GW - 1

WORK PLANS

GIANT
INDUSTRIES, INC.

July 15, 2005

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Frances Dr.
Santa Fe, New Mexico 87505

Ms. Hope Monzeglio
NMED Hazardous Waste Bureau
2905 Rodeo Park Dr. East. BLDG 1
Santa Fe, New Mexico 87505

Re: **Giant Refining Company's – Bloomfield's River Terrace Voluntary Corrective Measures Work Plan**

Mr. Price & Ms. Monzeglio:

As requested in our June 29, 2005 telephone call, Giant is submitting the enclosed information related to the proposed amendments to the May 25, 2005 VCM Work Plan (Work Plan), and additional information that supplements the Work Plan. The information is summarized below.

Bioventing Well Layout
As we discussed, Giant plans to use vertical bioventing wells on an approximate 40-foot grid in lieu of the trenches presented in the Work Plan. Figure 1 shows the approximate locations of the bioventing wells. Figure 2 shows the approximate area of influence of the bioventing wells. The bioventing pilot test at the Bloomfield Crude Station concluded a 30-foot radius of influence could be achieved at that site. We have conservatively assumed a 20-foot radius of influence will be achieved at the river terrace.

River Terrace Groundwater Conditions
Figure 3 presents an estimated isocontour map of benzene concentrations in the river terrace groundwater. The contours are based on an average composite of the groundwater sampling data collected between October 2004 and April 2005. This figure was developed to determine the area of focus for the bioventing system as shown in Figure 2.

Bioventing Piping Concept
Figure 4, which supersedes Figure 9 of the Work Plan, shows the conceptual layout of the bioventing and dewatering piping, and the general location of the treatment equipment area. Figure 5 and Figure 6 show the conceptual piping connections to the bioventing and dewatering wells.

Well Design
Figure 7 shows a schematic of the bioventing wells. Each well will be outfitted with two casings, one to ventilate the upper portion of the interval of interest during the initial stages of dewatering, and the other to ventilate the lower portion as dewatering progress occurs.

The change between casings will be made manually using a flexible venting hose from the main air header.

Figure 8 shows a schematic of the dewatering wells (DW-1 and DW-2).

Temporary Piezometers TP-9 Through TP-13

Appendix A contains the well logs for TP-9 through TP-13, which were installed in April 2005. Appendix B contains the laboratory reports for groundwater samples obtained from TP-9 through TP-13 shortly after their installation.

VCM Major Equipment

The following table lists the preliminary equipment selection. Manufacturers' equipment data sheets are contained in Appendix C.

Description	Equipment	Design Condition
Groundwater pump, MW-48 and DW-2	Grundfos 5S03-9 (1/3 hp)	5 to 7 gpm
Groundwater pump, DW-1	Grundfos 16S05-5 (1/2 hp)	15 to 20 gpm
Liquid-phase GAC treatment	US Filter/Westates ASC 2000	40 gpm
Bioventing blower	Rotron DR 808, 7.5 hp	10 to 20 scfm per well at 10 inches water column wellhead pressure.

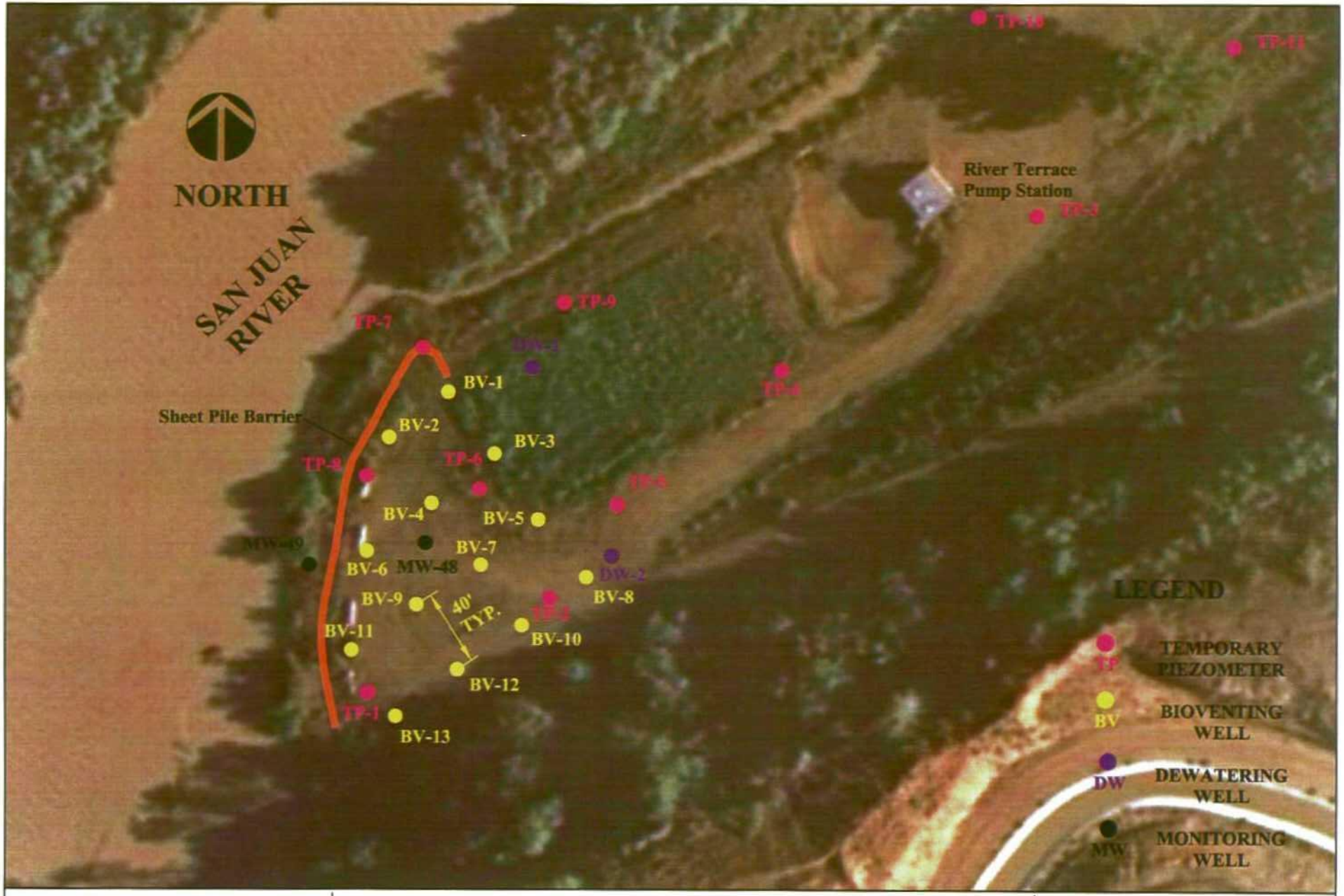
VCM Implementation Schedule

Figure 9 shows the revised estimated VCM implementation schedule.

Please feel free to call me if you have any questions.

