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**Suite 2400** 

**United States** 

Ms. Sara Krepps
Oregon Department of Environmental Quality
Northwest Region Portland Office
700 NE Multnomah St.
Portland, OR 97201-4987

Date: June 27, 2024

Former Petroleum Terminal #0022 and Manufactured Gas Plant DEQ ECSI #1646 256 Marine Drive Astoria, Oregon

Subject: Monitoring Well Abandonment Work Plan

Dear Ms. Krepps,

On behalf of Union Oil Company of California (Union Oil) and PacifiCorp, collectively referred to as the Parties, Arcadis U.S., Inc. (Arcadis) has prepared this Monitoring Well Abandonment Work Plan (Work Plan) for the Astoria Unocal (Former Petroleum Terminal #0022 and Manufactured Gas Plant [MGP]) located at 256 Marine Drive, Astoria, Oregon Washington (site; Figure 1). The Oregon Department of Environmental Quality (DEQ) issued a Conditional No Further Action (CNFA) Letter (Attachment A) for the site on May 22, 2024. The objective of this Work Plan is to detail the work to be completed for the abandonment of the select monitoring wells at the site (MW-4, MW-5R, MW-6, MW-7, MW-9R, MW-11, MW-10, MW-13, MW-14, and MW-15).

#### Site Background

The site is comprised of the property located at 256 Marine Drive and adjacent properties to the north, northeast, and northwest, including submerged land within the Columbia River and is divided into three distinct areas, collectively referred to as the Locality of Facility (LOF):

- On-site upland area, which includes the 256 Marine Drive property (the Site)
- Off-site upland area, which includes upland areas north and northeast of the city block denoted as the Site
- Off-site in-water area, which includes the intertidal zone of the Columbia River north of the Site

Historically, the site was used as an MGP and a petroleum storage/distribution terminal. Monitoring wells were installed at the Site over the course of investigation and remediation activities conducted at the site between 1996 and 2023 for impacts related to historical use.

On November 14, 2023, DEQ notified the Parties that it concurred with the recommendation for an NFA. A CNFA for the LOF was issued by DEQ on May 22, 2024 (Attachment 1). After DEQ issued the CNFA, a Certification of Completion was issued by the Oregon DOJ on June 14, 2024 (DOJ 2024).

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Sara Krepps Oregon DEQ June 27, 2024

The current groundwater monitoring network includes 11 wells and the Parties recommend abandoning 10 of them, as described in this Work Plan. The following section describes the monitoring well abandonment activities to be completed in 2024.

### **Monitoring Well Abandonment**

Prior to the start of field work, adjacent property owners and relevant stakeholders will be notified of proposed field activities and a. A Right-of-Way permit will be obtained from the City of Astoria. Traffic control will be required for the abandonment of MW-11, MW-13, MW-14, and MW-15 to protect work areas from pedestrian and vehicular traffic within the public Right-of-Way.

As required by the Occupational Safety and Health Administration 29 Code of Federal Regulations 1910.120 (Hazardous Waste Operations and Emergency Responses), Arcadis will prepare a Health and Safety Plan (HASP) that addresses the hazards associated with fieldwork at the site. The HASP is intended to identify and prevent potential safety hazards. Field staff and contractors will be required to review the HASP before beginning field operations at the site.

Underground utility location will be completed using the one call center and a private utility locating subcontractor. Utility clearance will be performed by the subcontractor prior to well abandonment and excavation activities. Utilities that will be inspected and marked during the site walk include existing utilities within the lot, and perimeter of the site. The subcontractor will check valves, meters, conduit trenching seams, utility vaults, lids and public mark-outs. The subcontractor will use magnetic detection, magnetic locator sweep, electromagnetic induction, and/or ground penetrating radar. Identified utilities will be discussed prior to any subsurface activities.

Arcadis will coordinate field activities associated with the abandonment of monitoring wells MW-4, MW-5R, MW-6, MW-7, MW-9R, MW-10, MW-11, MW-13, MW-14, and MW-15. Depth to water and total depth gauging will be performed at each of the 10 monitoring wells using an oil-water interface probe prior to abandonment.

Under the supervision and direction of Arcadis, an Oregon licensed driller will over-drill 10 groundwater monitoring wells (MW-4, MW-5R, MW-6, MW-7, MW-9R, MW-11, MW-10, MW-13, MW-14, and MW-15) with a rotary sonic drill rig to a minimum diameter of the original installation, in accordance with Oregon Administrative Rule (OAR) 690-240-0510. Monitoring wells that will be abandoned are shown on Figure 1. Attachment 2 includes well logs from the Oregon Water Resources Department (OWRD) Well Log Database. All well abandonment reports will be filed with the Oregon Water Resources Department (OWRD) after the work is completed.

Investigation-Derived Waste (IDW), including well decommissioning materials, purge water and decontamination liquids, will be stored on site in appropriately labeled containers and properly disposed. Disposable materials will be stored separately and properly disposed. Containers must be labeled at the time of collection and will include date, location(s), site name, city, state, and description of matrix contained (e.g., water, PPE).

#### Reporting

Upon completion of the field activities proposed in this Work Plan, Arcadis will describe the well abandonment activities in the 2024 Upland Cap Inspection and Maintenance Report to be submitted to Oregon DEQ as part of the CNFA.

Sara Krepps Oregon DEQ June 27, 2024

Sincerely,

Arcadis U.S., Inc.

Eric Epple

**Project Manager** 

Email: Eric.Epple@arcadis.com Direct Line: 206.578.5812

### Enclosures:

Figure 1. Site Plan

Attachment 1. No Further Action Letter; DEQ Attachment 2. Oregon State Well Logs

### References

DOJ 2024. Certification of Completion (DEQ ECSI No. 1646). June 14.

www.arcadis.com 3/3

# **Figure**

LEGEND

CONTOUR

CONTOUR (BENEATH PIER)

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STRUCTURAL BENT

PILE

RAILROAD TRACKS

MONITORING WELL

MONITORING WELLS WITH NAPL

#### NOTES:

- BASE MAP FROM A SURVEY PREPARED BY HLB AND ASSOCIATES, INC. ENTITLED "SURVEY FOR MAUL FOSTER & ALONG", AUTOCAD FILENAME GO3-8424-01-02.DWG, DATED JANUARY 8, 2004 IN AN APPARENT ASSUMED HORIZONTAL DATUM. SITE FEATURES FROM THE SURVEY WERE MOVED TO APPROXIMATELY MATCH GEOREFERENCED GIS DATA. APPARENT COORDINATE SYSTEM IS: NAD\_1983\_HARN\_StatePlane\_Oregon\_North\_FIPS\_3601\_IntiFeet.
- 2. ALL FEATURE LOCATIONS ARE APPROXIMATE.



