Surveys Review

OHA Drinking Water Services
Survey Training Webinar
October 10, 2018

Oregon Health Authority

DRINKING WATER SERVICES
Public Health Division
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 – 11:30</td>
<td>Survey Overview</td>
<td></td>
<td>Webinar</td>
</tr>
<tr>
<td><strong>Wednesday, October 17</strong></td>
<td></td>
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</tr>
<tr>
<td>9:00 – 11:30</td>
<td>Survey Prep</td>
<td>Small Groups – DWS</td>
<td>2577 NE Courtney Dr. Crate Lake Conference Rm. Bend OR,</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Working Lunch</td>
<td>Small Groups – DWS</td>
<td>Field Lunch</td>
</tr>
<tr>
<td>12:30 – 2:30</td>
<td>Field Work</td>
<td>Small Groups – DWS</td>
<td>Group 1 Eagle Crest Group 2 Cline Butte Group 3 Sun Mountain</td>
</tr>
<tr>
<td>3:00 – 5:00</td>
<td>Survey write up</td>
<td>Small Groups – DWS</td>
<td>2577 NE Courtney Dr. Crate Lake Conference Rm. Bend OR,</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td><strong>Thursday, October 18</strong></td>
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<td></td>
</tr>
<tr>
<td>8:00 – 10:00</td>
<td>Survey write up</td>
<td>Small groups -DWS</td>
<td>1300 SW Wall St. Barnes/Sawyer Rm. Bend, OR</td>
</tr>
<tr>
<td>10:00 – 3:00</td>
<td>Fall Training</td>
<td>DWS</td>
<td>1300 SW Wall St. Barnes/Sawyer Rm. Bend, OR</td>
</tr>
</tbody>
</table>
Surveys Review

- Survey basics – Tia
- Survey forms overview – Tia/Carrie
- Preparing for survey – Casey
- On-site inspection – Casey

Artesian emergency well
Survey basics

• Called sanitary surveys by EPA, OAR 333-061-061-0020

(117) "Sanitary Survey" or "Water System Survey" means an on-site review of the water source(s), facilities, equipment, operation, maintenance and monitoring compliance of a public water system to evaluate the adequacy of the water system, its sources and operations in the distribution of safe drinking water. The sanitary survey also identifies sources of contamination by using the results of source water assessments where available.
Survey basics

• Frequency
  – Every 3 years for Community Water Systems (CWS), unless determined to meet “Outstanding Performer” criteria
  – Every 5 years for non-community (NTNC & TNC), and “Outstanding Performer” community water systems.

• DWS provides a list at beginning of calendar year of surveys to be completed that year.

• Systems on the list receive a letter from DWS notifying that they are due for survey and the fee for the survey.
Survey basics – where to find forms

https://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Partners/Pages/index.aspx

Water System Surveys

The information on this page is designed for and intended for use by Drinking Water Services County and Department of Agriculture partners who have specialized training and are registered as an environmental health specialists. If you have questions regarding this material please contact Drinking Water Services at (971) 873.0406.

On this page:
- Survey Manual and Related Information
- Survey Form Templates
- Survey & Deficiency Follow-up
- For Operators

Survey Manual and Related Information
- Symbols for Schematics and Sample Water System Schematics
- Counting Population and Connections for a Public Water System
- Chemical Monitoring Schedules for Community and Non-Transient Non-Community groundwater systems
- Standard Monitoring Framework - to assist with completing the water quality monitoring page of the survey
- Outstanding Performance
- Deficiency List - revised 6/24/2015
- Setback Issues Found in a Survey - Procedure - New 12/15/2015

Survey Form Templates
- About Survey Template Packets
- Survey Template instructions
- Outstanding Performer Template
Survey form templates & resources

- See “About Survey Template Packets” on which pages to use

Survey Form Templates
- About Survey Template Packets
- Survey Template Instructions
- Outstanding Performer Template

The following documents are password protected (they currently open best in Firefox):
- Packet 1: C-NTNC Groundwater Survey Template - revised 10/12/2016
- Packet 2: C-NTNC Surface Water Survey Template - revised 10/12/2016
- Packet 3: TNC-NP Survey Template - revised 10/12/2016

Templates for Survey Cover Letters:
- Community Groundwater Systems - includes outstanding performer information language
- NTNC, TNC, and Non-EPA Groundwater Systems
- Community Surface Water Systems - includes outstanding performer information language
- NTNC, TNC, and Non-EPA Surface Water Systems

Survey Deficiency Follow-up
- Failure to Take Corrective Action Template for Groundwater Systems
- Follow-Up of Deficiencies Procedure - New 12/15/2015

For Operators
Resources to assist operators with preparing for surveys and inspections are located on the main site Operations.
Survey basics