Sincerely,

James R. Schmaltz
Environmental Manager
Giant Refining Company – Bloomfield



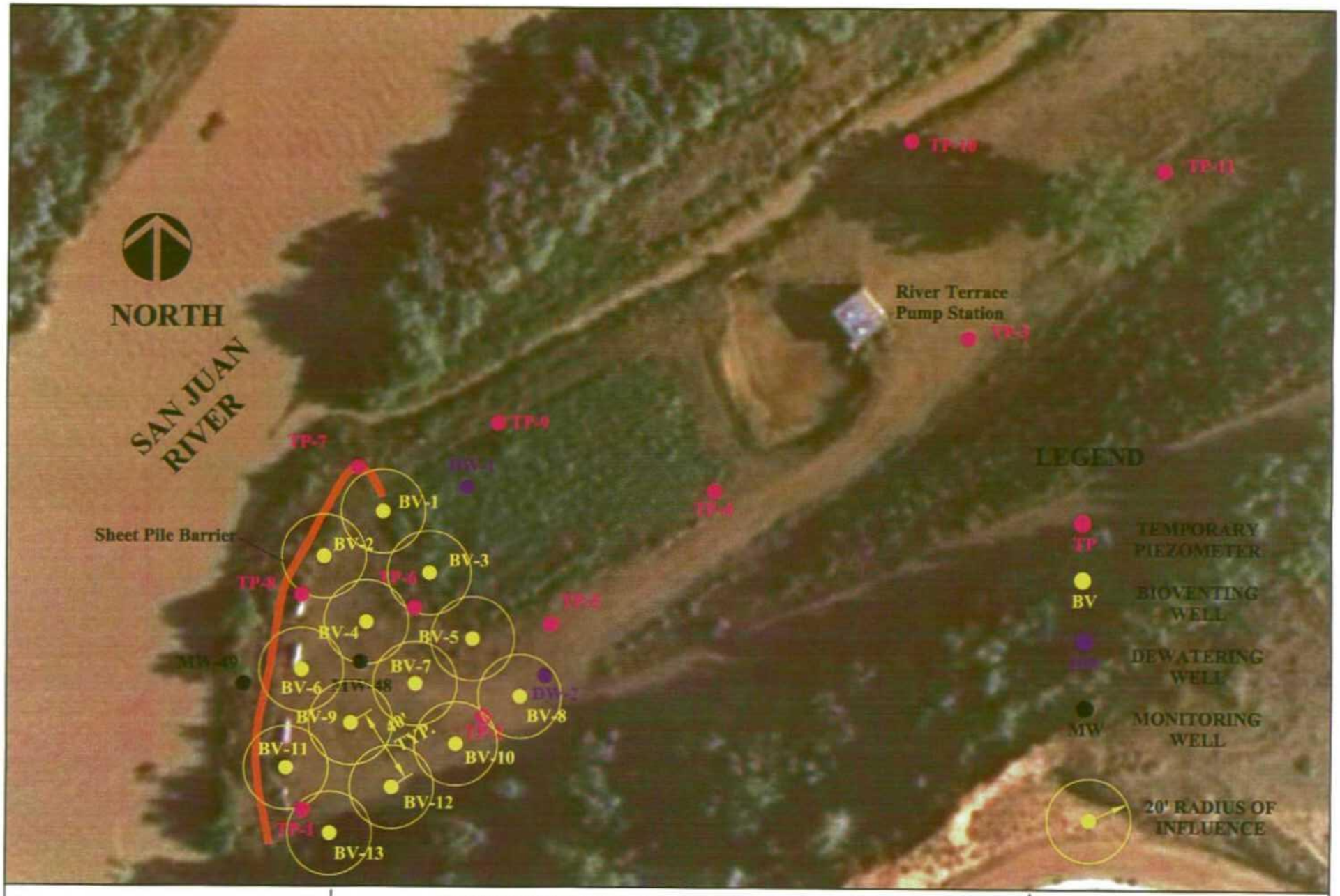
MALCOLM PIRNIE

APPROXIMATE WELL LOCATIONS

River Terrace Sheet Pile Area

Giant Refinery - Bloomfield, NM

FIGURE 1



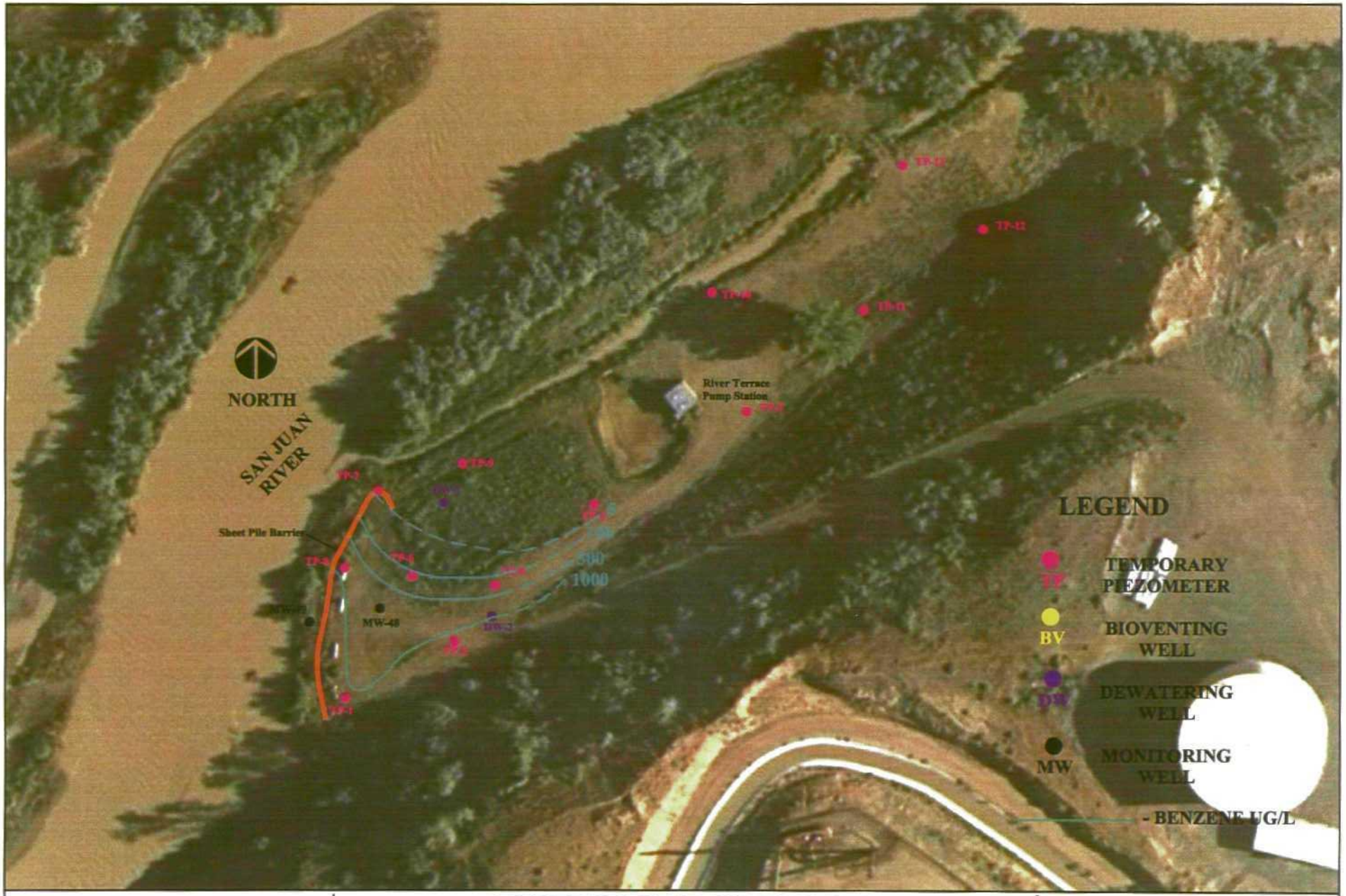
MALCOLM PIRNIE

APPROXIMATE BIOVENTING AREA OF INFLUENCE

River Terrace Sheet Pile Area

Giant Refinery - Bloomfield, NM

FIGURE 2



MALCOLM PIRNIE

BENZENE IN GROUNDWATER
ESTIMATED CONCENTRATION ISOCONTOURS

River Terrace Sheet Pile Area

Giant Refinery - Bloomfield, NM

FIGURE 3

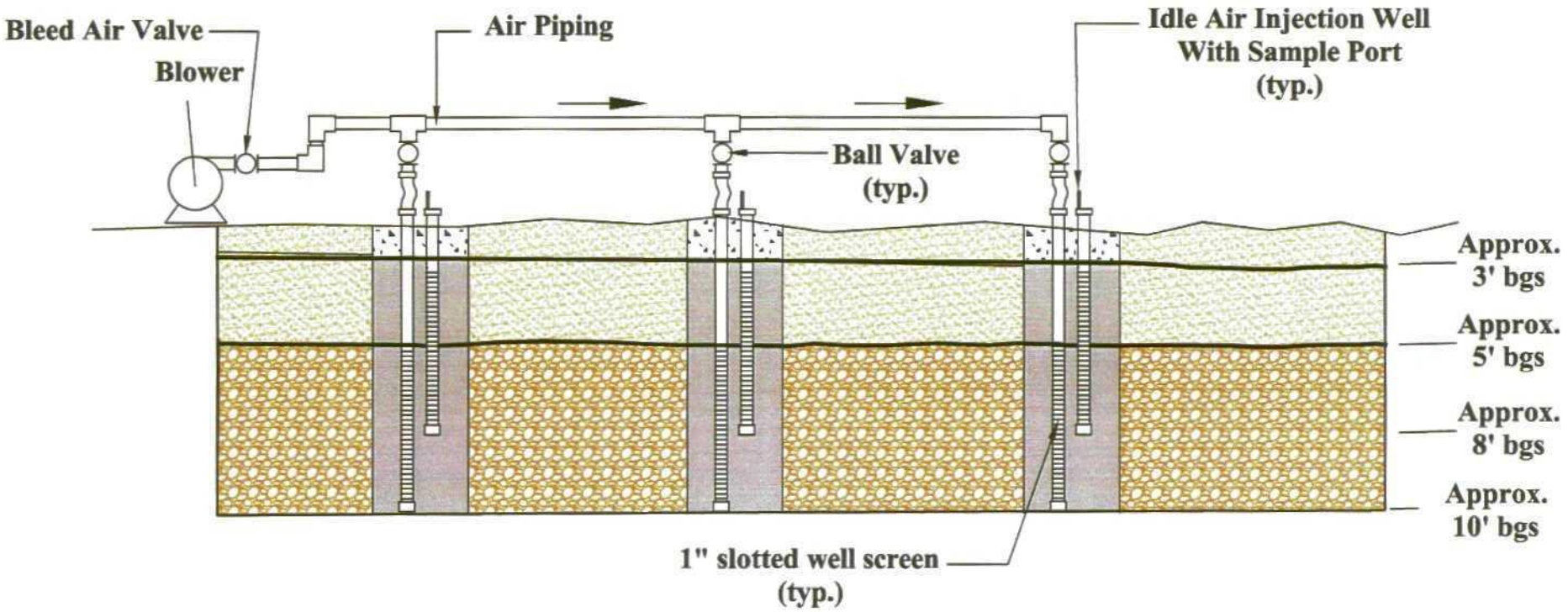
MALCOLM PIRNIE

CONCEPTUAL CORRECTIVE MEASURES LAYOUT

River Terrace Sheet Pile Area

Giant Refinery - Bloomfield, NM

FIGURE 4

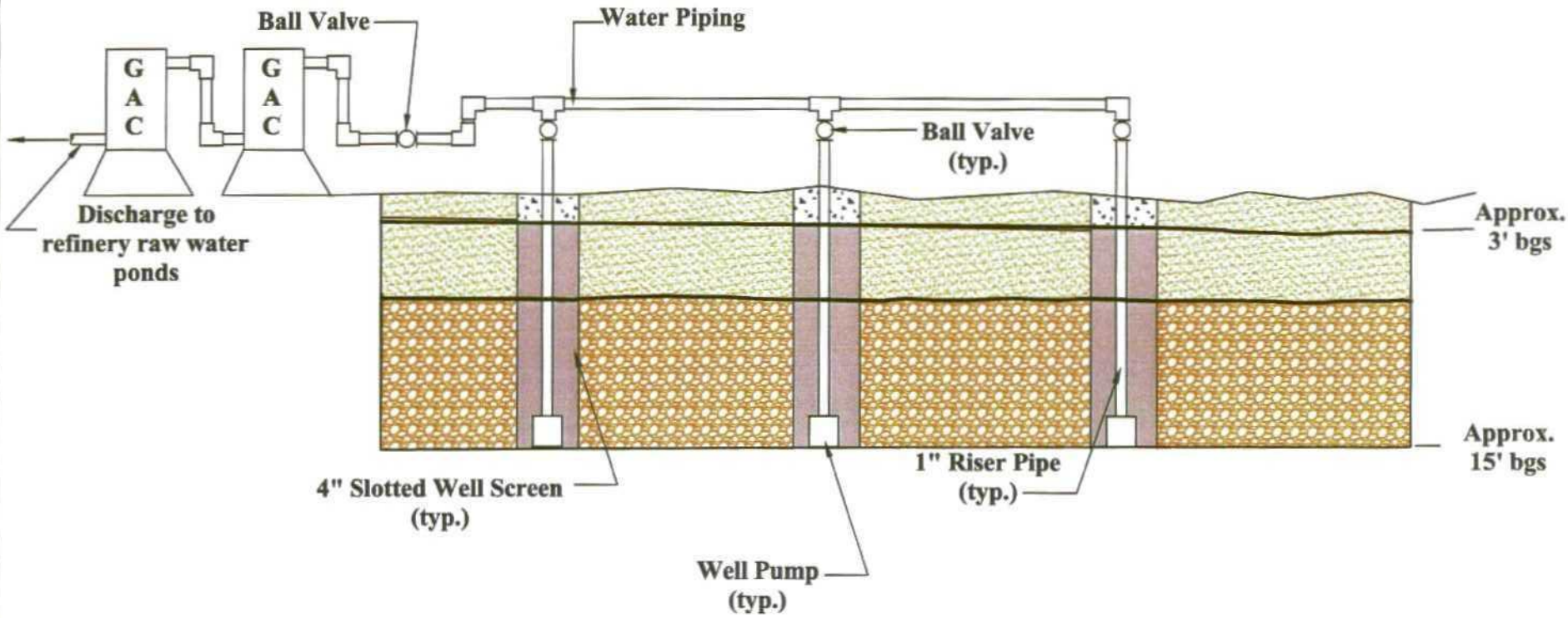


NOT TO SCALE

MALCOLM PIRNIE

Conceptual Bioventing Well Piping Schematic
River Terrace Sheet Pile Area
Giant Refinery - Bloomfield, NM

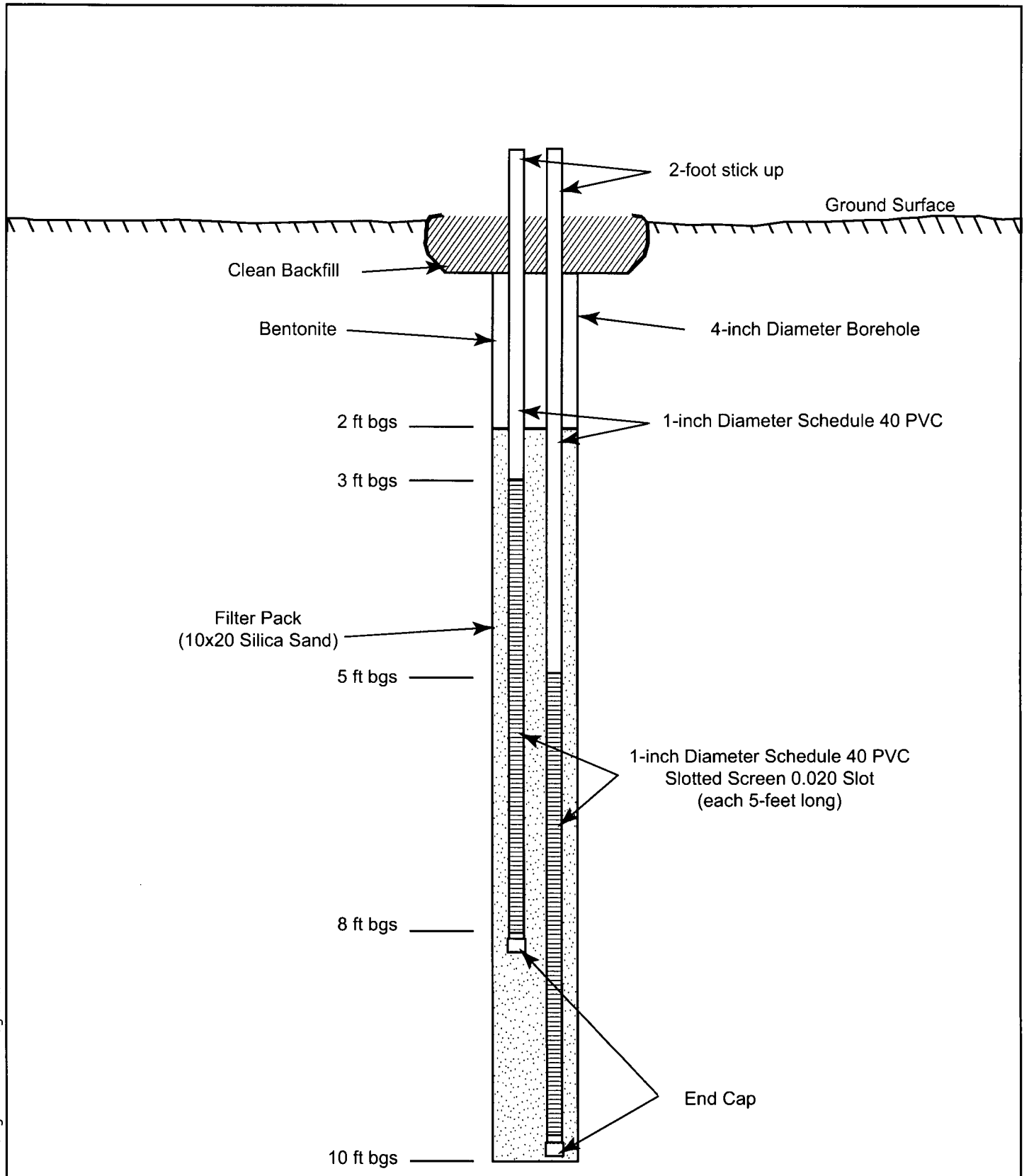
FIGURE 5



MALCOLM PIRNIE

Conceptual Dewatering Well Piping Schematic
River Terrace Sheet Pile Area
Giant Refinery - Bloomfield, NM