PACIFICORP - FORMER UNOCAL TERMINAL 0022 256 MARINE DRIVE, ASTORIA, OREGON WELL ABANDONMENT WORK PLAN

SITE PLAN



FIGURE

XREFS: IMAGES: X\_FSA22PR\_Base

## **Attachment 1**

**Oregon DEQ** 

**No Further Action Letter** 



Department of Environmental Quality
Northwest Region
700 NE Multnomah St., Suite 600
Portland, OR 97232
(503) 229-5696

May 22, 2024

Jackie Wetzsteon PacifiCorp Environmental Policy and Strategy 825 NE Multnomah, Suite 2000 Portland, OR 97232

Nathan Blomgren Chevron Environmental Management Company 5001 Executive Parkway, Suite 200 San Ramon, CA 94583

RE: Conditional No Further Action Determination for PacifiCorp/Unocal Former Petroleum Terminal No. 0022 and Manufactured Gas Plant in Astoria, ECSI #1646

Dear Ms. Wetzsteon & Mr. Blomgren:

The Oregon Department of Environmental Quality (DEQ) has completed a review of the available information for the PacifiCorp/Unocal Former Petroleum Terminal No. 0022 facility, including the closure reports cited in the August 19, 2022 Request for Issuance of Conditional No Further Actions, which was submitted to DEQ by Arcadis and DOF on your behalf. The PacifiCorp/Unocal Former Petroleum Terminal No. 0022 and Manufactured Gas Plant facility includes:

- One city block located at 256 Marine Drive, Astoria, Oregon comprising Lots 1 through 8 of Block 2 of McClures, Astoria (the Property)
- Upland areas between the Property and the Columbia River, and
- An in-water area including the intertidal zone of the Columbia River north and northeast of the Property.

DEQ has determined that remedial action to address environmental contamination at PacifiCorp/Unocal Former Petroleum Terminal No. 0022 is complete, and no further action is required, conditioned upon adherence to restrictions recorded with the property through an Easement and Equitable Servitude agreement (EES). This determination is a result of our evaluation and judgment based on the DEQ regulations and the facts as we now understand them including the following, and as more fully described in DEQ's Staff Memo dated March 21, 2024:

- Historical industrial use of the site included a manufactured gas plant (MGP) and a petroleum storage and distribution terminal.
- Contamination sources are from surface and subsurface spills or leaks from the former MGP and
  petroleum storage and distribution terminal operations, including sources of PAHs, diesel range
  organics, cyanide, metals and volatile organic compounds.
- The impacted media are soil, sediment, groundwater and surface water.
- In 1987, contaminated soil was removed and replaced with clean fill. In 2018, an upland cap was completed. In 2020, an in-water cap construction was completed. LNAPL recovery from monitoring wells began in 2002 and is ongoing.

- Contaminated soil, shallow groundwater, and LNAPL remain under portions of the upland and inwater caps.
- Reasonably anticipated short-term future land use at the site is commercial/industrial, though
  redevelopment to residential use may be allowed as a conditional use under current zoning. The lower
  reach of the Columbia River is north of the site, just upstream of Youngs Bay. Current uses of this
  portion of the Columbia River include ecological habitat, transportation, recreation, commercial and
  subsistence fishing, and irrigation.
- Complete human health pathways include the following: soil ingestion, dermal contact, and inhalation
  for all on-site receptors; groundwater incidental ingestion for excavation and construction workers,
  dermal contact and inhalation and air inhalation for potential occupational workers. Complete
  ecological exposure pathways include groundwater ingestion, dermal contact and gill uptake for
  aquatic organisms.
- The upland cap prevents direct contact with contamination in soil and shallow groundwater, including LNAPL. The in-water remedy prevents LNAPL from discharging to sediment and the cap prevents contact with impacted sediments.
- The 45-day public comment period for the CNFA started on April 1, 2024, and closed May 15, 2024, at 5:00pm. No public comments were received.
- Institutional controls for capped areas will be maintained through an Easement and Equitable Servitude agreement (EES) with a Contaminated Material Management Plan (CMMP) to address future subsurface maintenance or site redevelopment activities. Upland and in-water caps shall be maintained in accordance with their respective Operation, Monitoring, and Maintenance Plans. Upland LNAPL monitoring and removal will continue according to the adaptive management approach established in the LNAPL Pilot Scale Study and Recovery Report (Arcadis 2014). The EES prohibits use of shallow groundwater for consumption or other beneficial uses, and on-Property building construction without installation of a vapor barrier. An DEQ-approved investigation of the soil gas to indoor air pathway is required to remove this restriction.

Based on the available information, soil, sediment, groundwater and surface water conditions at PacifiCorp/Unocal Former Petroleum Terminal No. 0022 are currently protective of public health and the environment in accordance with Oregon environmental cleanup law, ORS 465.200 et seq. The site requires no further action unless new or previously undisclosed information becomes available, or there are changes in site development or land and water uses, or more contamination is discovered. DEQ will update the Your DEQ Online (YDO) database to reflect this decision.

This letter only applies to the release(s) discussed above. If any contaminated media is encountered in the future, it must be handled and disposed of in accordance with local, state and federal regulations. Monitoring wells that are not related to ongoing monitoring should be maintained or decommissioned in accordance with Oregon Water Resources Department regulations.

A copy of the relevant reports, including the EES, CMMP, approved monitoring plans and DEQ's Staff Memo supporting this Conditional No Further Action decision can be viewed at: <a href="https://ormswd2.synergydcs.com/HPRMWebDrawer/Record?q=webdrawercode%3A%22\*082\*%22+Andd+recAnyWord%3A%22ECSI1646%22&sortBy=recTypedTitle-">https://ormswd2.synergydcs.com/HPRMWebDrawer/Record?q=webdrawercode%3A%22\*082\*%22+Andd+recAnyWord%3A%22ECSI1646%22&sortBy=recTypedTitle-</a>. DEQ recommends keeping a copy of all the documentation associated with this remedial action with the permanent facility records. If you have any questions, please contact Sara Krepps at 503-956-9363, or via email at <a href="mailto:sara.krepps@deq.oregon.gov">sara.krepps@deq.oregon.gov</a>.

Conditional No Further Action
PacifiCorp/Unocal Former Petroleum Terminal No. 0022 and Manufactured Gas Plant
Astoria, Oregon
ECSI #1646
May 22, 2024
Page 3

