

STATE OF OREGON  
WATER SUPPLY WELL REPORT  
(as required by ORS 537.765)

(WELL I.D.)# L 67933 (Amended)  
(START CARD) # 167504 *Mult 75285*

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number **Basalt Inject.**  
Name **Portland State University**  
Address **P.O. Box 751**  
City **Portland** State **OR** Zip **97201**

(2) TYPE OF WORK  
 New Well  Deepening  Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD:  
 Rotary Air  Rotary Mud  Cable  Auger  
 Other **Reverse Circulation**

(4) PROPOSED USE:  
 Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Livestock  Other

(5) BORE HOLE CONSTRUCTION:  
Special Construction approval  Yes  No Depth of Completed Well **667** ft.  
Explosives used  Yes  No Type \_\_\_\_\_ Amount \_\_\_\_\_

HOLE		SEAL			
Diameter	From To	Material	From To	Sacks or pounds	
		<b>**SEE DIAGRA M**</b>			

How was seal placed: Method  A  B  C  D  E  
 Other **Bentonite poured dry**  
Backfill placed from **90** ft. to **150** ft. Material **Bent. Chlps**  
Gravel placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Size of gravel \_\_\_\_\_

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	<b>16"</b>	<b>0</b>	<b>250'</b>	<b>.375</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:	<b>12"</b>	<b>240'</b>	<b>667'</b>	<b>.250</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:  
 Perforations Method **Factory Machined**  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_

From	To	Slot size	Number	Diameter	Material	Casing	Liner
<b>240</b>	<b>667</b>	<b>1/8 x 3</b>	<b>15,372</b>	<b>12"</b>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem at	Flowing Artesian	Time
<b>***SEE ATTACHMENT**</b>			<input type="checkbox"/>	<b>1 hr.</b>

Temperature of water **58 F** Depth Artesian Flow Found \_\_\_\_\_  
Was a water analysis done?  Yes By whom \_\_\_\_\_  
Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other \_\_\_\_\_  
Depth of strata: \_\_\_\_\_

(9) LOCATION OF WELL by legal description:  
County **Multnomah** Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
Township **1 S** Range **1 E** WM.  
Section **3 NW** 1/4 **SE** 1/4  
Tax Lot **90006** Lot \_\_\_\_\_ Block \_\_\_\_\_ Subdivision \_\_\_\_\_  
Street Address of Well (or nearest address) **900 SW 4th Ave, Portland, OR 97201**

(10) STATIC WATER LEVEL:  
**133** ft. below land surface. Date **12-08-04**  
Artesian pressure \_\_\_\_\_ lb. per square inch. Date \_\_\_\_\_

(11) WATER BEARING ZONES:  
Depth at which water was first found **124**

From	To	Estimated Flow Rate	SWL
<b>*SEE ATTACHMENT*</b>			

(12) WELL LOG:  
Ground Elevation \_\_\_\_\_

Material	From	To	SWL
<b>**SEE ATTACHMENT**</b>			

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**APR 04 2005**  
**WATER RESOURCES DEPT.**  
**SALEM, OREGON**

Date started **09/08/04** Completed **12/23/04**

(unbonded) Water Well Constructor Certification:  
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.  
WWC Number **1523**  
Signed \_\_\_\_\_ Date **04/01/05**

(bonded) Water Well Constructor Certification:  
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.  
WWC Number **1523**  
Signed *[Signature]* Date **04/01/05**

Mult 75285

STATE OF OREGON WATER SUPPLY WELL REPORT (as required by ORS 537.765)

(WELL I.D.)# L 67933 (START CARD) # 167504

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number Basalt Inject. Name Portland State University Address P.O. Box 751 City Portland State OR Zip 97201

(2) TYPE OF WORK: [X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD: [X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [X] Other Reverse Circulation

(4) PROPOSED USE: [ ] Domestic [ ] Community [X] Industrial [ ] Irrigation [ ] Thermal [ ] Injection [ ] Livestock [ ] Other