FIGURE 6



*not to scale

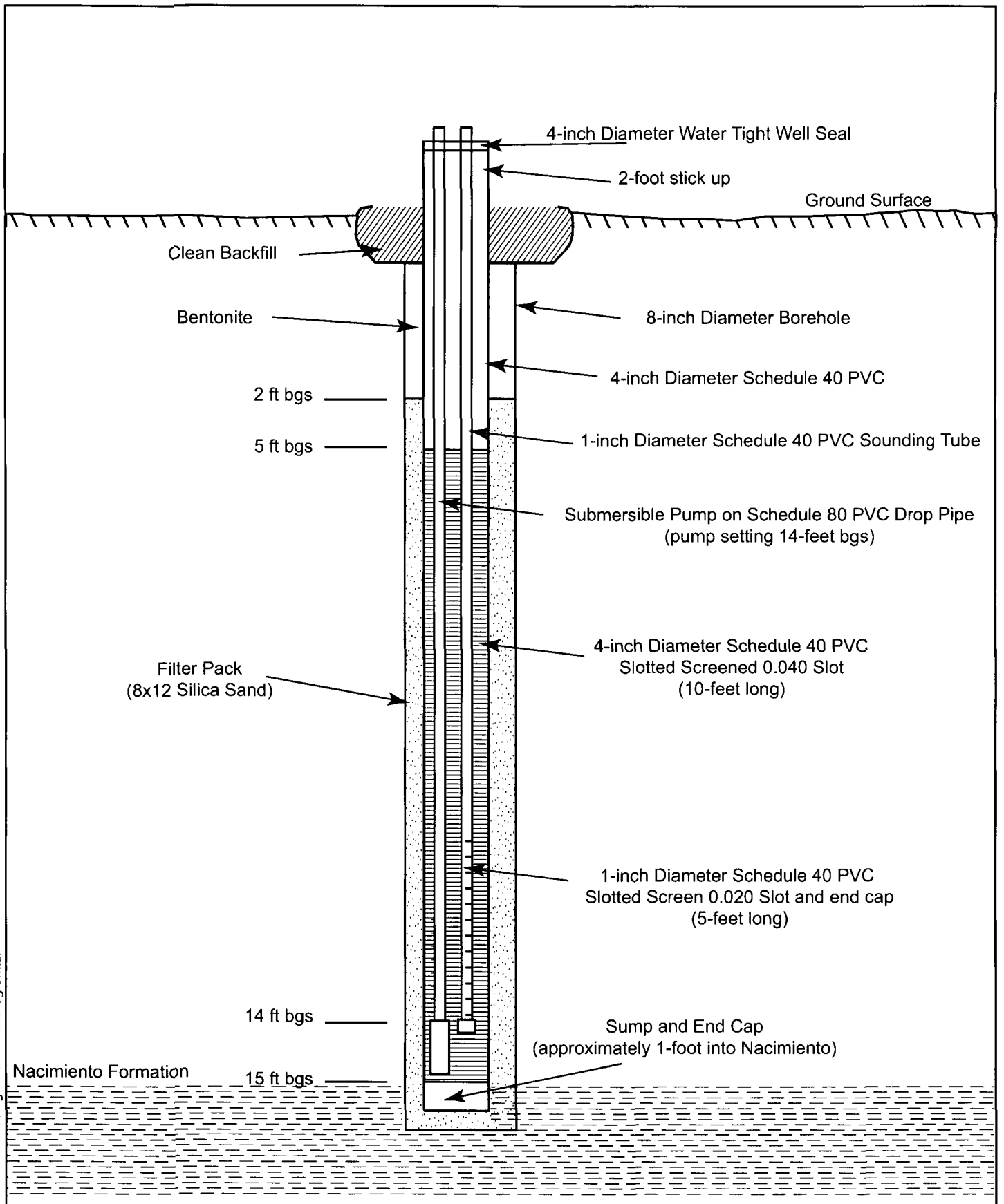
MALCOLM PIRNIE

Schematic Bio-Venting Well Design
Giant Refinery Bloomsfield, New Mexico

Malcolm Pirnie, Inc.

Figure 7

m:/5127003/River Terrace VCM/Driller/Figure BV Well Diagram.ai



*not to scale

m:/5127003/River Terrace VCM/Driller/Figure DW Well Diagram.ai

MALCOLM PIRNIE

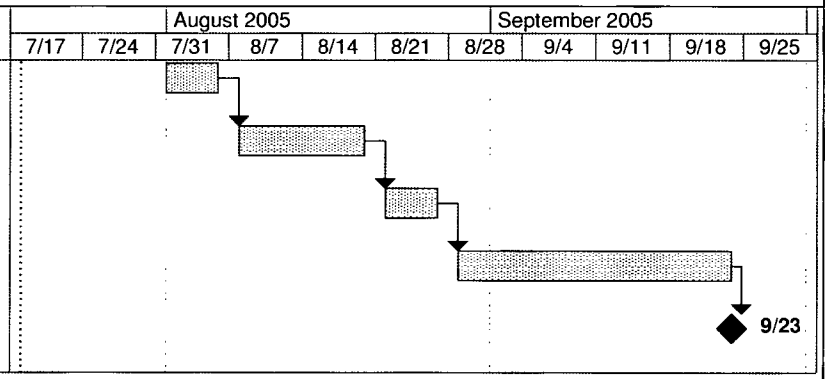
Schematic Dewatering Well Design
Giant Refinery Bloomsfield, New Mexico

Malcolm Pirnie, Inc.

Figure 8

FIGURE 9
Estimated Corrective Measures Implementation Schedule
River Terrace Sheet Pile Area
Giant Refinery - Bloomfield, NM

ID	Task Name	Duration	Start	Finish
1	Bioventing and Dewatering Well Installation	5 days	Mon 8/1/05	Fri 8/5/05
2	VCM System Construction	10 days	Mon 8/8/05	Fri 8/19/05
3	VCM System Start-Up and Testing	5 days	Mon 8/22/05	Fri 8/26/05
4	Initial Performance Monitoring Period	20 days	Mon 8/29/05	Fri 9/23/05
5	Begin Routine Operation and Maintenance	0 days	Fri 9/23/05	Fri 9/23/05



Project: VCM Implementation Schedu
Date: Mon 7/18/05

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

5127-003

May 2005

APPENDIX A

Soil Boring Logs for TP-9 through TP-13

Sheet: 1 OF 5
Bore Point: River Terrace
Water Elevation: 7.0'
Boring No.: TP-9

Precision Engineering, Inc.
P.O. Box 422
Las Cruces, NM 88004
505-523-7674

File #: 05-038
Site: Bloomfield
Giant Refining
Elevation: EXISTING
Date: 4/5/2005

Log of Test Borings

LAB #	DEPTH	BLOW COUNT	PLOT	SCALE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR,ETC.)	%M	LL	PI	CLASS.
	0.0-7.5		///**///		**Clay**, Slightly Sandy, Very Fine, Brown, Moist, Gravel, Cobbles				
			///**///						
			///**///						
			///**///						
			///**///	2.5					
			///**///						
			///**///						
			///**///						
			///**///						
			///**///	5.0					
			///**///						
			///**///						
			///**///						
	7.0		///**///		Water				
			///**///	7.5					
	7.5-10.0		*********		Sand, Very Fine, Grey, Water Bearing				
			*********						
			*********						
			*********						
			*********	10.0					
	10.0				TD				
					Set 2" Well @ 10.0'				
					5' of Screen, 6' of Riser				
					Top of Sand 3.1'				
					Top of Bentonite 1.5'				
				15.0					
				20.0					

SIZE & TYPE OF BORING: 4 1/4" ID HOLLOW STEMMED AUGER — LOGGED BY: KMM

\\Phoenix\Projects\5127003\River Terrace VCM\River Terrace Work Plan\Wor

Sheet: 2 OF 5
Bore Point: River Terrace
Water Elevation: 4'2"
Boring No.: TP-10

Precision Engineering, Inc.
P.O. Box 422
Las Cruces, NM 88004
505-523-7674

File #: 05-038
Site: Bloomfield
Giant Refining
Elevation: EXISTING
Date: 4/5/2005

Log of Test Borings

LAB #	DEPTH	BLOW COUNT	PLOT	SCALE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR,ETC.)	%M	LL	PI	CLASS.
	0.0-2.0		*-------* *-------* *-------*		**Silt**, Sandy, Very Fine, Brown, Gravel, Cobbles Moist				
	2.0-8.5		***--*** ***--*** ***--*** ***--*** ***--***	2.5	**Sand**, Very Fine to Fine, Silty, Brown, Gravel, Cobbles, Damp				
			-- ***--*** ***--*** ***--*** ***--*** ***--*** ***--*** ***--***	5.0 7.5	Water				
	8.5			10.0 15.0 20.0	TD Set 2" Well @ 8.5' 5' of Screen, 5' of Riser Top of Sand 2.5' Top of Bentonite 1.5'				

SIZE & TYPE OF BORING: 4 1/4" ID HOLLOW STEMMED AUGER LOGGED BY: KMM

\\Phoenix\Projects\5127003\River Terrace VCM\River Terrace Work Plan\Wor

Sheet: 3 OF 5
Bore Point: River Terrace
Water Elevation: 5.3'
Boring No.: TP-11

Precision Engineering, Inc.
P.O. Box 422
Las Cruces, NM 88004
505-523-7674

File #: 05-038
Site: Bloomfield
Giant Refining
Elevation: EXISTING
Date: 4/5/2005

Log of Test Borings

LAB #	DEPTH	BLOW COUNT	PLOT	SCALE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR,ETC.)	%M	LL	PI	CLASS.
	0.0-2.0		////////// ////////// //////////		**Clay**, Brown, Moist, Gravel, Cobbles				
	2.0-3.5		***//*** ***//*** ***//***	2.5	**Sand**, Clayey, Brown, Moist, Gravel, Cobbles				
	3.5-5.0		***--*** ***--*** ***--*** ***--***	5.0	**Sand**, Silty, Brown, Damp, Gravel, Cobbles				
	5.0-9.5		********		**Sand**, Fine to Coarse,.Tan, Damp, Wet				
	5.3'		******** ******** ******** ******** ******** ******** ********	7.5	Water				
	9.5			10.0	TD Set 2" Well @ 9.5' 5' of Screen, 5' of Riser Top of Sand 3.5' Top of Bentonite 1.4'				
				15.0					
				20.0					

SIZE & TYPE OF BORING: 4 1/4" ID HOLLOW STEMMED AUGER — LOGGED BY: KMM

\\Phoenix\Projects\5127003\River Terrace VCM\River Terrace Work Plan\Wor

Sheet: 4 OF 5
Bore Point: RiverTerrace
Water Elevation: 7.5'
Boring No.: TP-12

Precision Engineering, Inc.
P.O. Box 422
Las Cruces, NM 88004
505-523-7674

File #: 05-038
Site: Bloomfield
Giant Refining
Elevation: EXISTING
Date: 4/5/2005

Log of Test Borings

LAB #	DEPTH	BLOW COUNT	PLOT	SCALE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR,ETC.)	%M	LL	PI	CLASS.
	0.0-3.0		***--*** ***--*** ***--*** ***--*** ***--***	2.5	**Sand**, Very Fine to Fine, Slightly Silty, Brown, Gravel, Cobbles, Moist				
	3.0-4.5		////**/// ////**/// ////**///		**Clay**, Sandy, Very Fine, Brown, Some Gravel/ Cobbles, Moist				
	4.5-9.0		***//*** ***//*** ***//*** ***//*** ***//*** ***//*** ***//***	5.0 7.5	**Sand**, Very Fine to Fine, Clayey, Brown, Moist, Some Gravel				
	9.0-13.0		******** ******** ******** ******** ******** ******** ******** ******** ******** ******** ********	10.0	Water **Sand**, Fine to Coarse, Tan, Water Bearing				
	13.0			15.0 20.0	TD Set 2" Well @ 12.0' 5' of Screen, 8' of Riser Top of Sand 5'2" Top of Bentonite 4'2"				

SIZE & TYPE OF BORING: 4 1/4" ID HOLLOW STEMMED AUGER LOGGED BY: KMM

\\Phoenix\Projects\5127003\River Terrace VCM\River Terrace Work Plan\Wor

Sheet: 5 OF 5
Bore Point: River Terrace
Water Elevation: 6.0'
Boring No.: TP-13

Precision Engineering, Inc.
P.O. Box 422
Las Cruces, NM 88004
505-523-7674

File #: 05-038
Site: Bloomfield
Giant Refining
Elevation: EXISTING
Date: 4/5/2005

Log of Test Borings

LAB #	DEPTH	BLOW COUNT	PLOT	SCALE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR,ETC.)	%M	LL	PI	CLASS.
	0.0-1.5		*-------* *-------*		**Silt**, Sandy, Very Fine to Fine, Brown, Moist, Gravel, Cobbles				
	1.5-8.5		***//*** ***//*** ***//*** ***//*** ***//*** ***//*** ***//*** ***//*** ***//*** ***//***	2.5 5.0	**Sand**, Very Fine, Clayey, Brown, Moist, Gravel, Cobbles				
	6.0		***//*** ***//*** ***//*** ***//***	7.5	Water Level 6.0'				
	8.5-14.0		//////// //////// //////// //////// //////// //////// //////// //////// //////// //////// //////// //////// ////////	10.0	**Clay**, Grey/Black, Moist, No Hydrocarbon Odor				
	14.0			15.0 20.0	TD Set 2"' Well @ 14.5' 10' of Screen, 5' of Riser Top of Sand 2.5' Top of Bentonite 1.5'				

