





**DESC 58778**

WESTERN WATER DEVELOPMENT  
 P.O. Box 1670  
 REDMOND, OR 97756

**Well: Pilot Butte Well #4****Customer: City of Bend, Oregon****Formation Geology Description**

<b>Material</b>	<b>From</b>	<b>To</b>
Sandy Loam with Boulders	0	8
Broken Dark Gray Basalt	8	26
Black Vesicular Basalt	26	43
Broken Dark Gray Basalt	43	52
Black Vesicular Basalt	52	60
Dark Gray Basalt	60	74
Black / Red Basalt	74	95
Black / Red Basalt with Cinders	95	102
Black / Red Basalt	102	116
Vesicular Basalt with Cinders	116	130
Gray Basalt	130	144
Black / Red Basalt	144	152
Red Cinders	152	163
Hard Gray Basalt	163	170
Black / Red Basalt	170	181
Hard Gray Basalt	181	196
Red Cinders	196	202
Very Hard Gray Basalt	202	222
Red Cinders	222	228
Reddish Pumice & Gravels	228	250
Brown Pumice & Gravels	250	276
Brown Pumice & Sand	276	302
Broken Dark Gray Basalt	302	355
Hard Gray Basalt	355	367
Black Red Basalt	367	377
Brown Sandstone	377	398
Broken Black / Red Basalt	388	395
Void-Cement Grout	395	405
Hard Gray Basalt Slanted	405	414
Used Explosives to Straighten Borehole		
Black with Red / Brown Basalt	414	423
Brown Sandstone	423	437
Black Sandstone with Pumice	437	451
Hard Gray Basalt	451	463
Black & Red Basalt with Cinder Beds	463	474
Broken Gray Basalt	474	492
Broken Black Basalt	492	504
Broken Black & Red Basalt & Cinders	504	524
Hard Dark Gray Basalt	524	534
Very Hard Gray Basalt	534	541
Caving, cemented back to 500 ft. 10/31		
Caving, cemented back to 495' on 11/3		

**RECEIVED**

JUL 02 2009

 WATER RESOURCES DEPT  
 SALEM, OREGON

# DESC 58778

Material	From	To	
Brown Sandstone	541	549	
Dark Gray Basalt	549	578	
Black & Red Broken Basalt	578	598	
Broken Black Basalt	598	623	
Brown Sandstone with Gravel	623	655	
Dark Gray Basalt	655	664	
Black & Red Basalt	664	694 SWL 682'	
Vasicular with Ash Imbediments			
Broken Gray Basalt	694	705	
Broken Black & Red Basalt	705	715	
Redish Sandstone w/ Black & Red Gravels	715	743	
Broken Black Basalt	743	755 SWL 685'	
Hard Gray Basalt	755	766	
Broken Black & Red Basalt w/ Red Cinders	766	780	
Broken Vesicular Black, Red & Brown Basalt	780	790	
Gray Basalt	790	813	
Red Conglomerate	813	834 SWL 686.5'	
Brown Sandstone	834	864	
Black Basalt with Red Cinders	864	872	
Brown Conglomerate	872	925	
Black Basalt	925	958	
(No Returns from 958'-970')			
Black Basalt with Red Cinder fragments and seams of Brown Ash	958	1035	687.5
No Returns	1035	1050	
Black Basalt	1050	1080	
No Returns	1080	1095	
Black Basalt with Cinder Imbedaments	1095	1160	

**Well Seal & Backfill Information**

Surface Grout Seal	40 yds cement grout	0	101
Bentonite Backfill	20 Super Sacks	101	307
Intermediate Seal	2 yds cement grout	307	335
Bentonite Backfill	33 Super Sacks	335	660
Bottom Grout Seal	2 yds cement grout	660	680

WESTERN WATER DEVELOPMENT  
P.O. Box 1670  
Redmond, OR 97756

**RECEIVED**  
JUL 02 2009  
WATER RESOURCES DEPT  
SALEM, OREGON

THIS MAP WAS PREPARED FOR  
ASSESSMENT PURPOSE ONLY.