Sincerely,

Amanda Wozah Manager

Amanda Wozab, Manager
Northwest Region Cleanup Section

Attachment(s): Site Map

CMMP EES

cc: Erin McDonnell, DEQ

Mike Romero, DEQ Eric Epple, Arcadis Rob Webb, DOF

Anna St. John, Bridgewater Nathan Blomgren, Chevron Kristopher Byrd, WRD

ECSI #1646 File

## **Attachment 2**

CfY[ cb'State Well Logs

STATE OF OPEGON	IVED 0 /0	170
MONITORING WELL REPORT	$\sim N//(10)/$	T 6/0
(as required by ORS 537.765 & OAR 690-240-095)	5 1994 Start Card # 650.55	- CELL
Instructions for completing this report are on the last page of this form, and Dec	Start Card # 6,0055	
(1) OWNER/PROJECT: WELLNO. MW#4 GALEM	U.(6) LOCATION OF WILL By legal descrip	tion
Name Unocal CERT- northern Region	Well Location: County Claters	
Address P.O. Box 76		Section 7
City Neattle' State La Zip 98111	1. <u>NE</u> 1/4 of <u>SE</u> 1/4 of above sect	
(2) TYPE OF WORK:	2. Either Street address of well location 256 m	arine Wr.
	astoria, ore.	
New construction Alteration (Repair/Recondition)  Conversion Deepening Abandonment	or Tax lot number of well location	
Conversion Deepening Moundoinnent	3. ATTACH MAP WITH LOCATION IDENTIFIED. approximate scale and north arrow.	Map shall include
(3) DRILLING METHOD	(7) STATIC WATER LEVEL:	
Rotary Air Rotary Mud Cable		-24-94
Hollow Stem Auger Other		
BORE HOLE CONSTRUCTION	(8) WATER BEARING ZONES:	
Yes No	Depth at which water was first found N/H	
ecial Standards Depth of completed well ft.	From To Est. Flow Rate	SWL
Protective casing Locking cap		<del>  </del>
Protective		
ement monument		
Land surface	(9) WELLLOG: Ground elevation oppor	of 20 /f.
Monument Casing		
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Grout weight	Park aron silt 19	20
Borehole diameter	Treasure going state 17	20
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Bentonite plug at least 3 ft.	thick	
Filter ( Q& Q Screen Screen		
material PVC Sch	<u> </u>	
13 ft. 30 0 interval(s): 50 0 To 20		
20ft. \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
Slot size _000 in.		
Filter pack:	Date started 6-24-94 Completed	6-24-94
(802) Material 10/20 San	A.	
Sizein.	(unbonded) Monitor Well Constructor Certification:  I certify that the work I performed on the construction,	alteration or
(5) WELLTEST:	abandonment of this well is in compliance with Oregon w	ell construction
Pump Bailer Air Flowing Artesian	standards. Materials used and information reported above knowledge and belief.	· · · · · · · · · · · · · · · · · · ·
PermeabilityYieldGPM Conductivity PH	MV	VC Number 10284
Temperature of water 45° F OPh artesian flow found	knowledge and belief.  Signed Classen  D	ate 6-24-94
Was water analysis done? Yes No	(bonded) Monitor Well Constructor Certification:	
By whom?	I accept responsibility for the construction, alteration,	
Depth of strata to be analyzed. Fromft. tof	worm performed during time of in compliance with or	egon well construction
Remarks:	standards. This report is true to the best of my knowledge	and belief.
	_ MV	VC Number 10054
Name of supervising Geologist/Engineer Terry Fish	SignedDa	ate 6/29/94
ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTME	NT SECOND COPY-CONSTRUCTOR THIRD COPY-CU	STOMER "

RECEIVED

JUL - 5 1994

SALEM, OREGON WW-1 Φ 1992 KENNEDY/JENKS MONITORING WELL LOCATION 1992 KENNEDY/JENKS BORING LOCATION SITE PLAN 1987 EMCON TEST PIT LOCATION 1991 EMCON TEST PIT LOCATION FIGURE 2 1991 EMCON BORING LOCATION ( Approximate, Planned Note: The locations of all features shown are approximate. Well Location EXPLANATION: 87-т--1 BMW-3 ↔ 91-TP-3 B-2 🕀 Geo - Property Boundary 3rd Street B-7 ⊕ **⊠87-π-2** Enclosed Area Concrete Stab Burlington Northern Railroad

Skimmer Tanks

B-5-

2nd Street

91-TP-1

COLUMBIA RIVER

Reference: Undated drawing entitled 'Site Plan Map Astoria Lot 2, by Kennedy/Jenks Consultants.

Marine Drive

% W 87-TP-1

Concrete Slab

#### STATE OF OREGON MONITORING WELL REPORT (as required by ORS 537.765 & OAR 690-240-095) Start Card # \_\_\_\_\_ | Lel Les Instructions for completing this report are on the last page of this form. (6) LOCATION OF WELL By legal description: WELLNO. MWSA (1) OWNER/PROJECT County Charles Latitude Longitude S) Range\_ \_(E of W)Section . Address Po Box 299 Township . Edmonds State ( ) \_\_\_ 1/4 of above section. 256 Marine Dr Street address of well location (2) TYPE OF WORK 117ao Tax lot number of well location New construction Conversion □ Alteration (Repair/Recondition) ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include ☐ Abandonment Deepening approximate scale and north arrow. (7) STATIC WATER LEVEL: (3) DRILLING METHOD Date 12-19-03 ☐ Cable \_ Ft. below land surface. ☐ Rotary Air ☐ Rotary Mud XOther Sonic Artesian Pressure \_lb/sq. in. ☐ Hollow Stem Auger (8) WATER BEARING ZONES: (4) BORE HOLE CONSTRUCTION: Yes Depth of Completed Well 15.25 ft. Depth at which water was first found Special Standards SWL Est. Flow Rate From Land surface a Vault **O** ft. Water-tight cover TO - Surface flush vault Locking cap Casing diameter in. (9) WELL LOG: Ground Elevation material Welded Threaded Glued SWL From To Liner Seal diameter material Welded Threaded Glued TO Well seal: Material Amount Grout weight Borehole diameter RECEIVED in. Bentonite plug at least 3 ft. thick IJAN 2 1 2004 Filter material nack WATER RESOURCES DEPT interval(s): SALEM OREGON From 5 Slot size \_.016 in. Filter pack: Material Sanc Date started 12-19-03 Completed 12-19-03 Size 10 x 20 in. (unbonded) Monitor 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 (5) WELL TESTS: standards. Materials used and information reported above are true to the best of my ☐ Bailer ☐ Air ☐ Flowing Artesian ☐ Pump knowledge and belief. Yield. \_GPM Permeability MWC Number Conductivity\_ Temperature of water °F/C Depth artesian flow found \_\_\_\_ (bonded) Monitor 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 By whom? performed during this time is in compliance with Oregon water supply well Depth of strata to be analyzed. From\_\_\_ construction standards. This report is true to the best of my knowledge and belief. Remarks:

ORIGINAL COPY - WATER RESOURCES DEPARTMENT

Name of supervising Geologist/Engineer

FIRST COPY - CONSTRUCTOR

Signed ≤

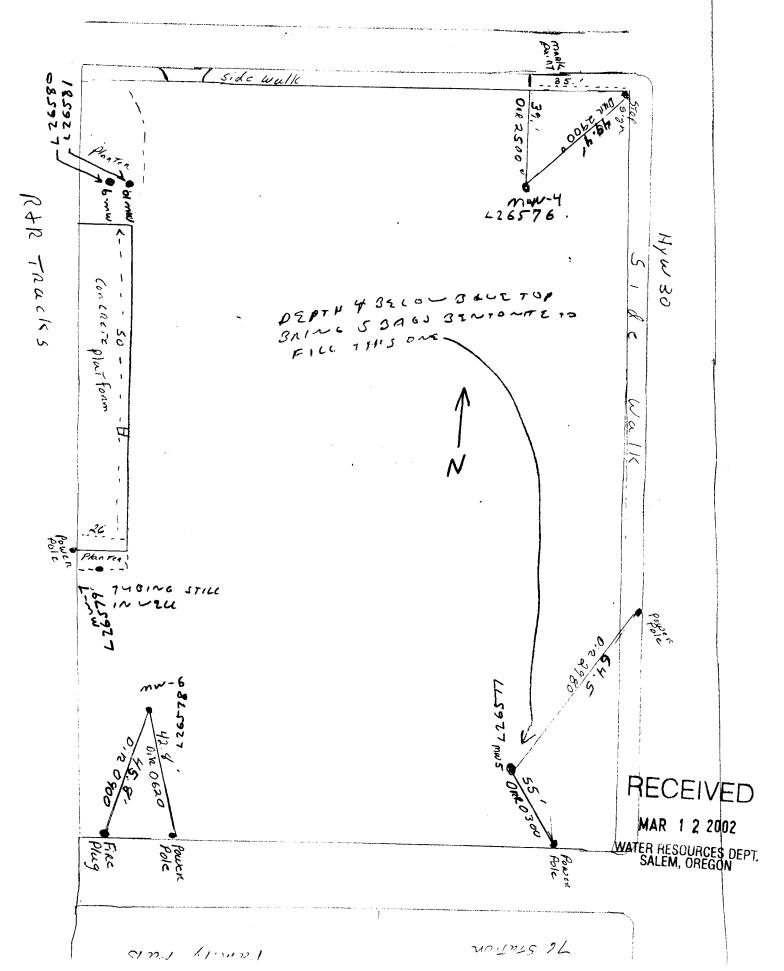
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### STATE OF OREGON MONITORING WELL REPORT (as required by ORS 537.765 & OAR 690-240-095)