SIZE & TYPE OF BORING: 4 1/4" ID HOLLOW STEMMED AUGER LOGGED BY: KMM

\\Phoenix\Projects\5127003\River Terrace VCM\River Terrace Work Plan\Wor

APPENDIX B

Laboratory Reports for April 2005
Groundwater Samples from TP-9 through TP-13

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

April 19, 2005

Cindy Hurtado
San Juan Refining
#50 CR 4990
Bloomfield, NM 87413
TEL: (505) 632-4161
FAX (505) 632-3911

RE: River Terrace Investigation TP9-TP13 Order No.: 0504087

Dear Cindy Hurtado:

Hall Environmental Analysis Laboratory received 5 samples on 4/8/2005 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Client Sample ID: TP-9
Lab Order: 0504087
Collection Date: 4/7/2005 2:00:00 PM
Project: River Terrace Investigation TP9-TP13
Lab ID: 0504087-01
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: SCC
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/13/2005 8:22:05 AM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/13/2005 8:22:05 AM
Surr: DNOP	113	58-140		%REC	1	4/13/2005 8:22:05 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	0.67	0.050		mg/L	1	4/8/2005 11:26:46 PM
Surr: BFB	103	78.3-120		%REC	1	4/8/2005 11:26:46 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	4/8/2005 11:26:46 PM
Benzene	3.3	0.50		µg/L	1	4/8/2005 11:26:46 PM
Toluene	5.0	0.50		µg/L	1	4/8/2005 11:26:46 PM
Ethylbenzene	7.0	0.50		µg/L	1	4/8/2005 11:26:46 PM
Xylenes, Total	22	0.50		µg/L	1	4/8/2005 11:26:46 PM
Surr: 4-Bromofluorobenzene	116	83.3-121		%REC	1	4/8/2005 11:26:46 PM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT:	San Juan Refining	**Client Sample ID:**	TP-10
Lab Order:	0504087	**Collection Date:**	4/7/2005 2:20:00 PM
Project:	River Terrace Investigation TP9-TP13		
Lab ID:	0504087-02	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: **SCC**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/13/2005 9:22:37 AM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/13/2005 9:22:37 AM
Surr: DNOP	90.4	58-140		%REC	1	4/13/2005 9:22:37 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/8/2005 11:56:47 PM
Surr: BFB	101	78.3-120		%REC	1	4/8/2005 11:56:47 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	4/11/2005 1:01:27 PM
Benzene	ND	0.50		µg/L	1	4/11/2005 1:01:27 PM
Toluene	ND	0.50		µg/L	1	4/11/2005 1:01:27 PM
Ethylbenzene	ND	0.50		µg/L	1	4/11/2005 1:01:27 PM
Xylenes, Total	0.56	0.50		µg/L	1	4/11/2005 1:01:27 PM
Surr: 4-Bromofluorobenzene	98.6	83.3-121		%REC	1	4/11/2005 1:01:27 PM

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Client Sample ID: TP-11
Lab Order: 0504087
Collection Date: 4/7/2005 1:00:00 PM
Project: River Terrace Investigation TP9-TP13
Lab ID: 0504087-03
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: **SCC**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/13/2005 9:52:33 AM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/13/2005 9:52:33 AM
Surr: DNOP	124	58-140		%REC	1	4/13/2005 9:52:33 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	0.082	0.050		mg/L	1	4/9/2005 12:26:49 AM
Surr: BFB	101	78.3-120		%REC	1	4/9/2005 12:26:49 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	4/9/2005 12:26:49 AM
Benzene	1.5	0.50		µg/L	1	4/9/2005 12:26:49 AM
Toluene	1.6	0.50		µg/L	1	4/9/2005 12:26:49 AM
Ethylbenzene	ND	0.50		µg/L	1	4/9/2005 12:26:49 AM
Xylenes, Total	2.7	0.50		µg/L	1	4/9/2005 12:26:49 AM
Surr: 4-Bromofluorobenzene	103	83.3-121		%REC	1	4/9/2005 12:26:49 AM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Client Sample ID: TP-12
Lab Order: 0504087
Collection Date: 4/7/2005 1:20:00 PM
Project: River Terrace Investigation TP9-TP13
Lab ID: 0504087-04
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: SCC
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/13/2005 10:22:31 AM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/13/2005 10:22:31 AM
Surr: DNOP	112	58-140		%REC	1	4/13/2005 10:22:31 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/9/2005 12:56:46 AM
Surr: BFB	99.2	78.3-120		%REC	1	4/9/2005 12:56:46 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	4/9/2005 12:56:46 AM
Benzene	0.75	0.50		µg/L	1	4/9/2005 12:56:46 AM
Toluene	0.80	0.50		µg/L	1	4/9/2005 12:56:46 AM
Ethylbenzene	ND	0.50		µg/L	1	4/9/2005 12:56:46 AM
Xylenes, Total	1.0	0.50		µg/L	1	4/9/2005 12:56:46 AM
Surr: 4-Bromofluorobenzene	103	83.3-121		%REC	1	4/9/2005 12:56:46 AM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Client Sample ID: TP-13
Lab Order: 0504087
Collection Date: 4/7/2005 2:45:00 PM
Project: River Terrace Investigation TP9-TP13
Lab ID: 0504087-05
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015B: DIESEL RANGE						Analyst: **SCC**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/13/2005 10:52:24 AM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	4/13/2005 10:52:24 AM
Surr: DNOP	128	58-140		%REC	1	4/13/2005 10:52:24 AM
EPA METHOD 8015B: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/9/2005 1:26:44 AM
Surr: BFB	102	78.3-120		%REC	1	4/9/2005 1:26:44 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	2.5		µg/L	1	4/9/2005 1:26:44 AM
Benzene	2.3	0.50		µg/L	1	4/9/2005 1:26:44 AM
Toluene	2.2	0.50		µg/L	1	4/9/2005 1:26:44 AM
Ethylbenzene	0.55	0.50		µg/L	1	4/9/2005 1:26:44 AM
Xylenes, Total	3.6	0.50		µg/L	1	4/9/2005 1:26:44 AM
Surr: 4-Bromofluorobenzene	101	83.3-121		%REC	1	4/9/2005 1:26:44 AM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Work Order: 0504087
Project: River Terrace Investigation TP9-TP13

QC SUMMARY REPORT
Method Blank

Sample ID MB-7741	Batch ID: 7741	Test Code: SW8015	Units: mg/L	Analysis Date 4/13/2005 5:23:14 AM	Prep Date 4/11/2005
Client ID:		Run ID: FID(17A) 2_050412A		SeqNo: 351425	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1									
Motor Oil Range Organics (MRO)	ND	5									
Surr: DNOP	1.079	0	1	0	108	58	140	0			

Sample ID Reagent Blank 5m	Batch ID: R15047	Test Code: SW8015	Units: mg/L	Analysis Date 4/8/2005 8:25:08 AM	Prep Date
Client ID:		Run ID: PIDFID_050408A		SeqNo: 350502	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.05									
Surr: BFB	19.39	0	20	0	96.9	78.3	120	0			

Sample ID Reagent Blank 5m	Batch ID: R15061	Test Code: SW8015	Units: mg/L	Analysis Date 4/11/2005 9:28:42 AM	Prep Date
Client ID:		Run ID: PIDFID_050411A		SeqNo: 350886	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.05									
Surr: BFB	18.94	0	20	0	94.7	78.3	120	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: San Juan Refining
Work Order: 0504087
Project: River Terrace Investigation TP9-TP13

QC SUMMARY REPORT
Method Blank

Sample ID Reagent Blank 5m Batch ID: R15047 Test Code: SW8021 Units: µg/L Analysis Date 4/8/2005 8:25:08 AM Prep Date
Client ID: Run ID: PIDFID_050408A SeqNo: 350499

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5									
Benzene	ND	0.5									
Toluene	ND	0.5									
Ethylbenzene	ND	0.5									
Xylenes, Total	ND	0.5									
Surr: 4-Bromofluorobenzene	19.22	0	20	0	96.1	83.3	121	0			

Sample ID Reagent Blank 5m Batch ID: R15061 Test Code: SW8021 Units: µg/L Analysis Date 4/11/2005 9:28:42 AM Prep Date
Client ID: Run ID: PIDFID_050411A SeqNo: 350885

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	2.5									
Benzene	ND	0.5									
Toluene	ND	0.5									
Ethylbenzene	ND	0.5									
Xylenes, Total	ND	0.5									
Surr: 4-Bromofluorobenzene	19.9	0	20	0	99.5	83.3	121	0			

7/12

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Work Order: 0504087
Project: River Terrace Investigation TP9-TP13

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID 0504087-02a ms	Batch ID: R15047	Test Code: SW8015	Units: mg/L	Analysis Date 4/9/2005 2:56:36 AM	Prep Date
Client ID: TP-10		Run ID: PIDFID_050408A		SeqNo: 350590	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.5284	0.05	0.5	0.0158	103	82.6	114	0			
Surr: BFB	24.25	0	25	0	97.0	78.3	120	0			

Sample ID 0504087-02a msd	Batch ID: R15047	Test Code: SW8015	Units: mg/L	Analysis Date 4/9/2005 3:26:38 AM	Prep Date
Client ID: TP-10		Run ID: PIDFID_050408A		SeqNo: 350593	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.4692	0.05	0.5	0.0158	90.7	82.6	114	0.5284	11.9	15	
Surr: BFB	23.55	0	25	0	94.2	78.3	120	24.25	2.95	0	

Sample ID 0504087-01a ms	Batch ID: R15047	Test Code: SW8021	Units: µg/L	Analysis Date 4/9/2005 1:56:44 AM	Prep Date
Client ID: TP-9		Run ID: PIDFID_050408A		SeqNo: 350560	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	28.94	2.5	40	0	72.3	64.5	133	0			
Benzene	24.18	0.5	20	3.293	104	88.7	114	0			
Toluene	25.66	0.5	20	4.956	104	89.3	112	0			
Ethylbenzene	27.64	0.5	20	7.037	103	88.6	113	0			
Xylenes, Total	85.02	0.5	60	22.34	104	89.4	112	0			
Surr: 4-Bromofluorobenzene	25.41	0	24	0	106	83.3	121	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: San Juan Refining
Work Order: 0504087
Project: River Terrace Investigation TP9-TP13

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Sample ID 0504087-01a msd Batch ID: R15047 Test Code: SW8021 Units: µg/L Analysis Date 4/9/2005 2:26:39 AM Prep Date
Client ID: TP-9 Run ID: PIDFID_050408A SeqNo: 350570

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	28.3	2.5	40	0	70.7	64.5	133	28.94	2.25	28	
Benzene	23.47	0.5	20	3.293	101	88.7	114	24.18	3.00	27	
Toluene	25.25	0.5	20	4.956	101	89.3	112	25.66	1.61	19	
Ethylbenzene	27.72	0.5	20	7.037	103	88.6	113	27.64	0.284	10	
Xylenes, Total	82.62	0.5	60	22.34	100	89.4	112	85.02	2.86	13	
Surr: 4-Bromofluorobenzene	24.62	0	24	0	103	83.3	121	25.41	3.15	0	

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Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

Hall Environmental Analysis Laboratory

Date: *19-Apr-05*

CLIENT: San Juan Refining
Work Order: 0504087
Project: River Terrace Investigation TP9-TP13

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID LCS-7741	Batch ID: 7741	Test Code: SW8015	Units: mg/L	Analysis Date 4/13/2005 5:53:08 AM	Prep Date 4/11/2005
Client ID:		Run ID: FID(17A) 2_050412A		SeqNo: 351426	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.687	1	5	0	134	81.2	149	0			

Sample ID LCSD-7741	Batch ID: 7741	Test Code: SW8015	Units: mg/L	Analysis Date 4/13/2005 5:12:01 PM	Prep Date 4/11/2005
Client ID:		Run ID: FID(17A) 2_050412A		SeqNo: 351565	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.592	1	5	0	112	81.2	149	6.687	17.8	23	

Sample ID GRO lcs 2.5ug	Batch ID: R15047	Test Code: SW8015	Units: mg/L	Analysis Date 4/9/2005 3:56:36 AM	Prep Date
Client ID:		Run ID: PIDFID_050408A		SeqNo: 350595	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.4986	0.05	0.5	0	99.7	82.6	114	0			

Sample ID GRO lcs 2.5ug	Batch ID: R15061	Test Code: SW8015	Units: mg/L	Analysis Date 4/12/2005 1:05:11 AM	Prep Date
Client ID:		Run ID: PIDFID_050411A		SeqNo: 350892	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.4896	0.05	0.5	0	97.9	82.6	114	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

J

CLIENT: San Juan Refining
Work Order: 0504087
Project: River Terrace Investigation TP9-TP13

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID BTEX lcs 100ng | Batch ID: R15047 | Test Code: SW8021 | Units: µg/L | Analysis Date 4/8/2005 7:55:35 PM | Prep Date
Client ID: | Run ID: PIDFID_050408A | SeqNo: 350578

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	36.12	2.5	40	0	90.3	64.5	133	0			
Benzene	19.64	0.5	20	0	98.2	88.7	114	0			
Toluene	19.71	0.5	20	0	98.6	89.3	112	0			
Ethylbenzene	20.82	0.5	20	0	104	88.6	113	0			
Xylenes, Total	58.33	0.5	60	0	97.2	89.4	112	0			