- Open DWS website
  - www.healthoregon.org/dws
Survey basics

Open Partners page
Survey basics – removing password

• Download a blank survey form
• Open document

Survey Manual and Related Information

- Symbols for Schematics and Sample Water System Schematics
- Counting Population and Connections for a Public Water System
- Chemical Monitoring Schedules for Community and Non-Transient Non-Community groundwater systems
- Standard Monitoring Framework - to assist with completing the water quality monitoring page of the survey
- Outstanding Performance
- Deficiency List - revised 6/24/2015
- Setback Issues Found in a Survey - Procedure - New 12/15/2015
- Membrane Survey Staff Guide - New 12/20/17

Survey Form Templates

- About Survey Template Packets
- Survey Template Instructions
- Outstanding Performer Template

The following documents are password protected (they currently open best in Firefox).
- Packet 1: C-NTNC Groundwater Survey Template - revised 05/30/2018
- Packet 2: C-NTNC Surface Water Survey Template - revised 05/30/2018
- Packet 3: TNC-NP Survey Template - revised 05/30/2018

Templates for Survey Cover Letters

- Community Groundwater Systems - includes outstanding performer information language
- NTNC, TNC, and Non-PRC Groundwater Systems
Survey basics – removing password

• Password protected
  – Public
  – Operators
  – Etc. . .

• Removing password
  – Historical files
  – Current version?
Survey basics – removing password

- Enter password

---

**Survey Basics**

**Removing Password**

- **Enter password**

---

**Survey Details**

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is entry point residual monitoring continuous if population &gt; 3,500 (SWTR, GWR 4-log)?</td>
</tr>
<tr>
<td>Are distribution residuals recorded at least twice weekly? N/A wholesale system with no distribution</td>
</tr>
</tbody>
</table>

- **Yes** | **No** |
| **Chlorine gas** N/A | |
| Separate room for gas storage and feeder? | |
| Fan with on/off switch outside? | |
| Vent located next to the floor? | |
| Door with a window? | |

- **Yes** | **No** |
| **Gas cylinders properly secured** | |
| **Door that opens out?** | |
| **Self-contained breathing apparatus** | |
| **Air scrubber system?** | |

**Survey Form**

- **Enter password to open file**

```
C:\\Downloads\survey-C-NTNC-GW (25).docx
```

- **Password**

```
1
```

- **OK** | **Cancel**
Survey basics – removing password

• Save the file to your computer desktop
Survey basics – removing password

- With the survey open
- Go to FILE
- Click PROTECT DOCUMENT
Survey basics – removing password

- Go to **ENCRYPT WITH PASSWORD**
Survey basics – removing password

• Delete the password that is in the box
Survey basics – removing password
Survey basics – removing password

- Click **OK**
- **Save** document as the name you’d like
Survey basics – editing document

- Click on the REVIEW tab
Survey basics

• Click on RESTRICT EDITING

• Click on STOP PROTECTION
Survey basics

• Add this feature to tool bar
Survey basics

• Click the down arrow to CUSTOMIZE QUICK ACCESS TOOLBAR
• Click MORE COMMANDS
Survey basics

- Open the **CHOOSE COMMANDS FROM** box
- Click **REVIEW TAB**
Survey basics

- From the review tab click **RESTRICT EDITING**
- Click **ADD**
- Click **OK**
Survey basics

- Shortcut on top of tool bar
Survey basics

- We now know…
  - What it is
  - Where to find
  - How to remove password
  - Shortcut for restrict editing (unlocking/locking editing)
Survey elements

- Deficiency summary
- Inventory and narrative
- Schematic
- Sources (wells, springs)
- Treatment (filtration, disinfection)
- Distribution systems
- Finished water storage
- Monitoring & reporting
- Management & operations
- Operator certification
- Cover letter

E. Coli photo credit: photo bucket

Adenovirus photo credit: http://cronodon.com/
Survey forms overview

- Tailor the forms to your specific system
- Delete, add, edit pages/tables as necessary
- Using the most recent version?
- Prepopulate before site visit
- Streamline for ease of fieldwork (double sided)
Survey forms overview

• Don’t leave blanks, mark “Yes, No, or N/A”

• Comments sections
  – Follow up of “no’s”
  – Allows for further details

• Information pages (back sides usually) to assist with filling in sections (service area, treatment codes)
Survey forms overview

- Significant deficiencies & rule violations shown as **bulleted items**

---

### Well Information

<table>
<thead>
<tr>
<th>Source ID</th>
<th>SRC-</th>
<th>Source Name</th>
<th>Well Log Available</th>
<th>Well Log ID (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Checkboxes

- **Well active?**
- **Filter acceptor?**
- **Sanitary seal & casing watertight?**
- **Run water sample tap?**
- **Treated water sample tap?**
- **If vented, properly screened?**
- **Wellhead protected from flooding?**
- **Concrete slab around casing?**
- **Casing height 12"+ above groundwater?**
- **Flowmeter?**
- **Pressure gauge?**
- **Pump to waste pipe?**
- **Well meets setbacks from hazards?**

If no, identify list of hazards within the setback and the distance to the hazard:

- **HAZARD**
- **DISTANCE (ft)**

**Protective housing?**

If yes, does it have:

- **Heat?**
- **Light?**
- **Soil drain?**
- **Well pump replacement provision?**

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>Bearing lubrication</th>
<th>Pumping capacity (gpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose an item</td>
<td>Choose an item</td>
<td>Choose an item</td>
</tr>
</tbody>
</table>

**If no well log available, record any known information regarding depth of well, depth of grout seal, year of installation, or casing diameter in the comments section below.**

**Comments:**
## Deficiency Summary

- Capture deficiencies found during survey
- Tracking tool for corrections
- Consistency across cover letter, summary, and forms.