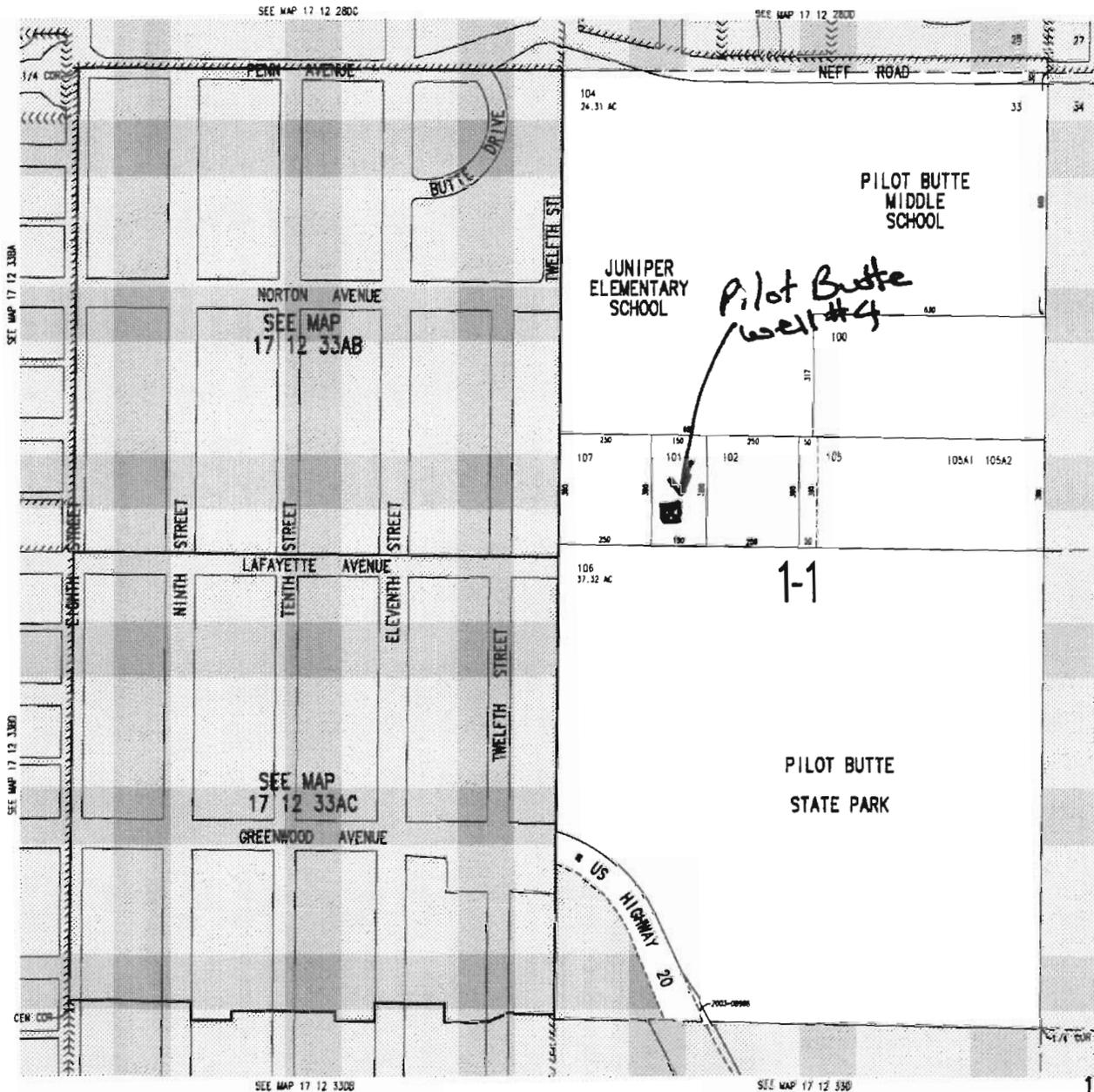
REVISED: 03/27/2003

# DESC 58778

NE1/4 SEC. 33 T.17S. R.12E. W.M.  
DESCHUTES COUNTY

1" = 200'

17 12 33A  
& INDEX



Cancelled Nos.  
103

SEE MAP 17 12 34

WESTERN WATER DEVELOPMENT  
P.O. Box 1670  
Redmond, OR 97756

**RECEIVED**

JUL 02 2009

WATER RESOURCES DEPT  
SALEM, OREGON

DESC 58778

17 12 33A  
& INDEX