Sample ID BTEX lcs 100ng | Batch ID: R15061 | Test Code: SW8021 | Units: µg/L | Analysis Date 4/11/2005 11:04:48 PM | Prep Date
Client ID: | Run ID: PIDFID_050411A | SeqNo: 350889

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	38.6	2.5	40	0	96.5	64.5	133	0			
Benzene	21.07	0.5	20	0	105	88.7	114	0			
Toluene	20.71	0.5	20	0	104	89.3	112	0			
Ethylbenzene	22.01	0.5	20	0	110	88.6	113	0			
Xylenes, Total	62.29	0.5	60	0	104	89.4	112	0			

11/12

Qualifiers: ND - Not Detected at the Reporting Limit | S - Spike Recovery outside accepted recovery limits | B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits | R - RPD outside accepted recovery limits

Hall Environmental Analysis Laboratory

Sample Receipt Checklist

Client Name SJR | Date and Time Received: 4/8/2005

Work Order Number 0504087 | Received by GLS

Checklist completed by _____ 4-8-05
Signature | Date

Matrix | Carrier name UPS

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	

Container/Temp Blank temperature? 3° *4° C ± 2 Acceptable* If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

CHAIN-OF-CUSTODY RECORD

QA / QC Package:
Std ☐ Level 4 ☐
Other: _____

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: San Juan Refining

Project Name: River Terrace Investigation TP9 — TP-13

Address: #50 Rd 4990 Bloomfield, NM 87413

Project #:

Project Manager:

Phone #: 505-632-4161

Sampler: Cindy Hurtado / Angela Folk

Fax #: 505-632-3911

Sample Temperature: 3

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No. 0504086	BTEX + ~~MTBE~~ + ~~TMB's~~ (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles or Headspace (Y or N)
4/07/05	2pm	H_2O	TP-9	4-VOA	X			-1	X		X														
	220pm		TP-10	4-VOA	X			-2	X		X														
	1pm		TP-11	4-VOA	X			-3	X		X														
	120pm		TP-12	4-VOA	X			-4	X		X														
	2pm		TP-13	4-VOA	X			-5	X		X														

Date	Time	Relinquished By: (Signature)	Received By: (Signature)	Remarks:
4/07/05	330pm	Cindy Hurtado		
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)	4/8/05 1255

APPENDIX C

VCM Equipment Data Sheets

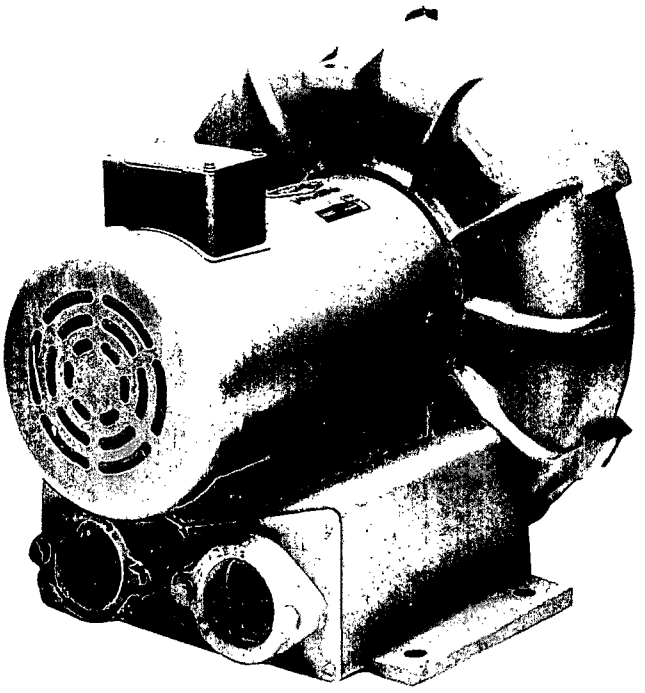
DR 808 & CP 808 Regenerative Blower

FEATURES
- Manufactured in the USA – ISO 9001 compliant
- CE compliant – Declaration of Conformity on file
- Maximum flow: 350 SCFM
- Maximum pressure: 116 IWG
- Maximum vacuum: 6.9" Hg (93.9 IWG)
- Standard motor: 7.5 HP, TEFC
- Cast aluminum blower housing, impeller & cover; cast iron flanges (threaded)
- UL & CSA approved motor with permanently sealed ball bearings
- Inlet & outlet internal muffling
- Quiet operation within OSHA standards

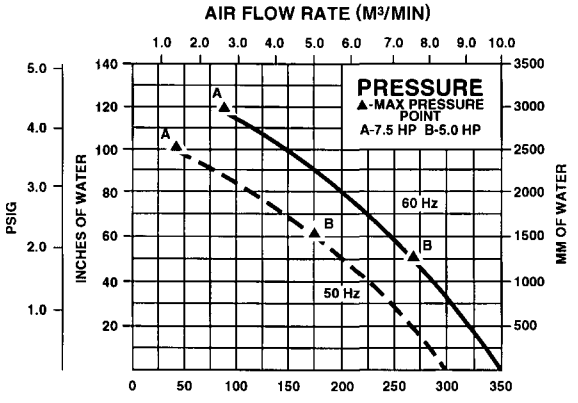
MOTOR OPTIONS
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

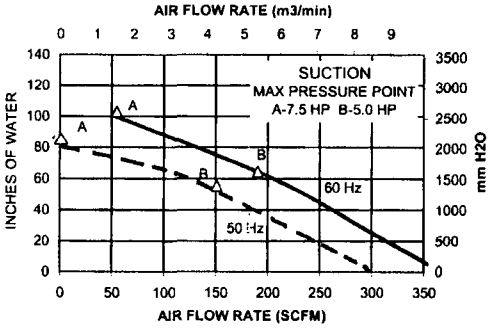
BLOWER OPTIONS
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

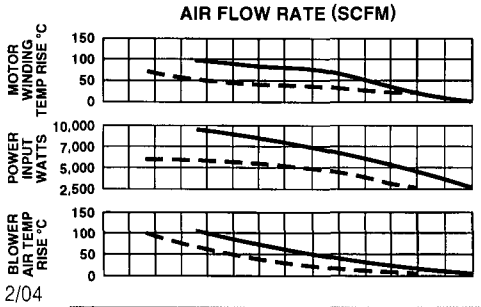
ACCESSORIES (See Catalog Accessory Section)
- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges & relief valves
- Switches – air flow, pressure, vacuum or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package

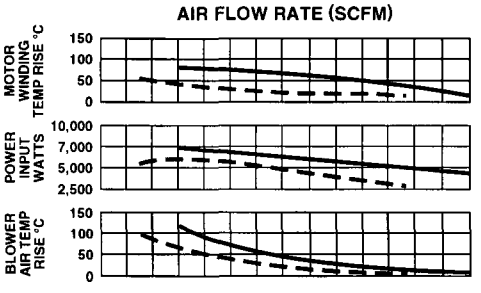


BLOWER PERFORMANCE AT STANDARD CONDITIONS





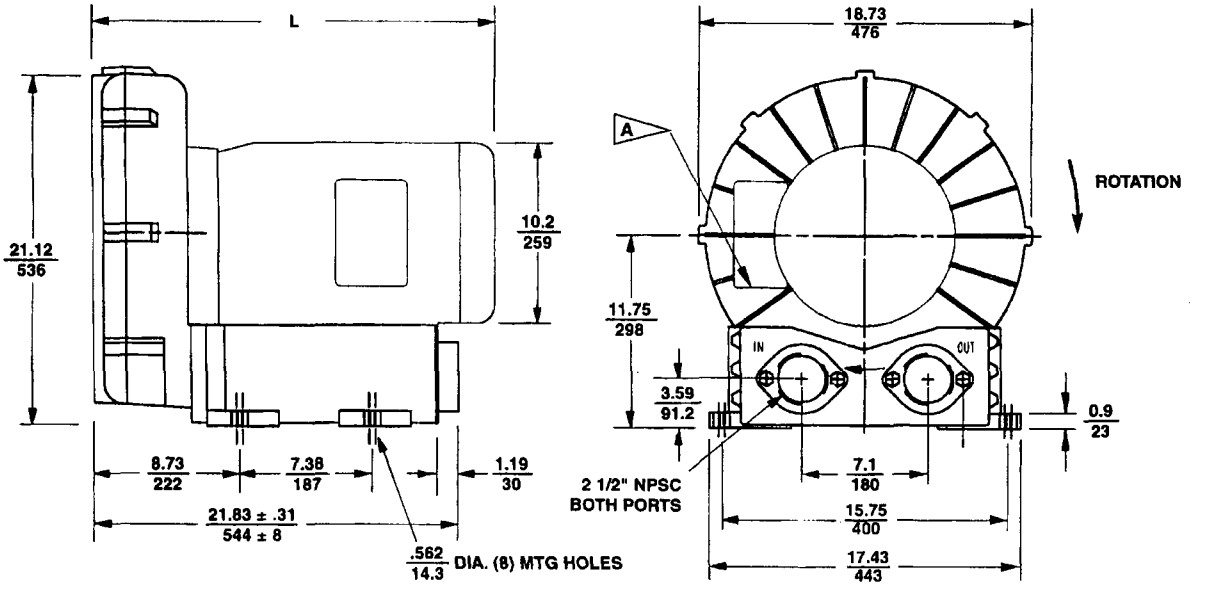




Rev. 2/04

AMETEK Technical and Industrial Products, Kent, OH 44240 • e mail: rotronindustrial@ametek.com • internet: www.ametektmd.com

DR 808 & CP 808 Regenerative Blower



DIMENSIONS: IN / MM
TOLERANCES: .XX ± .1 / 2.5
(UNLESS OTHERWISE NOTED)

MODEL	L (IN)	L (MM)
DR808AY72MX	23.23	590
DR808AY86MX	22.73	577
DR808D89MX	21.08	535
CP808FG72MXLR	22.74	578

Scale CAD drawing available upon request.

A TERMINAL BOX CONNECTION 1.06 INCH DIAMETER ON TEFC MOTORS .75 NPT ON XP MOTORS

SPECIFICATIONS

MODEL	DR808AY72MX	DR808AY86MX	DR808D89MX	CP808FG72MXLR	HiE808AY72MX
Part No.	038722	038724	038725	038734	038728
Motor Enclosure – Shaft Material	TEFC – **CS**	TEFC – **CS**	TEFC – **CS**	ChemTEFC – **SS**	TEFC – **CS**
Horsepower	7.5	7.5	5.0	Same as DR808AY72MX – 038722 except add Chemical Processing (CP) features from catalog inside front cover	Same as DR808AY72MX – 038722 except add High Efficiency motor
Voltage [1]	230/460	575	230/460		
Phase – Frequency [1]	Three - 60 Hz	Three - 60 Hz	Three - 60 Hz		
Insulation Class [2]	F	F	F		
NEMA Rated Motor Amps	22.2/11.1	7.2	17.3-15.6/7.8		
Service Factor	1.15	1.15	1.15		
Locked Rotor Amps	120/60	60	152/76		
Max. Blower Amps [3]	27.0/13.5	10.8	17.0/8.5		
Recommended NEMA Starter Size	1/1	1	1/0		
Shipping Weight	294 lb (134 kg)	262 lb (119 kg)	294 lb (134 kg)		

[1] Rotron motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: **208-230/415-460 VAC-3 ph-60 Hz** and **190-208/380-415 VAC-3 ph-50 Hz**. Our dual voltage 1 phase motors are factory tested and certified to operate on both: **104-115/208-230 VAC-1 ph-60 Hz** and **100-110/200-220 VAC-1 ph-50 Hz**. All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

[2] Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

[3] Maximum blower amps corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

Specifications subject to change without notice. Please consult your Local Field Sales Engineer for specification updates. Rev. 2/04

DATA SHEET

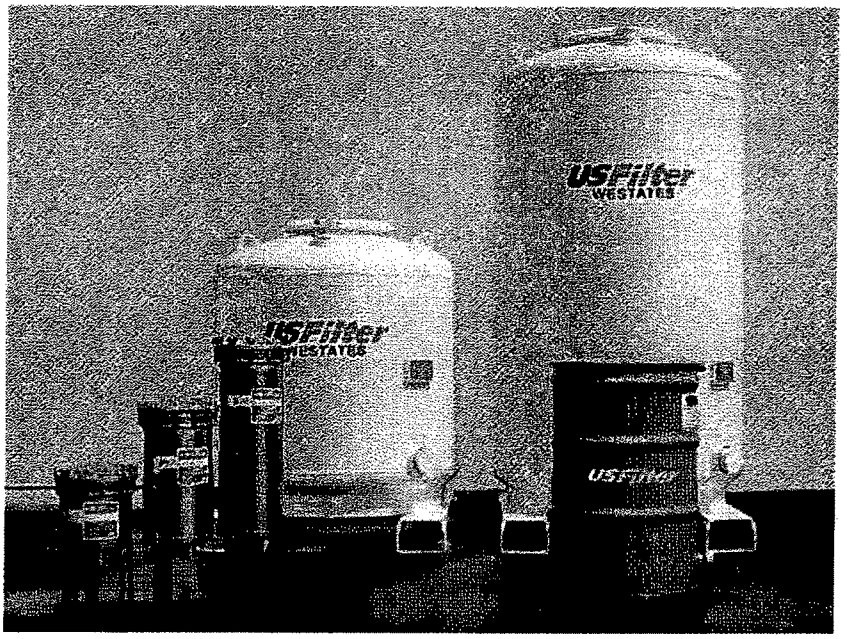
USFILTER WESTATES CARBON ASC-SERIES LOW PRESSURE LIQUID PHASE ADSORBERS

Benefits and Design Features

- *Rugged carbon steel construction; internally/externally welded seams*
- *SSPC-SP5 surface preparation, fusion bonded epoxy internal lining; rust preventative/urethane exterior coat. (ASC-1000/2000)*
- *Approved for the transport of hazardous spent carbon*
- *ASC-1000/2000 can be easily moved with a forklift*
- *Adapters are available to reduce the inlet/outlet to 1" FNPT (ASC-2000) and 2" FNPT (ASC-1000/2000)*
- *Cartridge and bag prefilters available*
- *ASC-1000/2000's available for rental or purchase*