CLAT 51305

Instructions for completing this report are on the last page of this form.		Start	Caru #	1121		
(1) OWNER/PROJECT WELL NO. Mu-	-6	(6) LOCATION County	OF WELL By Latitude	/ legal descrip	otion: Longitude	_
Address 825 De Molhacarch Bl	1 kg.	Township <b>S</b>	(N or S) Range	(E o	r W) Section	-
City Portland State OR Zip 97	232	<u> 1/4 c</u>				
A MUDE OF WORK		Street address of well				Ou
(2) TYPE OF WORK				dais		
☐ New construction ☐ Alteration (Repair/Recondition)		Tax lot number of we				
☐ Conversion ☐ Deepening ☐ Abandonment		ATTACH MAP WIT	H LOCATION IDE	ENTIFIED. Map s	shall include	
		approximate scale an	d north arrow.			
(3) DRILLING METHOD		(7) STATIC WA	TER LEVEL:			
☐ Rotary Air ☐ Rotary Mud ☐ Cable			below land surfac		·	
☐ Hollow Stem Auger ☐ Other		Artesian Pressure	ib/sc	q. in. Date	·	
(4) BORE HOLE CONSTRUCTION:	•	(8) WATER BEA	ARING ZONE	'8.		
Yes No						
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Vault						
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Surface flush vau	ult					
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COOP Size	in.	(unbonded) Monitor W	ell Constructor Cert	ification:		
AND		I certify that the wo	ork I performed on the	ne construction, alt	eration, or ab	andon-
(5) WELL TESTS:  Pump Sailer Air Flowing A	Artovian	ment of this well is in c standards. Materials use	compliance with Ore ed and information r	gon water supply venorted above are	vell construct true to the be	tion est of my
PermeabilityYieldGPI		knowledge and belief.				
	1¥1	Signed		MWC Nu	mber	
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Was water analysis done? ☐ Yes ☐ No	_		ity for the construct		ahandonmont	work
By whom? ft. to ft. to ft.		performed on this well	during the construct	ion dates reported	above. All we	ork
		performed during this to construction standards.	tme is in compliance This report is true to	e with Oregon wate the best of my kn	er supply well owledge and	l belief
Remarks:		and the second division of the second divisio		•	~	
Name of supervising Geologist/Engineer		Signed C	_	MWC Nu	mber / 6	<u> </u>

### Burger King



#### 51301 wei 10# L 26579 Start Card # 137940 MONITORING WELL REPORT CLAT (as required by ORS 537.765 & OAR 690-240-095) Instructions for completing this report are on the last page of this form. (6) LOCATION OF WELL By legal description: WELL NO. (1) OWNER/PROJECT County Longitude Longitude Township (N or S) Range (E or W) Section 1/4 of \_\_\_\_\_\_\_ 1/4 of above section. City Parks Street address of well location 250 mark Dr. (2) TYPE OF WORK Tax lot number of well location Alteration (Repair/Recondition) ☐ New construction ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include ☐ Abandonment □ Deepening ☐ Conversion approximate scale and north arrow. (7) STATIC WATER LEVEL: (3) DRILLING METHOD \_ Ft. below land surface. ☐ Cable ☐ Rotary Mud ☐ Rotary Air Artesian Pressure \_\_\_\_\_lb/sq. in. ☐ Hollow Stem Auger Other \_ (8) WATER BEARING ZONES: (4) BORE HOLE CONSTRUCTION: Yes No Depth of Completed Well 20,48 ft. Depth at which water was first found Special Standards **SWL** Est. Flow Rate From \_\_ Land surface Vault Water-tight cover TO Surface flush vault Locking cap Casing diameter (9) WELL LOG: Ground Elevation \_\_\_ material \_\_\_ Welded Threaded Glued Material From **SWL** Liner Seal yadones yaraf diameter Welded Threaded Glued TO Well seal: ft. Material Amount Grout weight Borehole diameter in. Bentonite plug at least 3 ft. thick RECEIVED Filter material pack interval(s): MAR 1 2 2002 To From ft. WATER RESOURCES DEPT. TO SALEM. OREGON Slot size ft. Filter pack: Material Date started \_\_\_\_\_\_ Completed \_ (unbonded) Monitor 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 (5) WELL TESTS: standards. Materials used and information reported above are true to the best of my Bailer ☐ Air ☐ Flowing Artesian ☐ Pump

knowledge and belief.

	MWC Number
Signed	Date

(bonded) Monitor 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.

	MWC Number 16077
igned	Date 1/16/02
COPY - CONSTRUCTOR	SECOND COPY – CUSTOMER

Depth of strata to be analyzed. From \_\_\_\_\_\_ft. to \_\_\_\_\_\_ft.

\_ Yield \_\_\_\_

\_ C Depth artesian flow found \_\_\_\_\_ ft.

PH\_

Permeability \_\_\_

Conductivity \_\_\_

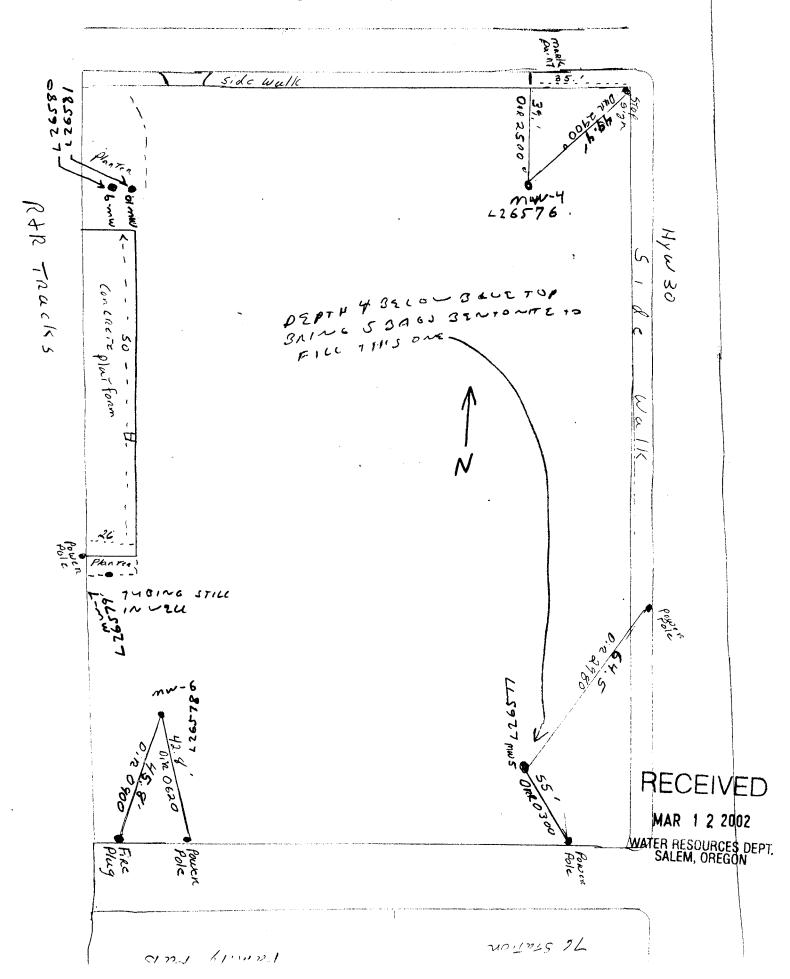
Remarks:

Temperature of water 48

Was water analysis done?  $\square$  Yes  $\square$  No

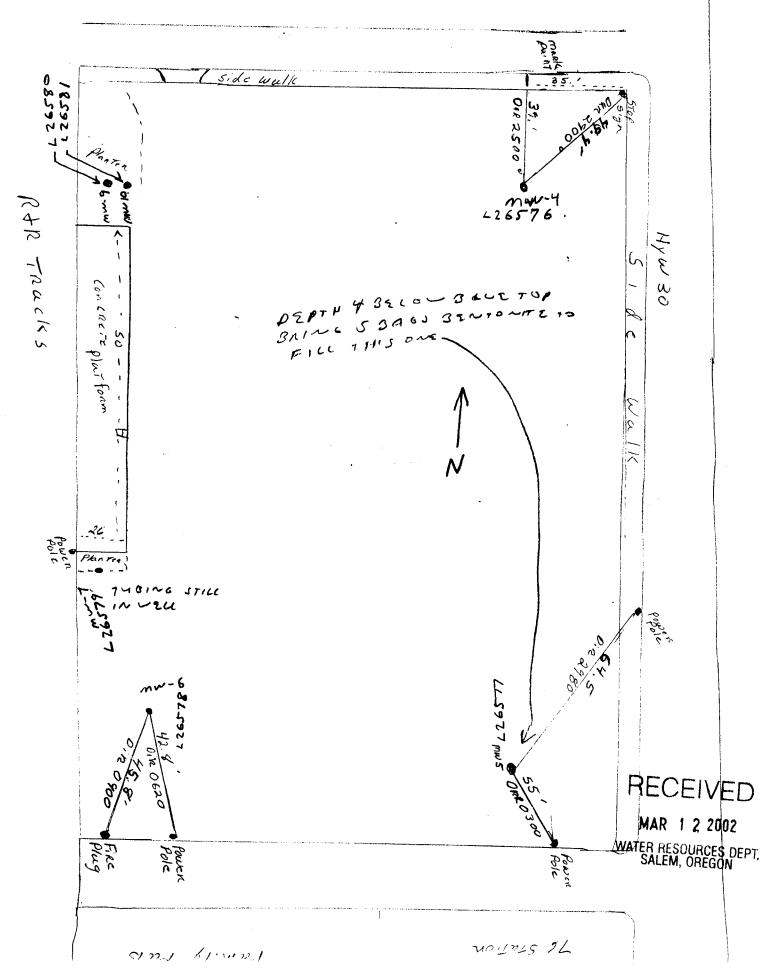
Name of supervising Geologist/Engineer\_\_\_

### Bunger King

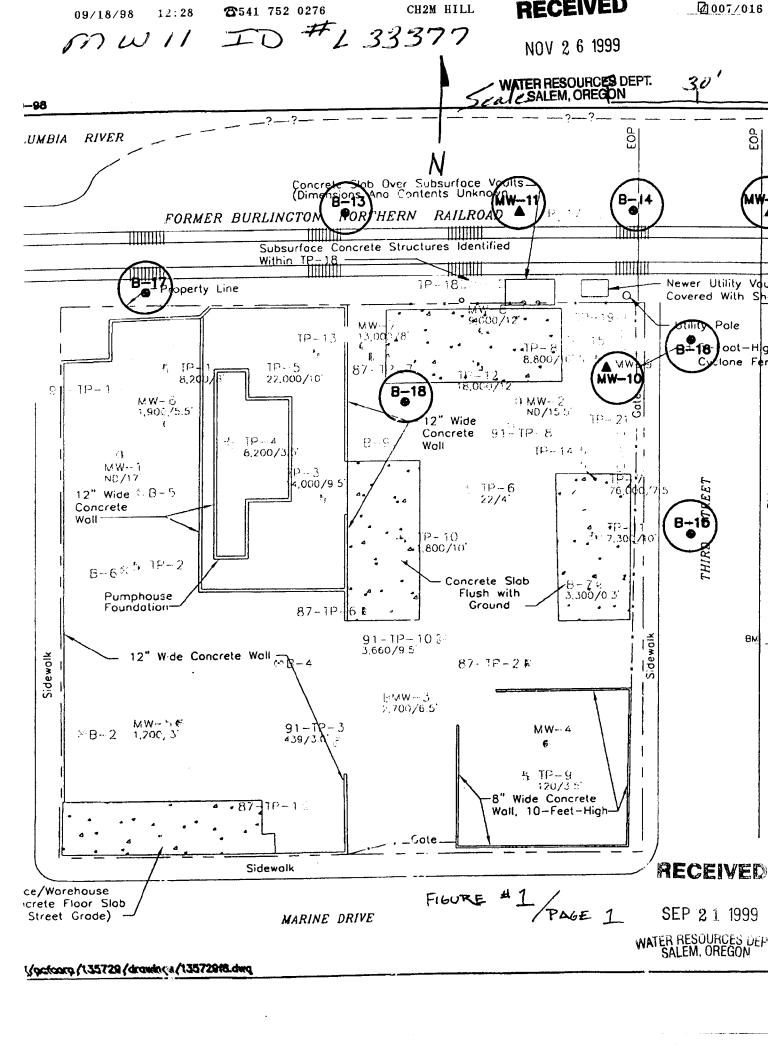


MONITORING WELL REPORT (as required by ORS 537.765 & OAR 690-240-095) Instructions for completing this report are on the last page of this form.	51302 <u>L Z658/</u> Start Card # <u>/37736</u>
(1) OWNER/PROJECT WELL NO	(6) LOCATION OF WELL By legal description:
Name Becker Corp Address P.75 per multiment Blad City Parksand State OR Zip 47232	County Latitude Longitude Township (N or S) Range (E or W) Section 1/4 of above section.
(2) TYPE OF WORK	Street address of well location 250 Marke Dr.
<ul> <li>□ New construction</li> <li>□ Conversion</li> <li>□ Deepening</li> <li>□ Abandonment</li> </ul>	Tax lot number of well location  ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.
(3) DRILLING METHOD  Rotary Air Rotary Mud Cable Hollow Stem Auger Other	(7) STATIC WATER LEVEL:Ft. below land surface. Date Artesian Pressurelb/sq. in. Date
(4) BORE HOLE CONSTRUCTION:	(8) WATER BEARING ZONES:
Yes No Special Standards Depth of Completed Well 36. 1/1 ft.	Depth at which water was first found
Vault Land surface	From To Est. Flow Rate SWI
ft.	
ft. Surface flush vault	
Casing diameter Lin.	(9) WELL LOG: Ground Elevation
Welded Threaded Glued	Material From To SWI
Seal COO Liner  ft. OOO DOO DOO DOO DOO DOO DOO DOO DOO DO	CONVERT FRAM ABOURGAOND to
TO Welded Threaded Glued  ft. Well seal:	
Material	
Borehole diameter in.	ick
Filter pack  ft.     Document   D	RECEIVED
ft.   \$\begin{array}{cccccccccccccccccccccccccccccccccccc	MAR 1 2 2002 WATER RESOURCES DEPT.
ft. Slot size in.	SALEM, OREGON
COUNTY CONTROL OF THE COUNTY C	
(5) WELL TESTS:  Pump  Bailer  Air  Flowing Artesian	<ul> <li>(unbonded) Monitor Well Constructor Certification:</li> <li>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.</li> </ul>
Permeability Yield GPM  Conductivity PH  Temperature of water Ft.  Depth artesian flow found ft.	MWC Number           Signed         Date
Was water analysis done?	(bonded) Monitor Well Constructor Certification:  1 accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work
Depth of strata to be analyzed. Fromft. toft. Remarks:	construction standards. This report is true to the best of my knowledge and belief.
Name of supervising Geologist/Engineer	Signed Date //6/02  Date //6/02

