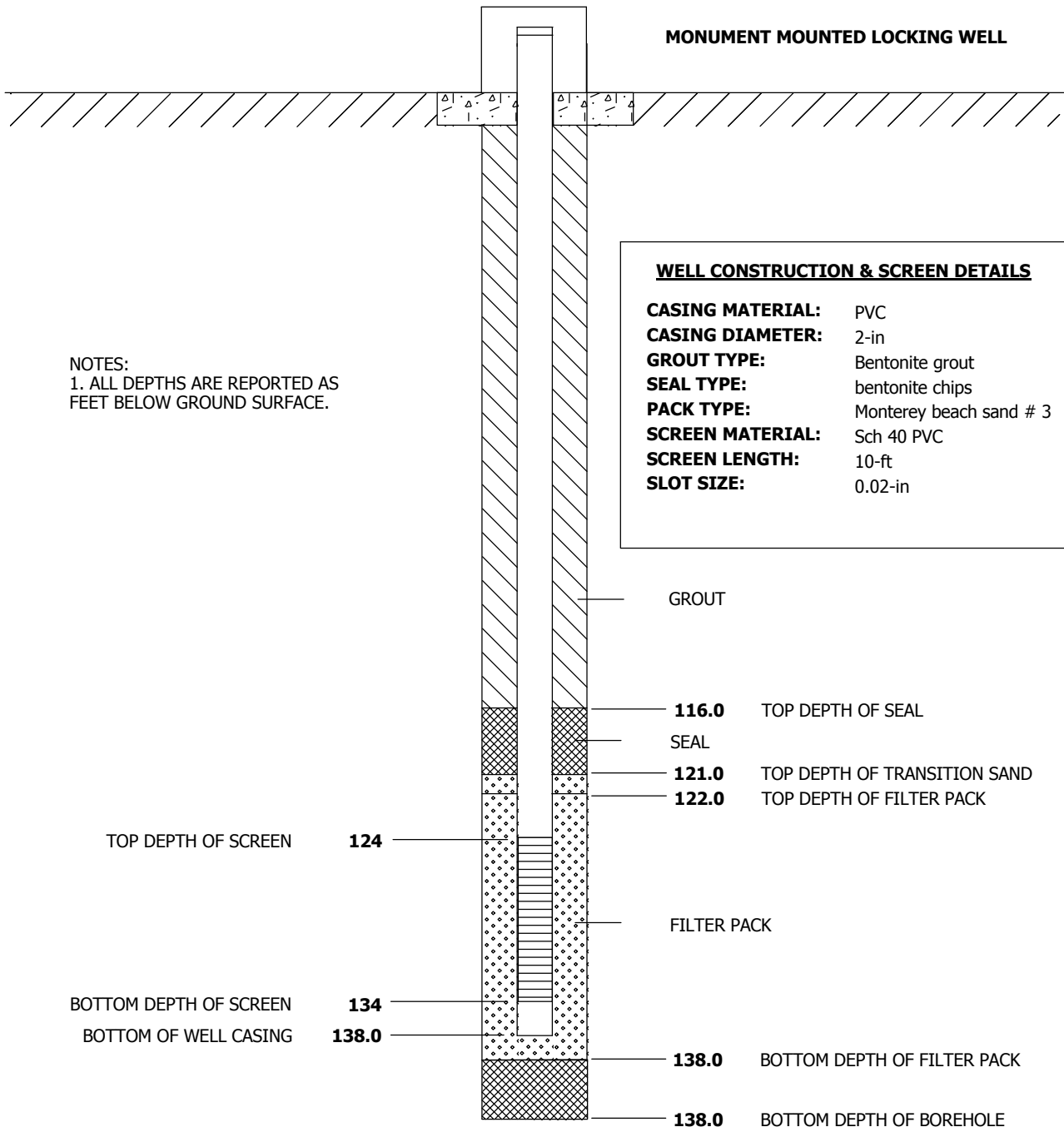


WELL COMPLETION DIAGRAM

PROJECT NO: 326128.01.16.EN	PROJECT: IMPM Drill Program	WELL NO: <i>MW-48</i>
LOCATION: PG&E Compressor Station - Flood Plain, Topock, California		
DRILLING CONTRACTOR: Prosonic (Denzel Roberts = Driller)	DRILLING START DATE: 5/3/2006	
DRILLING METHOD: Rotosonic	DRILLING END DATE: 5/4/2006	
LOGGER: J. Blei	WELL COMPLETION DATE: 5/4/2006	
TOP OF WELL CASING (NGVD 29): 486.22	NORTHING COORDINATE (CCS DAND 27, ZONE 5): 2101435.28	
GROUND SURFACE ELEVATION (NGVD 29): 484.41	EASTING COORDINATE (CCS NAD 27 ZONE 5): 7615915.90	