(5) BORE HOLE CONSTRUCTION: Special Construction approval [ ] Yes [X] No Depth of Completed Well 667 ft. Explosives used [ ] Yes [X] No Type Amount

Table with columns: HOLE Diameter, From, To, Material, SEAL From, To, Sacks or pounds. Entry: \*\*SEE DIAGRAM\*\*

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E [X] Other Bentonite poured dry Backfill placed from 90 ft. to 150 ft. Material Bent. Chips Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER: Table with columns: Diameter, From, To, Gauge, Steel, Plastic, Welded, Threaded. Casing: 16" 0 250' 375 [X] [ ] [X] [ ] Liner: 12" 240' 667' 250 [X] [ ] [X] [ ]

Final location of shoe(s)

(7) PERFORATIONS/SCREENS: [X] Perforations Method Factory Machined [ ] Screens Type Material From 240 To 667 Slot size 1/8 x 3 Number 15,372 Diameter 12" Casing [ ] Liner [X]

(8) WELL TESTS: Minimum testing time is 1 hour [ ] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian Yield gal/min Drawdown Drill stem at Time \*\*\*SEE ATTACHMENT\*\* 1 hr. Temperature of water 58 F Depth Artesian Flow Found Was a water analysis done? [ ] Yes By whom Did any strata contain water not suitable for intended use? [ ] Too little [ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other Depth of strata:

(9) LOCATION OF WELL by legal description: County Multnomah Latitude Longitude Township 1 S Range 1 E NW WM. Section 3 NW 1/4 SE 1/4 Tax Lot 90006 Lot Block Subdivision Street Address of Well (or nearest address) 900 SW 4th Ave, Portland, OR 97201

(10) STATIC WATER LEVEL: 133 ft. below land surface. Date 12-08-04 Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES: Depth at which water was first found 124

Table with columns: From, To, Estimated Flow Rate, SWL. Entry: \*\*SEE ATTACHMENT\*\*

(12) WELL LOG: Ground Elevation

Table with columns: Material, From, To, SWL. Entry: \*\*SEE ATTACHMENT\*\* RECEIVED JAN 20 2005 WATER RESOURCES DEPT SALEM, OREGON RECEIVED MAR 10 2005 WATER RESOURCES DEPT SALEM, OREGON

Date started 09/20/04 Completed 12/23/04

(unbonded) Water Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief. WWC Number 1523 Signed Date 01/19/05

(bonded) Water Well Constructor Certification: I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief. WWC Number 1523 Signed Date 01/19/05



Geo-Tech Explorations  
 A Division of Boart Longyear  
 19700 SW Teton Ave  
 Tualatin, OR 97062  
 503-692-6400  
 503-692-4759 (fax)

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Start Card: 167504  
 Well Label: L67933  
 Boring #: Basalt Injection

**Well Tests:**

Injection	Pump	Air	Yield GPM	Drawdown/Rise	Depth Tested	Time
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1000 gpm	51 ft. Rise		12 hrs
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

**Water Bearing Zones:**

Depth at which water was first found 124 ft.

From	To	Specific Capacity	SWL
403	405	↓	133
423	435	↓	↓
437	444	↓	↓
478	488	↓	↓
507	547	↓	↓
643	647	50 + gpm/ft	

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**Soil Profile Continued from Log:**

Material	From	To	SWL
Top soil	0	3	
Pea gravel	3	16	
Silt to sand	16	93	
Sand to small gravels	93	98	
Gravels to sand	98	100	
Cemented gravels	100	104	
Gravels - loose	104	111	
Cemented gravels w/ basalt	111	153	
Gravels large & loose	153	184	
Gravels - slightly cemented	184	195	
Gravels - some basalt	195	209	