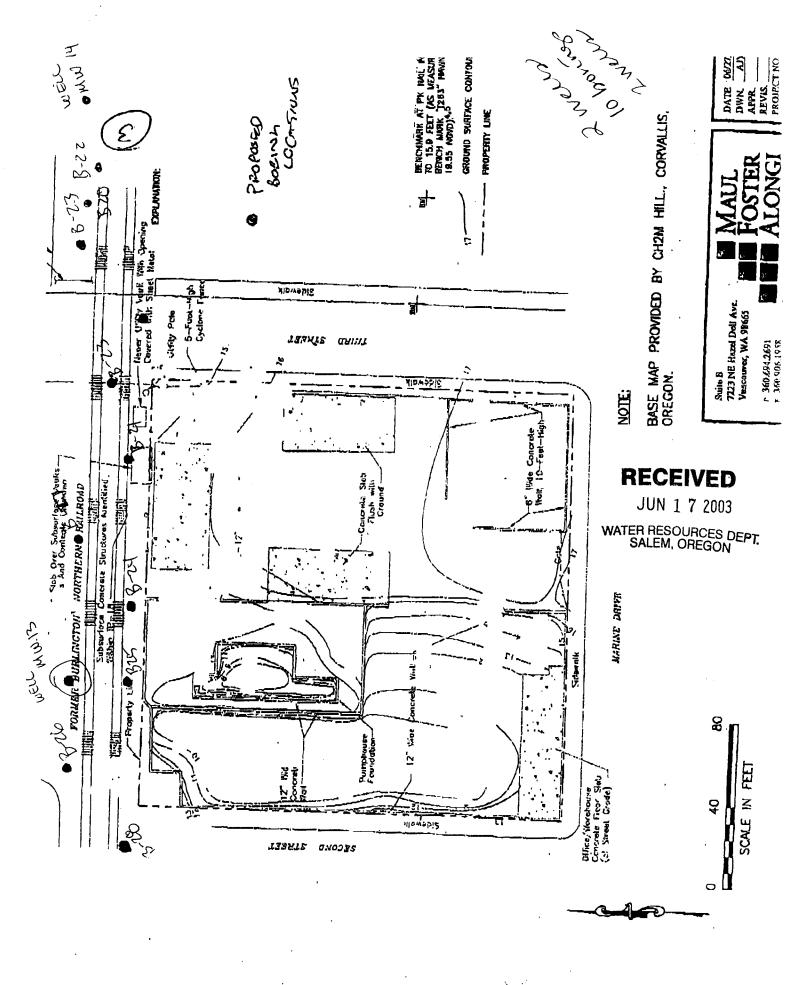
### Bunger King



* STATE OF OREGON	CLAS	
MONITORING WELL REPORT	50077 SO	A 5) //
MONIFORING WELL REPORT (as required by ORS 537.765 & OAR 690-240-095)  Instructions for completing this report are on the last page of this form.	331 Start Card # 12	3031
(1) OWNER/PROJECT: WELL NO MULT	(6) LOCATION OF WELL By	legal description
Name (1,000) 76	Well Location: County Clat	
Address 11720 Alnaco Rd. Blog.	Township Sr S) Range	(E or W) Section
City Edmands State W/A Zip 98020	1. <u>Sw</u> 1/4 of <u>w</u> w	1/4 of above section.
(2) TYPE OF WORK:	2. Either Street address of well location	256 Marine
New construction Alteration (Repair/Recondition)	or Tax lot number of well location	light of w
Conversion Deepening Abandonment	3. ATTACH MAPWITH LOCATION	IDENTIFIED. Map shall include
	approximate scale and north arrow.	
(3) DRILLING METHOD	(7) STATIC WATER LEVEL:	ou sola local
Rotary Air  Rotary Mud  Cable  Hollow Stem Auger  Other  Sonie	Ft. below land surface.  Artesian Pressure   Ib/sq. in.	Date 10/22/98/
Thomas Stell Auger A Other	Artesian Fressure ioroq. iiii	
BORE HOLE CONSTRUCTION	(8) WATER BEARING ZONE	S:
Yes No	Depth at which water was first found_	
Special Standards Depth of completed well 21, 25 ft.	From To Est	. Flow Rate SWL
Protective casing Locking cap		
Protective		
ment monument		
	(9) WELLLOG: Ground el	evation
Land surface Casing	()) WEELEGG. Ground Cr	
Manuscant Diversity   In the State of the St	n. Material	From To SWL
ft. Significant of the state of	Silty Sandy	
TO Welded Threaded Glued	Gravel	0 20
ft.	Sand Sitt	25 5
30 30 30 diameteri	n. Poravel	
material		
Welded Threaded Glued	Sandy Silty	5 8
Seal G Well seal:	Crave 7200125	
TO ROSA Material Portland	grows Silty Corava	8 23 11
2 ft. 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	with Sandi	
Grout weight	_ Sandy Gravel	Cobles
Borehole diameter in.		RECEIVED
DO DO Bentonite plug at least 3 ft.	thick RECEIVED	HEUEIVE
Filter G& G Screen		NOV 0 6 1999
pack, Joseph Harrial PUC	- SEP 2 1 1999	NOV 2 6 1999
10 10 10 10 10 10 10 10 10 10 10 10 10 1		WATER RESOURCES DEP
<b>33</b> ft.	WATER RESOURCES DEPT. SALEM, OREGON	WATER RESOURCES DEP SALEM, OREGON
Slot size 101 in.	10/2/20	
Filter pack:	Date started	Completed 10/22/98
GRACI GRACI Material Size in.	(unbonded) Monitor Well Constructor Co	
(5) WELLTEST: JUY	<ul> <li>I certify that the work I performed on abandonment of this well is in compliance</li> </ul>	
Pump Bailer Air Flowing Artesian	standards. Materials used and information	
PermeabilityYieldGPM	knowledge and belief.	MWC Number
ConductivityPH_ Temperature of water	Signed	Date
Was water analysis done? Yes No	(bonded) Monitor Well Constructor Cert	fication:
By whom?	I accept responsibility for the constru  work performed on this well during the	
Depth of strain to be unaryzed.	ft. work performed during this time is in co	mpliance with Oregon well construct
Remarks:	standards. This report is true to the best	MWC Number
Name of supervising Geologist/Engineer R. Heavy CHDM	Al signed & Janiel	MWC Number 6
ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTME	NT SECOND COPY-CONSTRUCTOR T	

