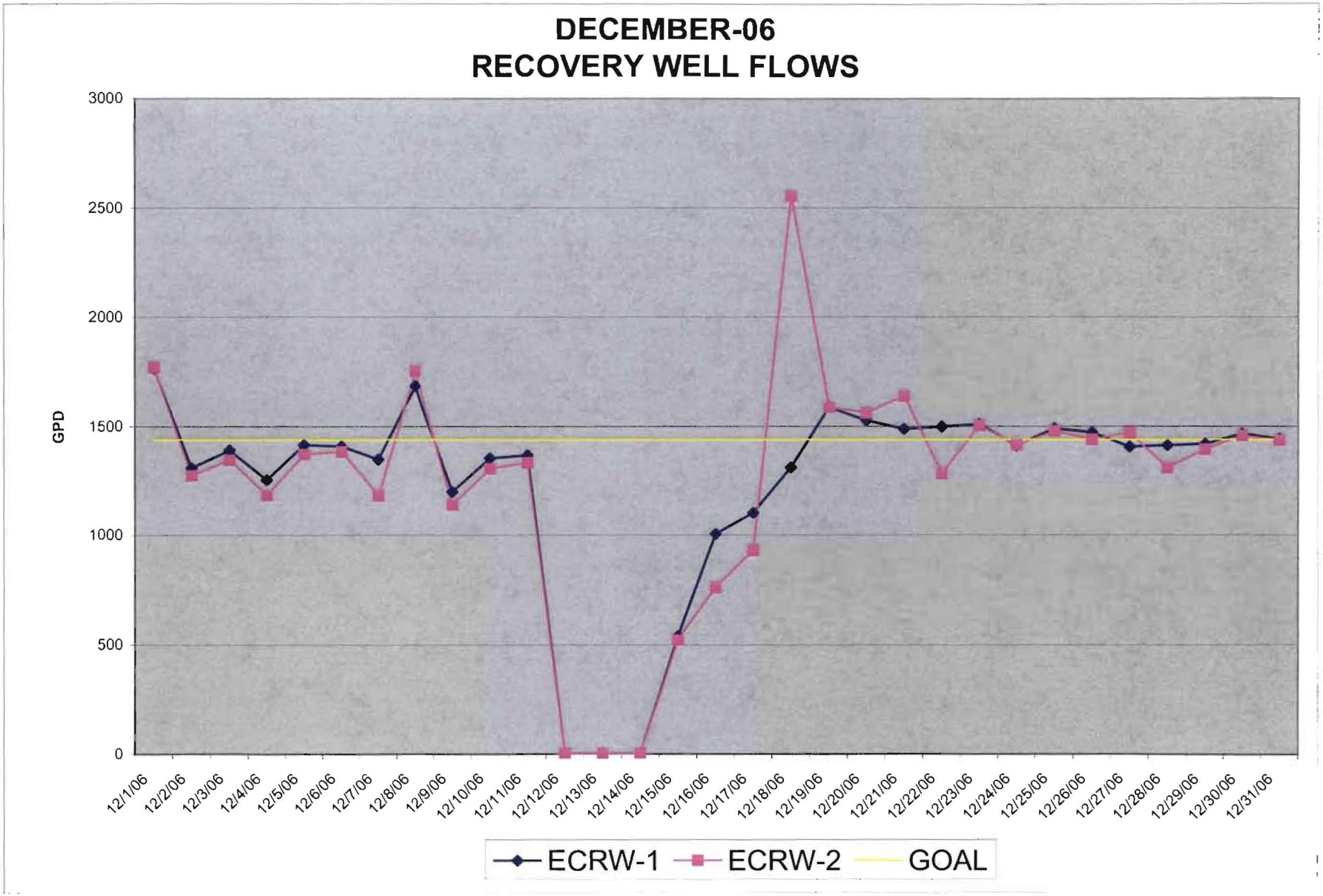
11/21/06
11/22/06
11/23/06
11/24/06
11/25/06
11/26/06
11/27/06
11/28/06
11/29/06
11/30/06
ECRW-1
ECRW-2
GOAL


DECEMBER-06
RECOVERY WELL FLOWS
GPD
3000
2500
2000
1500
1000
500
0
12/1/06
12/2/06
12/3/06
12/4/06
12/5/06
12/6/06
12/7/06
12/8/06
12/9/06
12/10/06
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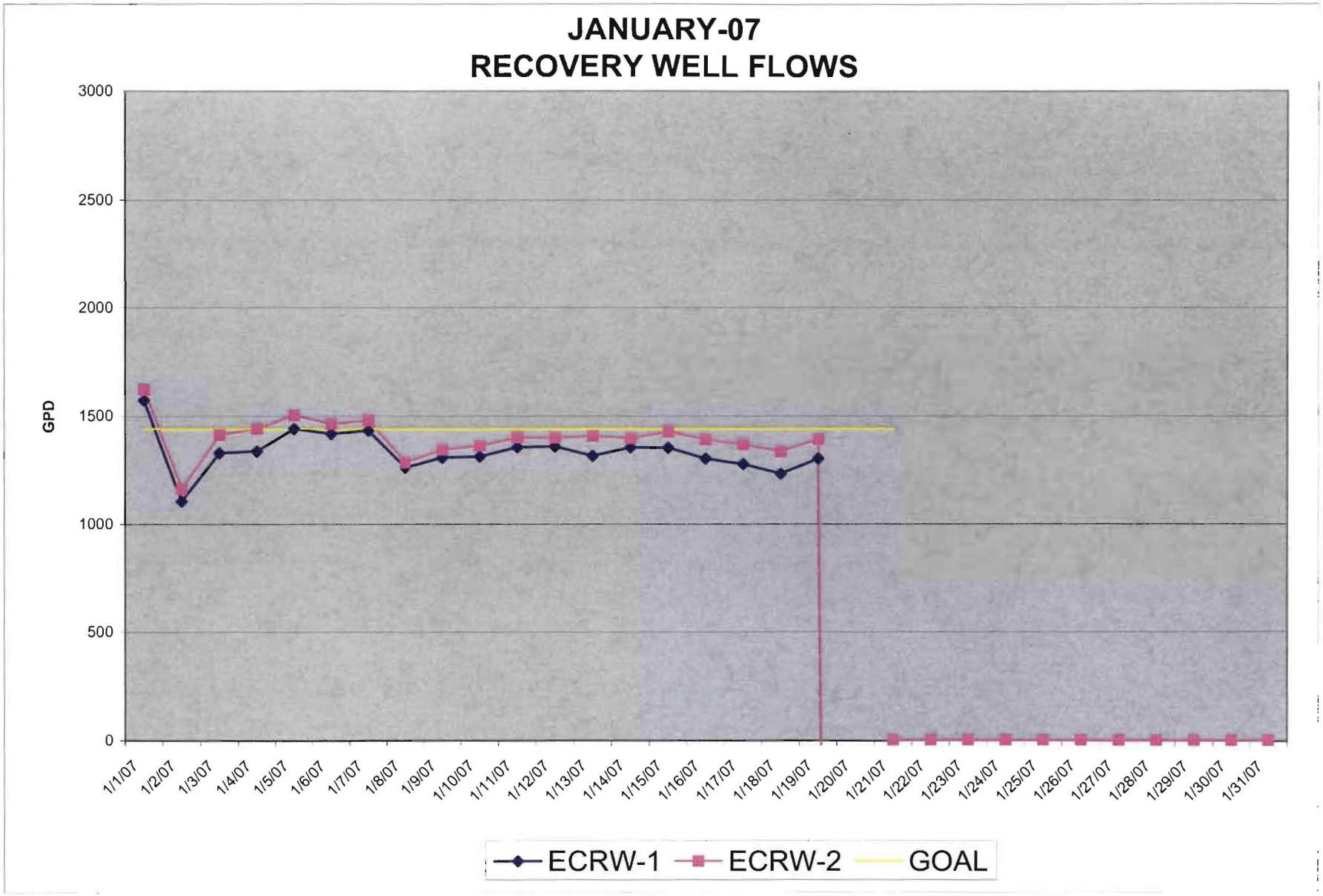
12/23/06
12/24/06
12/25/06
12/26/06
12/27/06
12/28/06
12/29/06
12/30/06
12/31/06
ECRW-1
ECRW-2
GOAL


JANUARY-07
RECOVERY WELL FLOWS
GPD
3000
2500
2000
1500
1000
500
0
1/1/07
1/2/07
1/3/07
1/4/07
1/5/07
1/6/07
1/7/07
1/8/07
1/9/07
1/10/07
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1/31/07
ECRW-1
ECRW-2
GOAL