Gravels - loose	209	213	
Basalt & gravels (fault line)	213	217	
Basalt & gravels - conglomerated	217	222	
Vesicular basalt	222	225	
Basalt - grey; fractured	225	230	
Basalt - weathered; fractured w/ clay matrix	230	232	
Basalt - weathered; fractured	232	245	
Basalt - grey; hard	245	255	
Basalt - grey, hard, fractured	255	260	
Basalt - grey, hard	260	283	
Clay w/ basalt (vesicular)	283	285	
Basalt (vesicular)	285	287	
Basalt - gray, medium	287	307	
Claystone, clay w/ wood/organics, and soft vesicular basalt	307	310	
Claystone, clay (brown) and soft vesicular basalt	310	314	
Basalt (vesicular, soft; grey)	314	317	
Basalt (vesicular; dark grey to green) w/ brown clay	317	320	
Basalt (dark grey; hard)	320	324	
Basalt (vesicular, soft)	324	327	
Basalt (vesicular, weathered, medium/soft)	327	330	
Basalt (vesicular, soft, grey)	330	334	
Basalt (vesicular, weathered, medium)	334	336	
Basalt (vesicular, soft, grey)	336	339	
Basalt (grey, medium/hard)	339	345	
Basalt (vesicular, soft, grey)	345	351	
Basalt (grey, medium/hard)	351	362	
Basalt (vesicular, soft, grey)	362	365	
Basalt (grey, hard)	365	369	
Basalt (vesicular, soft, grey)	369	373	
Basalt (grey, hard)	373	376	
Basalt (vesicular, soft)	376	391	
Basalt (grey, hard)	391	398	
Basalt (light grey to dark gray, hard)	398	403	
Basalt (grey w/ weathered vesicular, medium/hard)	403	405	WB
Basalt (light gray w/ black specs, very hard)	405	420	
Basalt (grey, fractured w/ green seams)	420	423	
Basalt (grey, fractured w/ black seams) w/ large quartz	423	424	WB
Basalt (grey, vesicular, medium/soft) w/ quartz	424	434	WB
Basalt (fractured, weathered)	434	435	WB
Basalt (grey; med)	435	437	
Basalt (grey, vesicular, medium/soft)	437	444	WB
Basalt (grey, vesicular, medium/hard)	444	450	
Basalt (grey, hard)	450	464	
Basalt (grey w/ green and brown, fractured, hard)	464	475	
Basalt (grey, medium/hard)	475	477	
Basalt (grey, fractured, medium/soft)	477	478	
Basalt (grey, vesicular, medium/soft)	478	486	WB?
Basalt & claystone (dark brown to black)	486	488	WB
Basalt (grey, vesicular, soft)	488	501	

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Basalt (grey, medium/hard)	501	507	
Basalt (grey to light grey, fractured/vesicular, medium/hard)	507	547	WB
Basalt (grey, fractured w/ some weathering, medium/hard)	547	550	
Basalt (grey, medium/hard)	550	563	
Basalt (weathered – fractured, medium/hard)	563	565	
Basalt (grey, some fractures, medium/hard)	565	588	
Basalt (dark grey, some vesicular, medium)	588	593	
Basalt (grey, some fractures)	593	598	
Basalt (grey, fractured w/ green seams)	598	600	
Basalt (grey, fractured, hard)	600	613	
Basalt (grey, fractured, vesicular, pyrite) med. soft; some weathering	613	620	
Basalt (grey, fractured, vesicular) medium soft w/ green claystone	620	631	
Basalt (grey, fractured, some vesicular) medium soft	631	639	
Basalt (dark grey, fractured)	639	643	
Basalt (grey to brown, fractured w/ pyrite veins) hard	643	647	WB
Basalt (dark grey, fractured) hard	647	667	