Piping Manifold (Optional)

- *2"/3" sch 80 PVC piping and valves (optional carbon steel and stainless steel piping)*
- *Series or parallel operation.*
- *Clean utility water connection for manual backflush.*
- *Sampling ports and pressure gauges*
- *Flexible hoses with Kamlock fittings allow easy installation and removal during service exchange operations.*



ASC-Series Adsorbers are designed to provide uniform water flow for consistent treatment and to ensure efficient carbon usage. The ASC-Series Adsorbers can be cost effectively used in applications including:

- Groundwater remediation
- Wastewater filtration
- Pilot testing
- Leachate treatment
- Dechlorination
- Spill cleanup

Installation, Start Up and Operation

The ASC-Series Adsorbers are shipped filled with dry activated carbon that must be properly wetted and deaerated prior to use.

Your USFilter sales representative can assist with details on installation, preferred operating conditions and carbon usage calculations using our extensive isotherm database.

At the time of purchase or rental of the ASC-Series Adsorbers, arrangements should be made for the reactivation of the spent carbon. USFilter Westates will provide instructions and assistance to obtain acceptance of RCRA or non-RCRA spent carbon for reactivation.

ASC-Series Adsorbers must be drained and the inlet/outlet plugged prior to shipment. Spent carbon cannot be received until the acceptance process has been completed.

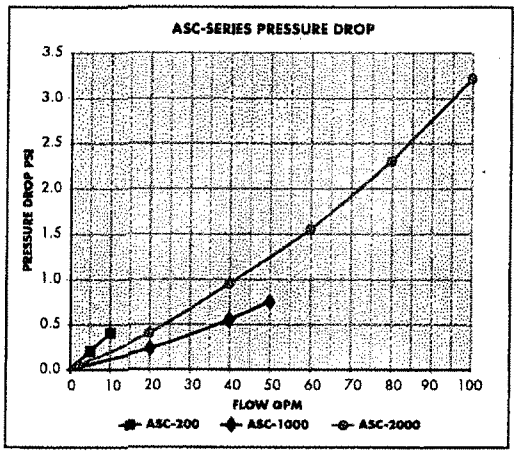
USFilter

DATA SHEET

ASC-SERIES LOW PRESSURE LIQUID PHASE ADSORBERS

SPECIFICATIONS			
	ASC-200	**ASC-1000**	**ASC-2000**
Dimensions, diameter x overall height	22" x 34"	48" x 56"	48" x 96"
Vessel Construction	Carbon Steel	Carbon Steel	Carbon Steel
Inlet/Outlet Connection	2" FNPT/2"MNPT	4" FNPT	4" FNPT
Manway	Top	18"	16"
Internal Piping	PVC	PVC	PVC
Interior Coating	Epoxy	Fusion Bonded Epoxy	Fusion Bonded Epoxy
Exterior Coating	Enamel	Epoxy/Urethane	Epoxy/Urethane
Carbon Bed Volume (cu.ft.)	6.8	34	68
Cross Section (sq.ft.)	2.6	12.3	12.3
Vessel Weight (lbs.):			
Shipping (carbon)	250	1890	3190
Operating (approx)	500	4280	7250
Flow, gpm (max)	10	50	100
Pressure, psig (max)	3	25	25
Temperature °F. (max)	140°	140°	140°
Pounds of Carbon	200	1000	2000
Contact time @ max flow/min:	5.1	5.1	5.2
Backflush rates (GPM)	15	75	75

For detailed specifications or dimensional information or drawings, contact your local USFilter Westates sales representative.



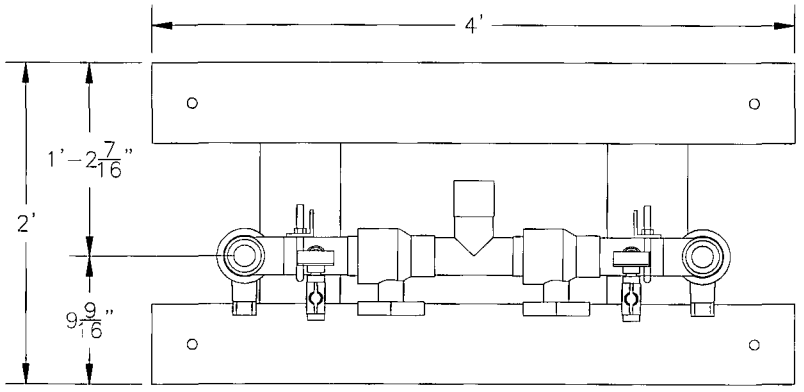
USFilter
Westates
Customer and
Technical Service Network:

Gulf Coast Region 800.659.1723
(Louisiana) 225.744.3153
Southwest Region 800.659.1771
Mid-Atlantic Region 800.659.1717
Midwest Region 708.345.7290
Northwest Region 800.659.1718
Southeast Region 225.744.3153
New England Region 800.659.1717

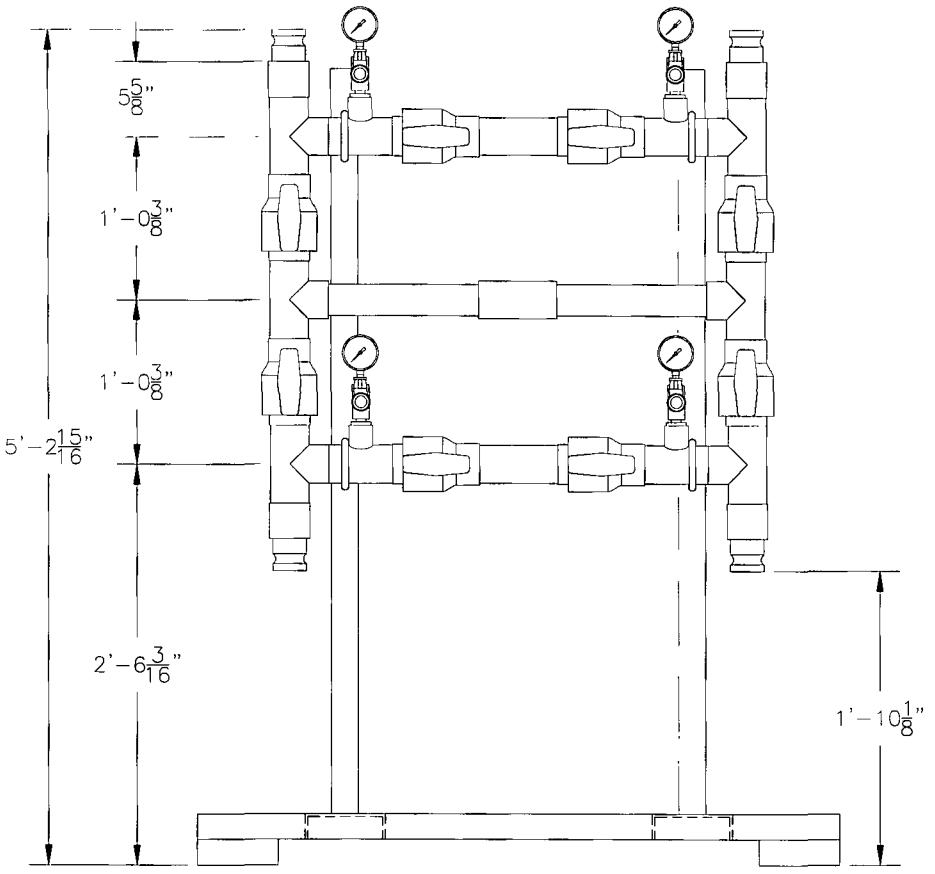
www.usfilter.com

WS-AQSB-DS-0704

SID: 2-0600-8X11A	INTL REF:



TOPVIEW



FRONT VIEW

DESIGNER	DATE
AJA	5-9-01
CHECKER	DATE
ENGINEER	DATE
MANAGER	DATE
FILE:	
SCALE: NONE	

TITLE 2" PVC MANIFOLD W/ PIPE RACK
GENERAL ASSEMBLY

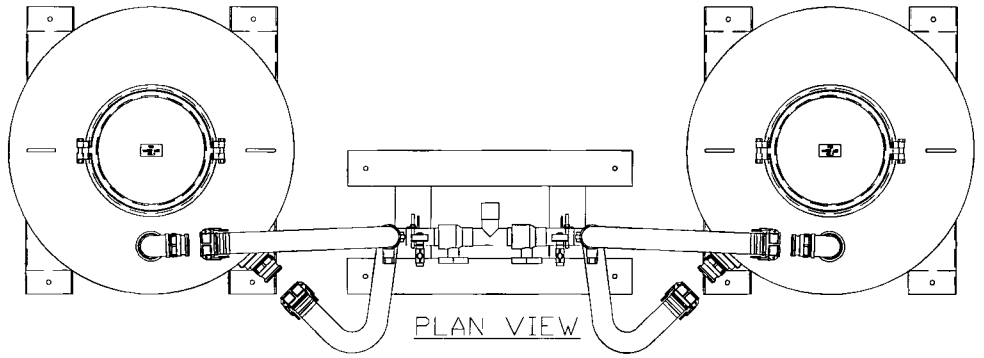
CLIENT

USFilter

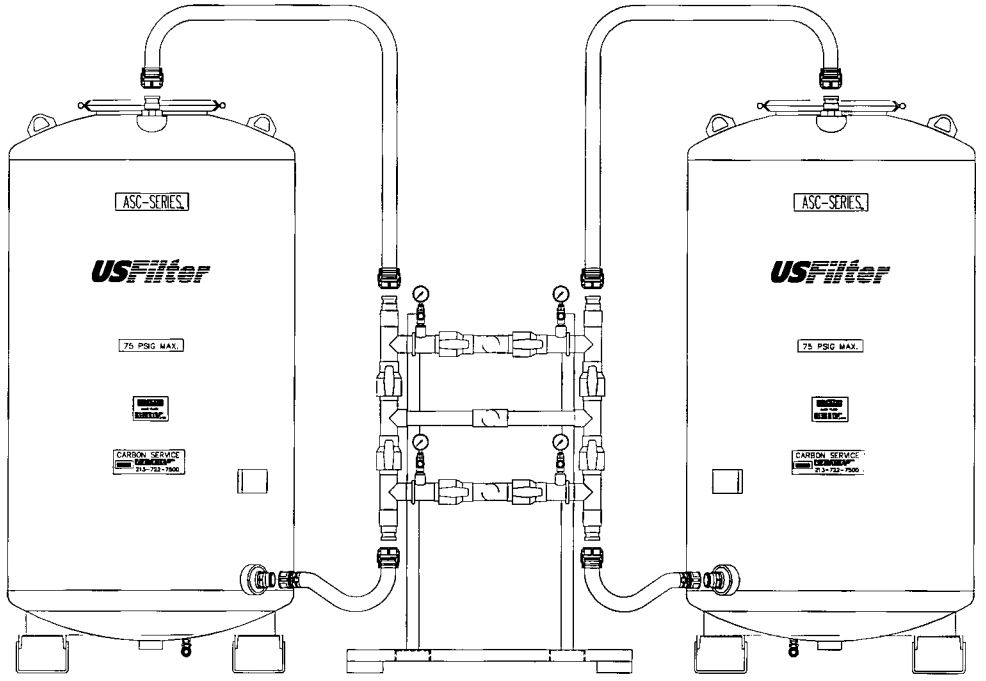
USFILTER/WESTATES
RED BLUFF, CA
1-800-795-2664

PROJECT	DRAWING	SHEET	REV
	2inPVCmanifoldASS.dwg	1 OF 1	

STD: 2-0600-8X11A | INTL REF:



PLAN VIEW



ELEVATION

DESIGNER	DATE
AJA	4-29-04
CHECKER	DATE
ENGINEER	DATE
MANAGER	DATE
FILE:	
SCALE: NONE	

TITLE ASC 2000 W/ 2" MANIFOLD

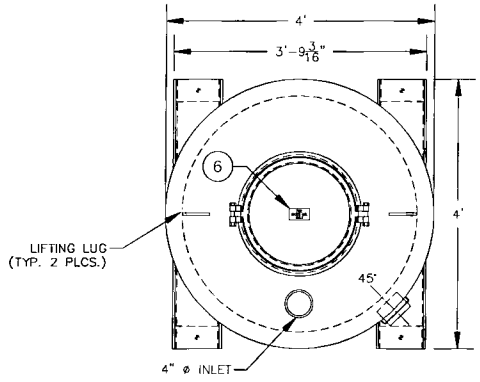
CLIENT

USFilter

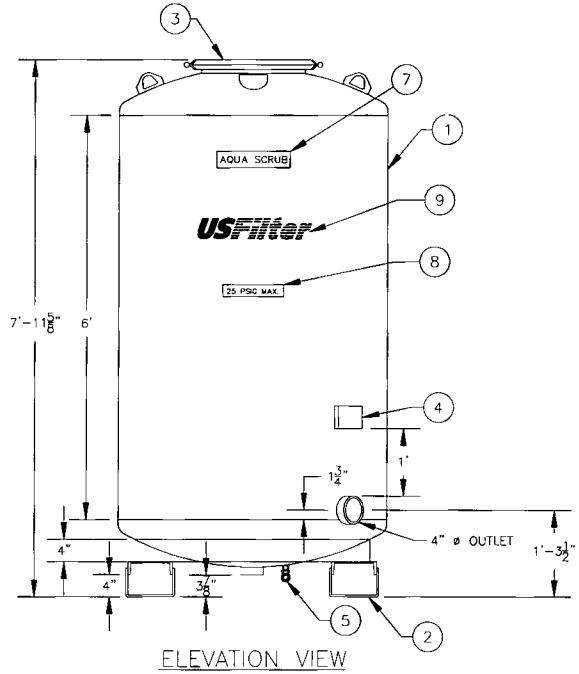
USFILTER/WESTATES
RED BLUFF, CA
1-800-795-2664

PROJECT	DRAWING	SHEET	REV
	ASC2000w2inMani	1 OF 1	

STD: 2-0600-8X11A | INTL REF:



PLAN VIEW



ELEVATION VIEW

LIST OF COMPONENTS

ITEM	QTY	DESCRIPTION
1	1	TANK ASSEMBLY
2	1	SKID ASSEMBLY
3	1	MANWAY ASSEMBLY, 18" DIA.
4	1	PLATE, I.D. & SERIAL NUMBER
5	1	BRONZE BALL VALVE, 3/4"
6	1	DECAL, "FOR WATER USE ONLY", 2 1/2" x 4 1/4"
7	2	DECAL, "AQUA-SCRUB", WHITE MYLAR
8	2	DECAL, "25 PSIG MAX", WHITE MYLAR
9	2	DECAL, "USFILTER/WESTATES" WHITE MYLAR W/BLUE LETTERS

NOTES:

1. DESIGN DATA:
   48" DIAMETER PRESSURE VESSEL-25 PSIG (MAX)
   @ 120°F-NOT ASME CODE STAMPED FOR WATER USE ONLY
   50 GPM
   2000 LBS. ACTIVATED CARBON

2. MATERIAL:
   HEADS - SA 36-HR
   SHELL - SA 36-HR
   SKID - SA 36-HR

3. SURFACE PREPARATION:
   INTERIOR:
   SANDBLAST: SSPC-SP-5 WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   COATING: 3M BRAND SCOTCHKOTE 134
   THICKNESS: 10-15 DFMT - COLOR: GREEN
   EXTERIOR:
   SANDBLAST: SSPC-SP-10 NEAR WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   PRIMER COAT: RUST PREVENTATIVE EPOXY PRIMER (CARBOLINE 893)
   THICKNESS: 4-6 DFMT - COLOR: RED
   FINISH COAT: HIGH BUILD POLYURETHANE (CARBOLINE 134HG)
   THICKNESS: 3-4 DFMT - COLOR: WHITE (FED. I.D.#17925)

4. LIFTING REQUIREMENTS:
   5200 LBS. MINIMUM RATING.
   EST. WEIGHTS:
   1190 LBS. - EMPTY VESSEL
   3190 LBS. - WITH CARBON
   7317 LBS. - OPERATING

DESIGNER	DATE
AJA	10-8-01
CHECKER	DATE
ENGINEER	DATE
MANAGER	DATE
FILE:	
SCALE: NONE	

TITLE ASC2000
GENERAL ASSEMBLY

CLIENT

USFILTER/WESTATES
RFD BLUFF, CA
1-800-795-2664

PROJECT	DRAWING	SHEET	REV
	ASC2000SHEET1.DWG	1 OF 5	

USFilter

Westates
11711 Reading Road
Red Bluff, CA 96080

Telephone (530) 527-2664
Facsimile (530) 527-8724

ASC2000

SPECIFICATION SUMMARY

ASC2000 Liquid Phase Adsorption Systems are designed to treat a wide range of contaminated process streams. With piping and valves can be configured for series, parallel, or vessel isolation flows. The adsorber is equipped with a carbon retention system capable of maximum flow rate of 100 gpm.

EACH VESSEL:

Vessel Diameter	48"
Side Shell Height	72"
Overall Height (Approx.)	8'
Total Empty Weight / Vessel	1190 lbs
Maximum Working Pressure	15 psig @ 150 °F
Manway at head	18" dia
Vessel Volume	660 gal.
Carbon Capacity	2000 lbs.
Carbon Bed Volume-Typical	68 Ft^3
Maximum Flow	100 gpm
Empty Bed Contact Time	5.2 min @ 100gpm
Material	Carbon Steel
Supports	Skid mounted
Lifting	Lifting Lugs
Seismic	Zone 4
Interior Surface Prep	SSPC-SP5
Interior Surface Coating	3M ScotchKote 134, 10-15 mil min dft
Exterior Surface Primer	Carboline 893 Rust Preventative Epoxy 3 mil min dft
Exterior Surface Coating	Carboline 134 High Solids Urethane 3mil min dft
Standard Color	White (Federal Standard 17925)

CONNECTIONS:

Influent and Effluent	4" FNPT (SS)

SCREEN:

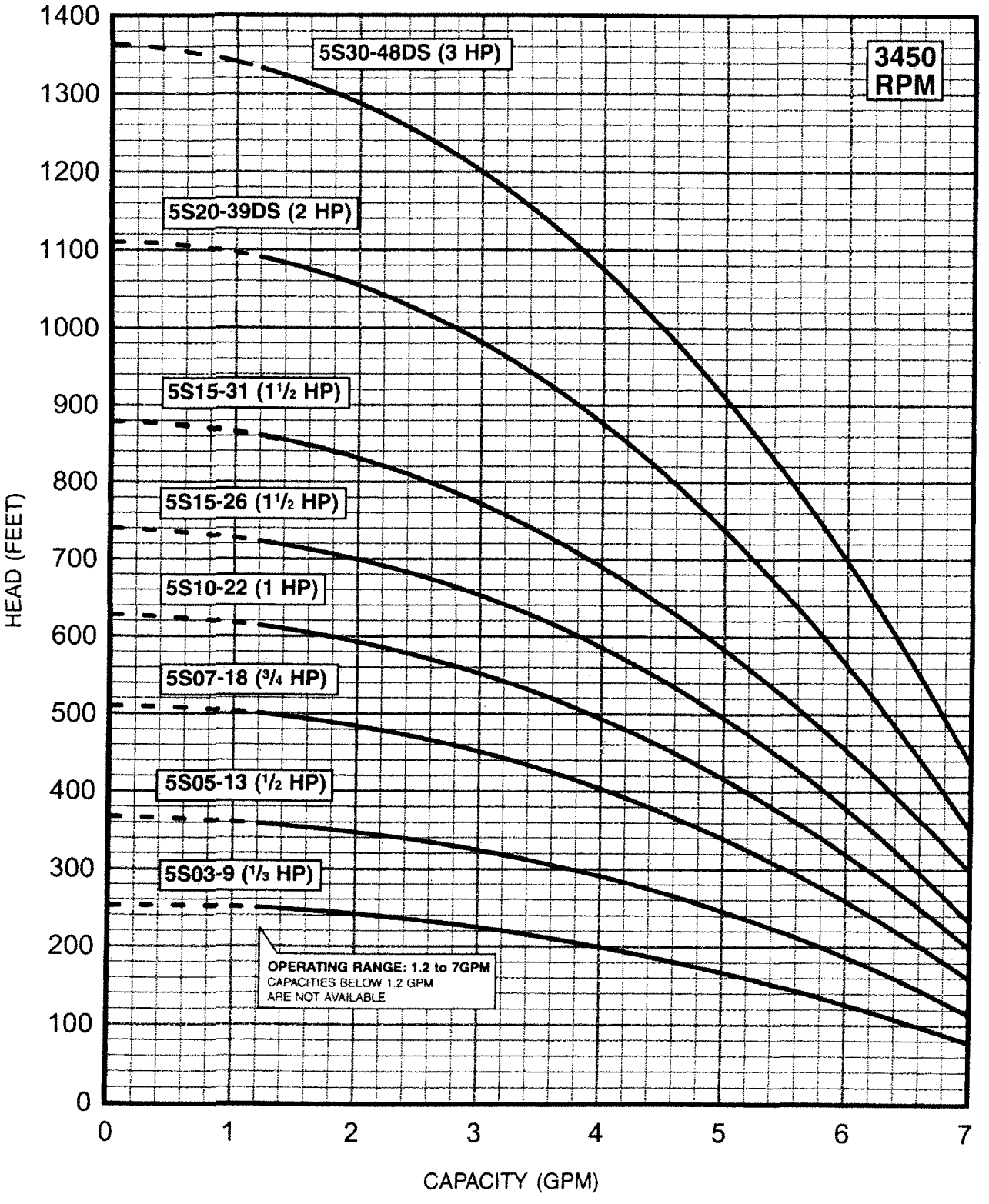
Lateral	4" x 36" PVC V-Wire

WEIGHT:

Shipping weight (vessel)	1,190 lb
Operating weight (vessel & carbon)	3,190 lb

PERFORMANCE CURVES 5 GPM MODEL 5S

FLOW RANGE: 1.2 - 7 GPM **OUTLET SIZE: 1" NPT** **NOMINAL DIA. 4"**



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
4" MOTOR STANDARD, 3450 RPM.

Performance conforms to ISO 9906. 1999 (E) Annex A
Minimum submergance is 2 feet.

DIMENSIONS AND WEIGHTS

MODEL NO.	FIG.	HP	MOTOR SIZE	DISCH. SIZE	DIMENSIONS IN INCHES					APPROX. SHIP WT.
					A	B	C	D	E	
5S03-9	A	1/3	4"	1" NPT	22.3	8.8	13.5	3.8	3.9	27
5S05-13	A	1/2	4"	1" NPT	26.4	9.5	16.9	3.8	3.9	31
5S07-18	A	3/4	4"	1" NPT	31.7	10.7	21.0	3.8	3.9	34
5S10-22	A	1	4"	1" NPT	36.1	11.8	24.3	3.8	3.9	42
5S15-26	A	1 1/2	4"	1" NPT	41.2	13.6	27.6	3.8	3.9	46
5S15-31	A	1 1/2	4"	1" NPT	47.1	13.6	33.5	3.8	3.9	58
5S20-39DS	A	2	4"	1" NPT	55.2	15.1	40.1	3.8	3.9	65
5S30-48DS	A	3	4"	1" NPT	70.0	20.6	45.8	3.8	3.9	90

NOTES: All models suitable for use in 4" wells
Weights include pump end with motor in lbs.