SOIL BORING LOG

PROJECT NAME: IMPM Drill Program		HOLE DEPTH (ft): 138.0	DRILLING CONTRACTOR: Prosonic Corp. Phoenix, AZ	
SURFACE ELEVATION: 484.4 ft. MSL	NORTHING (CCS NAD 27 Z 5): 2,101,435.28	EASTING (CCS NAD 27 Z 5): 7,615,915.90	DATE STARTED: 5/3/2006	DATE COMPLETED: 5/4/2006
DRILLING METHOD: Rotasonic			DRILLING EQUIPMENT:	
LOCATION: PG&E Compressor Station - Flood Plain, Topock, California			LOGGED BY: K. Ebel	

DEPTH BGS (feet)	SAMPLE			USCS CODE	SOIL DESCRIPTION SOIL NAME, USCS SYMBOL, COLOR, PERCENT COMPOSITION, GRADING, GRAIN SHAPE, MINERALOGY, DENSITY/CONSISTENCY, STRUCTURE, MOISTURE.	COMMENTS DRILLING OBSERVATIONS AND OPERATIONS, DAILY START AND END TIMES, DRILL RATE, REFUSALS, SAMPLING AND TESTING NOTES.
	INTERVAL	TYPE/NUMBER	RECOVERY (ft)			
5			0	SM	SILTY SAND (SM) - yellowish brn (10YR5/4), 65% vf to f sand, 25% silt, 10% met gravel, poorly graded, subang to ang up to 4cm, very loose, dry - some c sand, gravel increases to 15% - 40% gravel - some <3cm silt nodules, well graded, increased silt, 50% sand, 35% fines, 15% gravel - brn (10YR4/3), 65% sand, 10% fines, 25% gravel, increased gravel and c sand, mostly subang, loose, dry	Hand auger to ~6'
10			10		Drilling Hard	
15					Drilling Hard	
20			10		- becomes moist, dk yellow brn (10YR3/4), 75% sand, 15% fines, 10% silt - (10YR4/4) - increasing gravel up to 6cm, subrnd, met, 50% sand, 10% fines, 40% gravel	
25						
30			10		SILTY SAND W/ GRAVEL (SM) - dr yellowish brn (10YR4/4), 40% vf to c sand, 30% silt, 30% gravel, subang up to 4cm, dk met sand and gravel, hard, moist SANDY SILT W/ GRAVEL (ML) - dk yellow brn (10YR4/3), 35% vf to c sand, 50% met fines (50% clay & 50% silt), 15% gravel, subang up to 2cm, m density, moist SILTY SAND W/ GRAVEL (SM) - dr yellowish brn (10YR4/4), 40% vf to c sand, 30% silt, 30% gravel, subang up to 4cm, dk met sand and gravel, hard, moist	
35					- large 10cm cobble, mm, lightly weathered	

SOIL BORING LOG

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LOCATION: PG&E Compressor Station - Flood Plain, Topock, California			LOGGED BY: K. Ebel	

DEPTH BGS (feet)	SAMPLE			USCS CODE	SOIL DESCRIPTION SOIL NAME, USCS SYMBOL, COLOR, PERCENT COMPOSITION, GRADING, GRAIN SHAPE, MINERALOGY, DENSITY/CONSISTENCY, STRUCTURE, MOISTURE.	COMMENTS DRILLING OBSERVATIONS AND OPERATIONS, DAILY START AND END TIMES, DRILL RATE, REFUSALS, SAMPLING AND TESTING NOTES.
	INTERVAL	TYPE/NUMBER	RECOVERY (ft)			
40			5	SM	<p>WELL GRADED SAND (SM) - 75% mostly m to c sand, 10% fines, 15% gravel, subang up to 3cm, dark met, loose, moist</p> <p>- more fines, 60% sand, 25% fines, 15% gravel</p>	<p>Drilling Hard</p> <p>Drilling Hard - top of old alluvium ?</p>
45			6	SM	<p>SAND w/ SILT and GRAVEL (SM) - reddish brn (5YR4/3), 45% m to c sand, 20% fines, 35% gravel, subang up to 4cm, mm, m density, wet</p> <p>- gravel fines, 75% sand, 15% fines, 10% gravel</p> <p>- clay nodules</p>	
50			8	GM	<p>GRAVEL w/ SILT and SAND dk reddish brn (5YR3/4), 25% well graded f to c sand, 30% fines, 45% subang gravel up to 9cm, fine silt, loose, dry</p>	
				ML	<p>SILT w/ SAND and GRAVEL (ML) - dr reddish brn (5YR3/3), 30% f to c poorly graded sand, 45% fines, 25% weathered gravel, subrnd to subang up to 3cm, loose, moist</p> <p>- 25% sand, 65% fines, 10% gravel, very wet</p> <p>- sandy lenses, 60% sand, 30% fines, 10% gravel</p> <p>- 30% gravel, 30% sand, 40% fines</p> <p>- large mm cobble, all highly weathered</p>	
55					<p>SANDY SILTY GRAVEL (GM) - dr reddish brn (5YR3/4), 30% f to c well graded subrnd to subang sand, 20% fines, 50% weathered gravel, subrnd to subang up to 10mm</p>	
60			5			
65			5	GM	<p>- increased gravel and silt, 15% sand, 25% silt, 60% gravel</p>	
					<p>- large conglomerate cobbles, no met</p>	
70			5			