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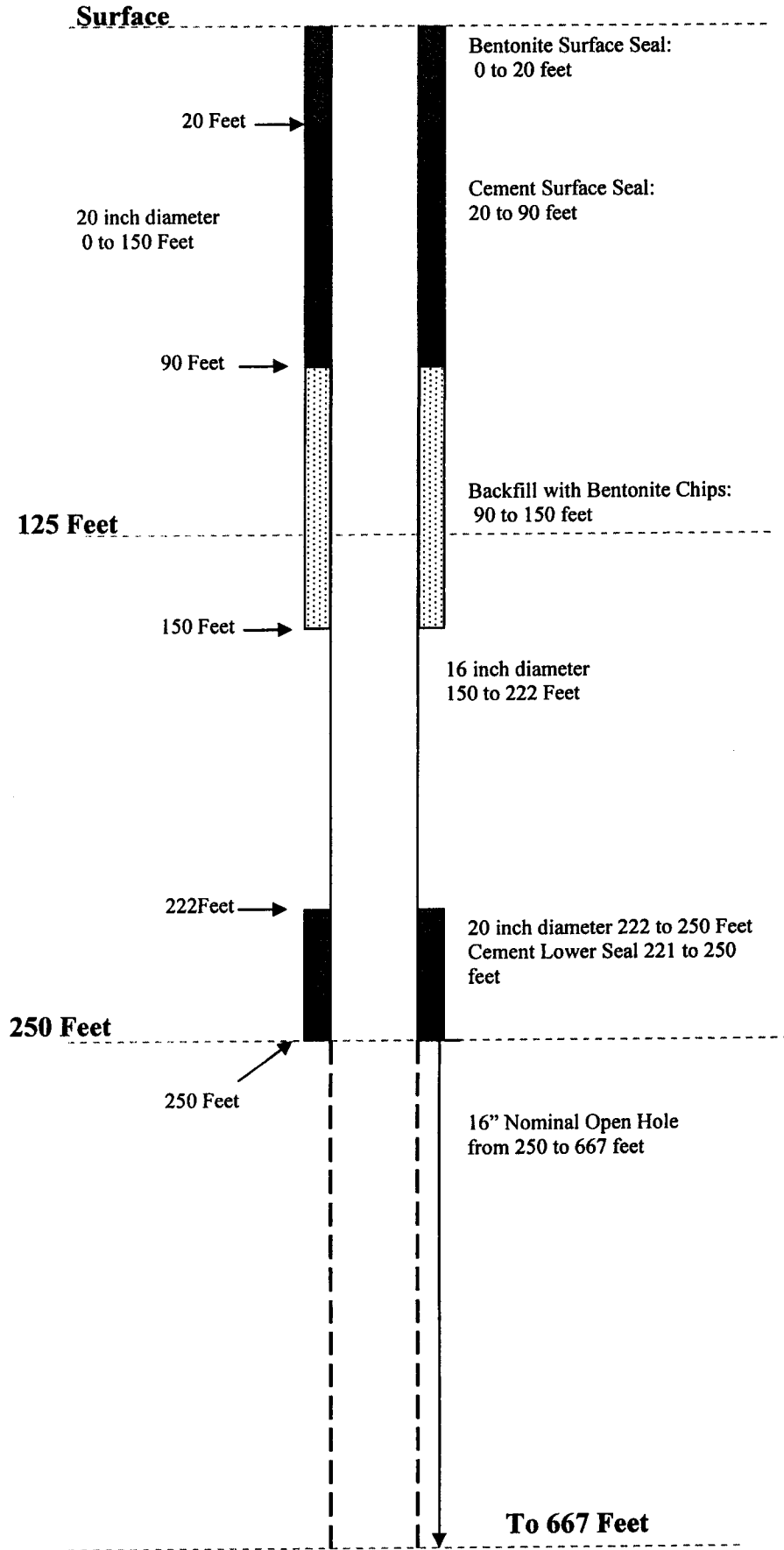
**PSU Injection Well**

**Start Card: 167504**

**Label: L67933**

**Start: 09/08/04**

**Finish: 12/23/04**



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