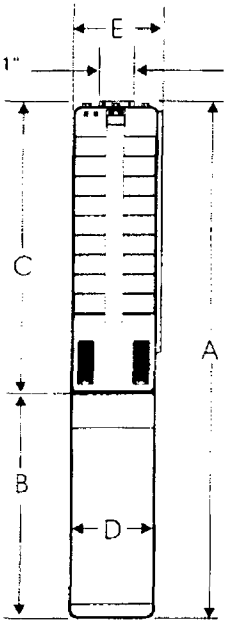


Fig. A

MATERIALS OF CONSTRUCTION

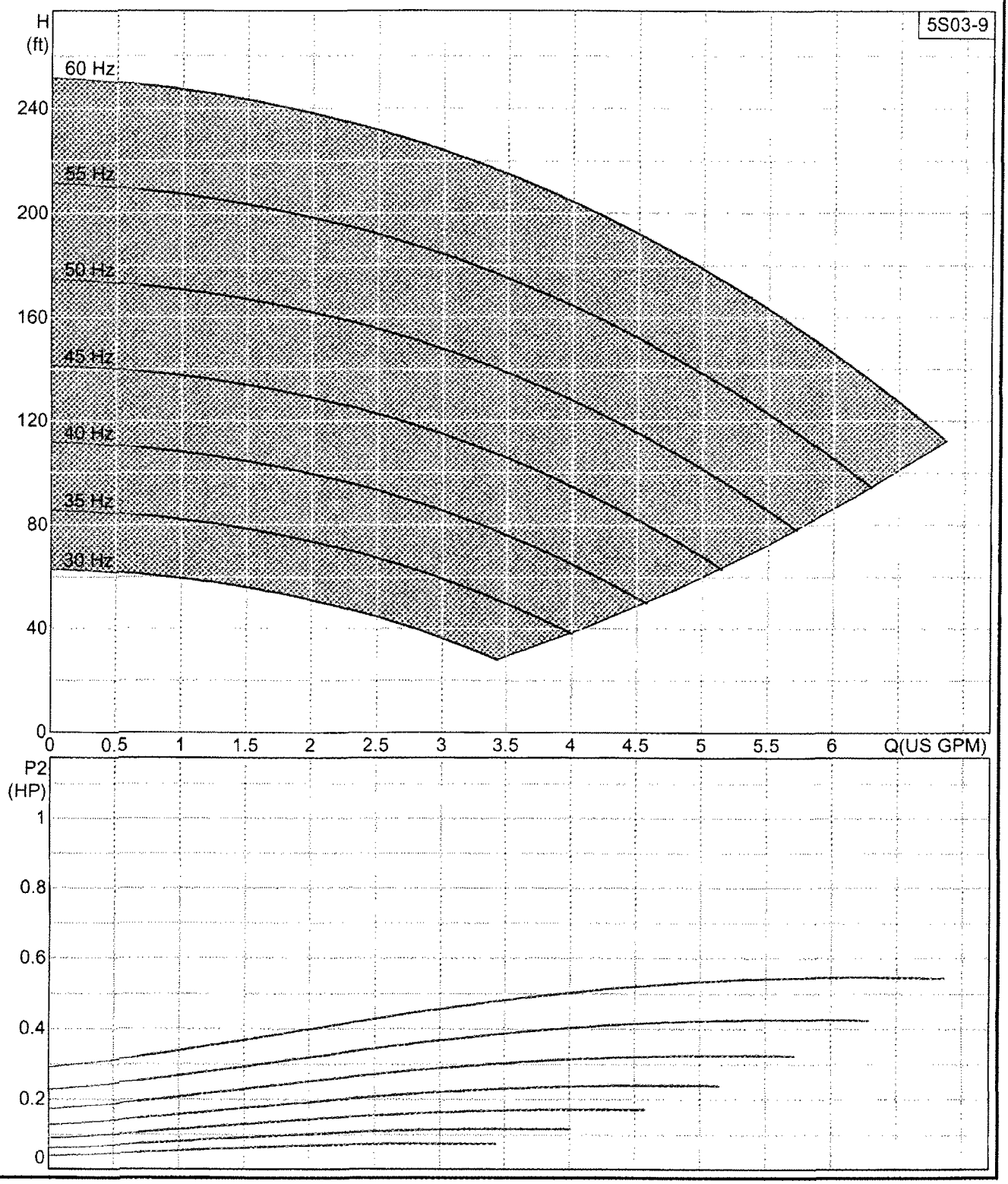
COMPONENT	SPLINED SHAFT (9-26 Stgs.)	CYLINDRICAL SHAFT (31-48 Stgs.)
Check Valve Housing	304 Stainless Steel	304 Stainless Steel
Check Valve	304 Stainless Steel	304 Stainless Steel
Diffuser Chamber	304 Stainless Steel	304 Stainless Steel
Impeller	304 Stainless Steel	304 Stainless Steel
Suction Interconnector	304 Stainless Steel	304 Stainless Steel
Inlet Screen	304 Stainless Steel	304 Stainless Steel
Pump Shaft	304 Stainless Steel	431 Stainless Steel
Straps	304 Stainless Steel	304 Stainless Steel
Cable Guard	304 Stainless Steel	304 Stainless Steel
Priming Inducer	304 Stainless Steel	316 Stainless Steel
Coupling	329/420/431 Stainless Steel	329/420/431 Stainless Steel
Check Valve Seat	NBR/304 Stainless Steel	NBR/316 Stainless Steel
Top Bearing	NBR/304 Stainless Steel	NBR/316 Stainless Steel
Impeller Seal Ring	NBR/PBT (Valox®)	NBR/PPS (Ryton®)
Intermediate Bearings	NBR	304 Stainless Steel
Shaft Washer	Not Required	LCP (Vectra®)
Split Cone	Not Required	304 Stainless Steel
Split Cone Nut	Not Required	316 Stainless Steel

NOTES: Specifications subject to change without notice.
Valox® is a registered trademark of General Electric Co.
Vectra® is a registered trademark of Hoechast Celanese Corporation.
Ryton® is a registered trademark of Phillips 66.

GRUNDFOS

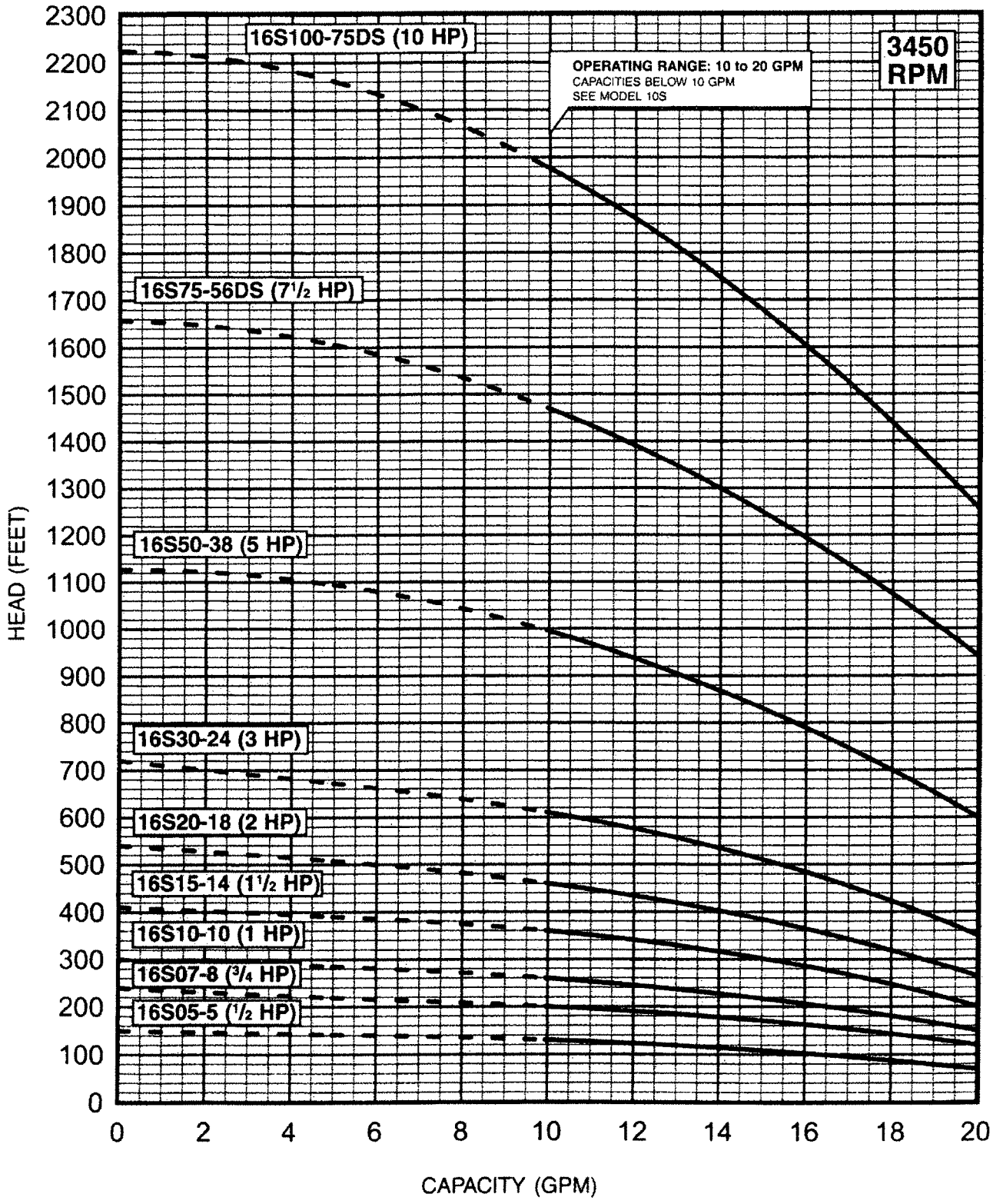
Company name:	GRAND CANYON PUMP & SUPPLY
Created by:	LEW WILLIAMS
Phone:	(602) 272-7867
Fax:	(602) 233-9225
Date:	7/14/2005

08010009 5S03-9



PERFORMANCE CURVES 16 GPM MODEL 16S

FLOW RANGE: 10 -20 GPM **OUTLET SIZE: 1¼ " NPT** **NOMINAL DIA. 4"**



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
4" MOTOR STANDARD, .5 -5 HP/3450 RPM.
6" MOTOR STANDARD,7.5 -10HP/3450 RPM.

Performance conforms to ISO 9906. 1999 (E) Annex A
Minimum submergance is 2 feet.

DIMENSIONS AND WEIGHTS

MODEL NO.	FIG.	HP	MOTOR SIZE	DISCH. SIZE	DIMENSIONS IN INCHES					APPROX. SHIP WT.
					A	B	C	D	E	
16S05-5	A	1/2	4"	1 1/4" NPT	19.7	9.5	10.2	3.8	3.9	27
16S07-8	A	3/4	4"	1 1/4" NPT	23.4	10.7	12.7	3.8	3.9	29
16S10-10	A	1	4"	1 1/4" NPT	26.2	11.8	14.4	3.8	3.9	32
16S15-14	A	1 1/2	4"	1 1/4" NPT	32.8	15.1	17.7	3.8	3.9	36
16S20-18	A	2	4"	1 1/4" NPT	36.0	15.1	20.9	3.8	3.9	40
16S30-24	A	3	4"	1 1/4" NPT	46.5	20.6	25.9	3.8	3.9	64
16S50-38	A	5	4"	1 1/4" NPT	61.1	23.6	37.5	3.8	3.9	94
16S75-56DS*	B	7 1/2	6"	1 1/4" MPT	93.0	24.2	68.8	5.4	4.6	220
16S100-75DS*	B	10	6"	1 1/4" MPT	109.9	25.4	84.5	5.4	4.6	245

NOTES: All models suitable for use in 4" wells, unless otherwise noted.
Weights include pump end with motor in lbs..
* Built into sleeve 1¼" MPT discharge, 6" min. well dia.

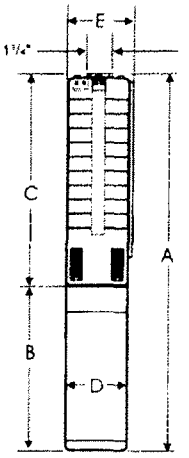


Fig. A

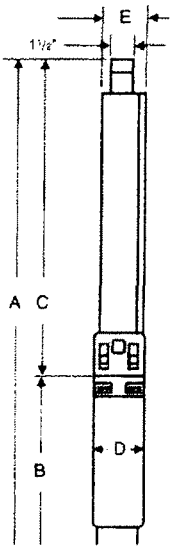


Fig. B

MATERIALS OF CONSTRUCTION

COMPONENT	SPLINED SHAFT (5-24 Stgs.)	CYLINDRICAL SHAFT (38 Stgs.)	DEEP SET (56-75 Stgs)
Check Valve Housing	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Check Valve	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Diffuser Chamber	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Impeller	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Suction Interconnector	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Inlet Screen	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Pump Shaft	304 Stainless Steel	431 Stainless Steel	431 Stainless Steel
Straps	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Cable Guard	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Priming Inducer	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Coupling	316/431 Stainless Steel	316/431 Stainless Steel	329/416 Stainless Steel**
Check Valve Seat	NBR/304 Stainless Steel	NBR/316 Stainless Steel	NBR/316 Stainless Steel
Top Bearing	NBR	NBR/316 Stainless Steel	NBR/316 Stainless Steel
Impeller Seal Ring	NBR/PBT (Valox®)	NBR/PPS (Ryton®)	NBR/PPS (Ryton®)
Intermediate Bearings	NBR	304 Stainless Steel	NBR/316 Stainless Steel
Shaft Washer	Not Required	LCP (Vectra®)	LCP (Vectra®)
Split Cone	Not Required	304 Stainless Steel	304 Stainless Steel
Split Cone Nut	Not Required	316 Stainless Steel	304 Stainless Steel
Sleeve	Not Required	Not Required	316 Stainless Steel
Sleeve Flange	Not Required	Not Required	304 Stainless Steel
Coupling Key	Not Required	Not Required	302/304 Stainless Steel**

NOTES: Specifications are subject to change without notice.
Valox® is a registered trademark of General Electric Co.
Vectra® is a registered trademark of Hoechast Calanese Corporation.
Ryton® is a registered trademark of Phillips 66.
***Stainless Steel option available.**
** If using 4" non-standard motors, refer to 329/420/431 Stainless Steel for coupling.
A coupling key is not required.

GRUNDFOS

Company name:	GRAND CANYON PUMP & SUPPLY
Created by:	LEW WILLIAMS
Phone:	(602) 272-7867
Fax:	(602) 233-9225
Date:	7/14/2005

10010005 16S05-5