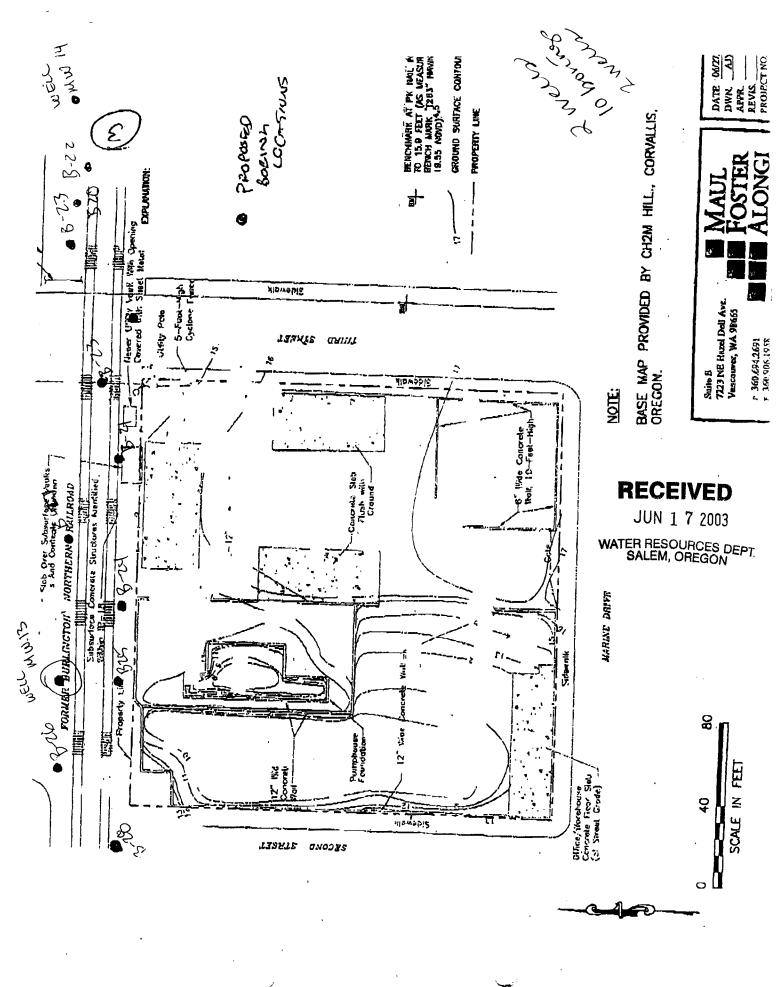


STATE OF OREGON CLAT	51643
MONITORING WELL REPORT (as required by ORS 537,765 & OAR 690-240-095) Instructions for completing this report are on the last page of this form.	Well ID# 156301
(1) OWNER/PROTECT WELL NO MW 13  Name Unocal Address P.O. Box 399  City Edmonds State WA Zip 98080	(6) LOCATION OF WELL By legal description:  County Clatson Latitude Longitude  Township SID (N or S) Range 9W (E or W) Section 7  NE 1/4 of SE 1/4 of above section
(2) TYPE OF WORK	Street address of well location
Devices Construction	2570 MONINE Dr. OSTONIO, OR  Tax lot number of well location
(3) DRILLING METHOD  Rotary Air Rotary Mud Cable Hollow Stem Auger Other Stell	(7) STATIC WATER LEVEL:  12' Ft. below land surface. Date 5-13-03  Artesian Pressurelb/sq. in Date
(4) BORE HOLE CONSTRUCTION:	(8) WATER BEARING ZONES:
Yes No Special Standards  Depth of Completed Well  ft.	Depth at which water was first found
Vault Land surface	From To Est. Flow Rate SWI.
n.   9 Water-tight cover	
Surface flush vault	
Casing 2"	
diameterin	(9) WELL LOG: Ground Elevation
Sing D	Material From To SWI.  Cobbles + Sulty Smoos On Zoo
Seal Cool Liner  ft. 0.30 diameter in	CO 3015 C 31114 3145 C
y D y D y D material	
TO OBO Welded Threaded Glued	
Tr. Well scal:	
Amount 3 50165 Bag	
Grout weight	
Borehole diameter in.	
Bentonite plug at least 3 ft. thick	k
Filter (18.0) Screen material PVC	RECEIVED
Filter pack COO material PVC interval(s):	JUN 1 7 2003
\ \frac{4}{ft.} \ \ \frac{1}{20} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
サ ft.   **De s   **Pe s   From <u>20 '</u> To <u>15 '</u>	WATER RESOURCES DEPT. SALÉM, OREGON
20 ft. Slot size OOO in. Filter pack:	
San Material Sicila Stop	Date started 5 i 3 -03 Completed 5 B 03
(3000)   3000   Size <u>20/40</u> in.	(unbonded) Monitor Well Constructor Certification
(5) WELL TESTS:	- I certify that the work I performed on the construction, alteration, or abandon ment of this well is in cumulance with Oregon water supply well construction
Pump Bailer Air Flowing Artesian	ment of this well is in climpliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and the little with the best of my knowledge and the little with
Permeability	MWC Number 105 C
Conductivity PH PH Temperature of water 54° oF/C Depth artesian flow found ft.	Signed Date 5 12.05  (bonded) Monitor Well Constructor Certification
Was water analysis done? ☐ Yes ☐ No	I accept responsibility for the construction, alteration, or abandonment work
By whom?	performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well
Remarks:	construction standards. This report is true to the best of my knowledge and belief
Name of supervising Geologist/Engineer	Signed MWC Number Date 6.5.03
ORIGINAL COPY - WATER RESOURCES DEPARTMENT FIR	Signed Date Date Date Date Date Date Date Date



STATE OF OREGON  MONITORING WELL REPO  AS required by ORS \$11.765 & OAR 690-240-0  Anstructions for completing this report are on the	ART OR SON	1642 Well IDA Start Car (6) LOCATION O		2502		
Name Unocal	WFILNO MW-14  WA ZP 98000	County ClatSof Fownship 870 _NE1/4 of	)Latitude (N or S) Range SE	1 GW (E or 1/4 of above sect	ongitudi Wi Section	7
(2) TYPE OF WORK		Street address of well loc	e Dr.	astor	ia OF	2
New construction Alteration Deepening	(Repair/Recondition)	Tax lot number of well lo ATTACH MAP WITH L approximate scale and no	ocation OCATION (DE)		600	
(3) DRILLING METHOD  Rotary Air Rotary Mu Hollow Stem Auger Other	d []Cable <u>5ομι 1<sup>2</sup>ιά</u>	(7) STATIC WATE  12' Ft bol  Artesian Pressure	ow land surface		5 16 0	13
(4) BORE HOLE CONSTRUCTION	:	(8) WATER BEAR	ING ZONES	<b>}</b> :		
Yes No Special Standards	pleted Well 35' ft	Depth at which water was				· · · · · · · · · · · · · · · · · · ·
	Land surface	From	То	Est. Flov	Rate	SWL.
Vault 2		SAC			×1211211	
©_ r   8	Water-tight cover  Surface flush vault					
1' n   0	Locking cup					
	Casing diameter 211 material PVC	(9) WELL LOG: Ground	Elevation			
	Welded Threaded Glued	Materia	1	From	To	SWI
	Liner	cobbles / silty	SALDOS	0	35	
Scal O O O	diameter		1			İ
0000	material					
10 2 600	Welded Threaded Glued		1			į
4 (1 0000	Well scal:					
	Material Chips Amount 3 50165 Bags					
	Grout weight					
508	Borehole diameter in.					-
60°C	Bentonite plug at least 3 ft. thick					
po po la	g sum	PEGE	WEi	·		
Filter   GB G   H G G G	material PVC		2002	<u> </u>		
(中 ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	From 35' To 4'	JUL 2 8	\$ 2003			
四人 医药 目 原药	From To	WATER HESON	Fine Folian			
35 t   68		SALEM O	HI-GOSH			
	Material SILIA SAND	Date started 5 16	O'S Cor	mpleted 5	16 03	
ြုပ္မွဳဖွဲ့ရွိ 📗 ဗိုဂ္ဖစ္ခဲ့	Size <u>20/40</u> in.	(unbonded) Monitor Well C				1
5) WELL TESTS:  Pump  Bailer	Air	I certify that the work I ment of this well is in comp standards. Materially used in	diande with Orego	on water supply we corted above are tr	ue to the best	on cotm.
PermeabilityYield	GPM	knowledge and belief			165 iber 165	
Conductivity PH PH Temperature of water PF/C	Depth artesian flow found fr	Signed		ion (	ate 51.6	. C. S
Was water analysis done? Yes No		(bonded) Monitor Well Cidal  E accept responsibility for	or the construction	n, alteration, or at	oandonment :	work
By whom?	fi to	performed on this well during	ng the constructions in compliance v	n dates reported al vith Oregon water	supply well	O.
Remarks:		construction standards. This	report is true to t	he best of my kno		124
Name of supervising Geologist/Lingineer		Signed		MWC Nun		