SOIL BORING LOG

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DRILLING METHOD: Rotasonic			DRILLING EQUIPMENT:	
LOCATION: PG&E Compressor Station - Flood Plain, Topock, California			LOGGED BY: K. Ebel	

DEPTH BGS (feet)	SAMPLE			USCS CODE	SOIL DESCRIPTION SOIL NAME, USCS SYMBOL, COLOR, PERCENT COMPOSITION, GRADING, GRAIN SHAPE, MINERALOGY, DENSITY/CONSISTENCY, STRUCTURE, MOISTURE.	COMMENTS DRILLING OBSERVATIONS AND OPERATIONS, DAILY START AND END TIMES, DRILL RATE, REFUSALS, SAMPLING AND TESTING NOTES.
	INTERVAL	TYPE/NUMBER	RECOVERY (ft)			
75			5	GM	<p>SANDY SILTY GRAVEL (GM) - dr reddish brn (5YR3/4), 30% f to c well graded subrnd to subang sand, 20% fines, 50% weathered gravel, subrnd to subang up to 10mm</p> <p>- less gravel, slightly moist, dense, fines are about 35% clay, gravel up to 5cm, 30% sand, 35% fines, 35% gravel</p>	
80			10		<p>SILTY SANDY GRAVEL (GW) - reddish brn (5YR4/4), 30% m sand, 20% fines, 50% gravel, subrnd to subang up to 4cm, mm & conglom clasts, loose, dry</p>	
85						
90				SM	<p>SILTY SAND (SM) - dr reddish (5YR3/3), 75% m subrnd sand, 20% fines, 5% gravel, subrnd to subang up to 8cm, trace clay, saturated</p> <p>- sand and gravel coarsening with depth, 50% sand, 20% fines, 30% gravel</p>	
95				ML	<p>SANDY SILT W/ GRAVEL (ML) - dk reddish brn (5YR3/3), 30% vf to c sand, 60% met fines, 10% gravel, subrnd up to 4cm, m density, wet</p> <p>- much siltier, 10% sand, 85% fines, 5% gravel</p> <p>- dr brn (7.5YR3/4), loose but dry gravel up to 6cm, 25% sand, 45% fines, 30% gravel</p> <p>- reddish brn (5YR4/4)</p>	
100						
105			10	GM	<p>SANDY SILTY GRAVEL (GM) - brn (7.5YR4/4), 35% f to c sand, 35% fines, 40% gravel, subrnd to subang up to 9cm, mm, loose, dry</p> <p>- coarsening of sand and gravel</p> <p>- brn (7.5YR4/4)</p>	

SOIL BORING LOG

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DEPTH BGS (feet)	SAMPLE			USCS CODE	SOIL DESCRIPTION SOIL NAME, USCS SYMBOL, COLOR, PERCENT COMPOSITION, GRADING, GRAIN SHAPE, MINERALOGY, DENSITY/CONSISTENCY, STRUCTURE, MOISTURE.	COMMENTS DRILLING OBSERVATIONS AND OPERATIONS, DAILY START AND END TIMES, DRILL RATE, REFUSALS, SAMPLING AND TESTING NOTES.
	INTERVAL	TYPE/NUMBER	RECOVERY (ft)			
					SANDY SILTY GRAVEL (GM) - brn (7.5YR4/4), 35% f to c sand, 35% fines, 40% gravel, subrnd to subang up to 9cm, mm, loose, dry	Drill Rate = 1' / min
110			10	ML	SILT w/ GRAVEL (ML)	
115					SILTY SANDY GRAVEL (GM)	
120			10	GM		Hard Drilling = 3' / min
125						
130			1	GM	SILTY GRAVEL w/ SAND (GM)	Hard Drilling - Lost core from 127' to 137'
135						
					SILTY SANDY GRAVEL (GM) - core sized conglom clasts - gravel fining	Very Hard Drilling = 0.7' / min, chattering



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	INTERVAL	TYPE/ NUMBER	RECOVERY (ft)			
			10	GM	SILTY SANDY GRAVEL (GM) - core sized conglom clasts - moist core, subang gravel, 15% sand, 35% fines, 50% gravel - dry core, subang gravel, 15% sand, 35% fines, 50% gravel - 20% sand, 30% fines, 50% gravel	Drilling easier = 1.5' / min
			8			
				BR	MIOCENE CONGLOMERATE (BR) - gravel coarsening up to 9cm	
Boring Terminated at 155 ft ABBREVIATIONS cc = continuous core run brn = brown lt = light dk = dark vf = very fine-grained f = fine-grained m = medium-grained c = coarse-grained vc = very coarse-grained ang = angular subang = subangular subrnd = subrounded rnd = rounded br = bedrock formation ss = sandstone conglom = conglomerate comptd = compacted qtz = quartz						