STATE OF OREGON		1642	110	m2 M		
(as required by ORS 537 765 & OAR 690-240-095) Instructions for completing this report are on the last page	0R3088 -	Well I Start (	D#L63 Card #151	010 0302		
(1) OWNER/PROJECT WELLN MAINE UNOCAL Address P.O. Box 399 City Edmonds State WA	10 <u>mw-14</u>	(6) LOCATION County Clatso Township 8P) NE 1/4 o	OF WELL By  Latitude  (N or S) Range	legal descrip	ongitude W) Section	7
(2) TYPE OF WORK		Street address of well	to a state			<b>_</b> -···
	Recondition)  Abandonment	Tax lot number of wel  ATTACH MAP WITH  approximate scale and	l location/]= I LOCATION IDE	ЮО	·	<b>-</b>
	Cable	Artesian Pressure _	below land surface	in Date	5 160	
(4) BORE HOLE CONSTRUCTION: Yes No		(8) WATER BEA				
Special Standards	ell <u>35</u> ft.	Depth at which water				
Vault S	Land surface	From SAC	То	Est. Flov	v Kate	SWI.
	Water-tight cover					<u> </u>
., 1 (9)	Surface flush vault Locking cap					
	Casing 211 in. material PVC	(9) WELL LOG:	ind Elevation			1
Son	Welded Threaded Glued	Mater		From	То	SWL
1 ft	Liner  diameter	CO PPIES / SIL	4 Supps	0"	35	
	Amount 3 50 bs Bac s Grout weight Borehole diameter in. Bentonite plug at least 3 ft. thick Screen				-	
	material PVC interval(s): From 35' To 4'	JUN 1 7	<b>ED</b> 2003			
35 n   200   200   200	From To In.  Slot size O <sub>1</sub> O1C in.  Filter pack:	WATER RESOUR SALEM, ORE	GON			
Card Card	Material SICIA SAND Size 20140 in.	Date started 5 14 (unbonded) Monitor Well f certify that the work	Constructor Certification	construction, alter	ation, or aba	ndon -
(5) WELL TESTS:  Permap Bailer Air  Permeability Yield PH  Conductivity PH  Temperature of water °F/C Depth arr  Was water analysis done? Yes No	tesian flow found ft.	ment of this well is in on standards. Materially sed knowledge and belts!  Signed	or the construction	MWC Num Dition: on, alteration, or ab	ue to the best liber 1053 ate 5.16	of my 29 03 —
Depth of strata to be analyzed. From f		performed on this well du performed during this tim construction standards. To	ic is in compliance v	vith Oregon water he best of my kno	supply well wledge and b	
Name of supervising Geologist/Engineer	*	Signed		MWC Num		03
ORIGINAL COPY - WATER RESOUR	CES DEPARTMENT FIRS	ST COPY - CONSTRE	ICTOR SECO	OND COPY 0	TUSTOME	:R



STATE OF OREGON MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

4/10/2015



START CARD # 1025684

(4) Y AND OWNERD Owner Well ID MILLS	
(1) LAND OWNER Owner Well I.D. MW15	(6) LOCATION OF WELL (legal description)
First Name Last Name	County CLATSOP Twp 8.00 N N/S Range 9.00 W E/W WM
Company PACIFICCORP & CHEVRON Address 825 NE MULTNOMAH ST	Sec 7 NE 1/4 of the NE SE 1/4 Tax Lot 200 501
City PORTLAND State OR Zip 97232	Lat ° ' " or DMS or DD
(2) TYPE OF WORK New Deepening Conversion	Long OmS or DD
Alteration (repair/recondition) Abandonment	Tax Map Number Lot  Lat
	256 MARINE DRIVE, ASTORIA, OR
(3) DRILL METHOD  Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud	
Reverse Rotary X Other SONIC	(7) STATIC WATER LEVEL
	Date SWL(psi) + SWL(ft)  Existing Well / Predeepening
	Completed Well 3/10/2015 12
Depth of Completed Well 25.00 ft. Special Standard	Flowing Artesian? Dry Hole?
MONUMENT/VAULT Below Ground	WATER BEARING ZONES  Depth water was first found  CIVIL D. C.
From <u>0</u> To <u>2</u>	SWL Date From To Est Flow SWL(psi) + SWL(ft)
BORE HOLE	
Diameter 10 From 0 To 25	
10 0 23	
CASING	(8) WELL LOG Ground Elevation
Dia. 6 From □ 0 To 10	Material From To
Gauge sch 80 Wld Thrd	Sandy Gravel 0 10
Material Steel Plastic X	Cobbles, Sandy Silt 10 25
LINER	
Dia. From To	RECEIVED DV
Gauge Wld Thrd	RECEIVED BY OWRD
Material Steel Plastic	UNI O
	JUN 0 8 2015
SEAL	
From 2 To 8	SALEM, OR
Material Bentonite Chips Amount 3 Sacks Grout weight	7.011
Amount 3 Sacks Grout Weight	
SCREEN	
Casing/Liner Casing Material pvc	
Diameter 6 From 10 To 25	•
Slot Size 0.010	Date Started 3/10/2015 Completed 3/11/2015
FILTER	(unbonded) Monitor Well Constructor Certification
From 8. To 25 Material SAND Size of pack 10/20	I certify that the work I performed on the construction, deepening, alteration, or
	abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to
(5) WELL TESTS	the best of my knowledge and belief.
Pump Bailer Air Flowing Artesian	License Number 10578 Date 4/10/2015
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)	Password : (if filing electronically)
	Signed JEFFREY D JOHNSON (E-filed)
	(bonded) Monitor Well Constructor Certification
Temperature 53 · °F Lab analysis Yes By	I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All
Supervising Geologist/Engineer	work performed during this time is in compliance with Oregon monitoring well
Water quality concerns? Yes (describe below) From To Description Amount Units	construction standards. This report is true to the best of my knowledge and belief.
From To Description Amount Units	License Number 10306 Date 4/10/2015  Password: (if filing electronically)
	Signed J TRENT CAŞTNER (E-filed)
	Contact Info (optional) Cascade Drilling
ORIGINAL - WATER RESOURCE	ES DEPARTMENT