### Deficiency Summary Table

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Significant Deficiencies and Rule Violations</th>
<th>Date to be corrected</th>
<th>Date corrected</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td>Source: Wall construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spring/other source:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treatment: Surface water treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disinfection:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other treatment:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finished Water Storage:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Distribution:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monitoring:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Example Deficiencies

- **Source Deficiencies:**
  - Sanitary seal and casing not watertight
  - Wellhead not protected from flooding

- **Treatment Deficiencies/Violations:**
  - Springbox not impervious durable material
  - Well submersible pump
  - No watertight access hatch/entry

- **Surface Water Treatment Deficiencies:**
  - Turbidity standards not met - 0030(5)
  - Turbidity not calibrated per manufacturer or at least quarterly - 0035(3)(6)(a)(ii)
  - Incorrect location for turbidity monitoring

- **Monitoring Violations:**
  - Unaddressed MCL violations or LCR AL exceedances - 0030
  - No CL200 Sampling Plan - 0036(5)(6)(vii)

- **Distribution System Violations:**
  - System pressure < 20 psi - 0025(7)

- **Cross Connection (CWS 333-061-10070):**
  - No ordinance or enabling authority (CWS)
  - Annual Summary Report not issued (CWS)
  - Testing results not current (CWS, NTNC, TNC)
  - No Cross Connection Control Specialist (CWS > 300 connections)
Inventory and Narrative

- Demographics of system
- Operator Cert requirements
- Contact info
Water System Schematic

- Visual display of the flow of the water through the system (source to distribution)
- Use DWS symbols
Source Information

- Entry Point
- Source
  - AA
  - BA
- Data Online
Deficiency review – wells

Significant deficiencies:
• Sanitary seal & casing not watertight
• No raw water sample tap
• No treated water sample tap (if applicable)
• No screen on existing well vent (if applicable)
• Well not protected from flooding
• Hazards within well’s setback distance
Deficiency review – wells

• Provide comment to clarify deficiency

![Photo 1. Wellhead](image)

<table>
<thead>
<tr>
<th>Well Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source ID#: SRC-</td>
</tr>
<tr>
<td>Source Name:</td>
</tr>
<tr>
<td>Well log available?*</td>
</tr>
<tr>
<td>Well log ID (e.g., CCLU123, L12345)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well active?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitless adaptor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sanitary seal &amp; casing watertight?</strong></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw water sample tap?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treated water sample tap? <strong>N/A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If vented, properly screened?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wellhead protected from flooding?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete slab around casing?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing height ≥12-in. above slab/grade?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Comment:
Hole in side of casing (see photo 1)
## Disinfection

- Disinfection/residual maintenance

### Sources

<table>
<thead>
<tr>
<th>Facility ID</th>
<th>Facility Name - Well Logs</th>
<th>Activity Status</th>
<th>Availability</th>
<th>Source Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC-AA</td>
<td>WELL - POLK1898</td>
<td>A</td>
<td></td>
<td>GW</td>
</tr>
</tbody>
</table>

### Treatment

<table>
<thead>
<tr>
<th>State ID</th>
<th>Facility Name</th>
<th>Treatment Process</th>
<th>Treatment Objective</th>
<th>Filter Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTP-A</td>
<td>TP FOR WELL</td>
<td>GWR 4-LOG VIRUS COMPLIANCE MON</td>
<td>DISINFECTION</td>
<td></td>
</tr>
</tbody>
</table>
Disinfection

- Disinfection/residual maintenance

### Disinfection

<table>
<thead>
<tr>
<th>State ID</th>
<th>Facility Name</th>
<th>Treatment Process</th>
<th>Treatment Objective</th>
<th>Filter Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTP-A</td>
<td>TP FOR WELL</td>
<td>GWR 4-LOG VIRUS COMPLIANCE MON</td>
<td>DISINFECTION</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State ID</th>
<th>Facility Name</th>
<th>Treatment Process</th>
<th>Treatment Objective</th>
<th>Filter Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTP-A</td>
<td>TP FOR WELL (DESC 3997)</td>
<td>RESID MAINT, HYPOCHLORINATION</td>
<td>OTHER</td>
<td></td>
</tr>
</tbody>
</table>

- Separate room for gas storage and feeder?
- Fan with on/off switch outside?
- Vent located next to the floor?
- Door with a window?
- Gas cylinders properly secured?
- Door that opens out?
- Self-contained breathing apparatus?
- Air scrubber system?

**CT evaluation for disinfection**

- **Disinfection Requirement:**
  - (sw) 0.5 log inactivation Giardia
  - (gw) 4.0 log inactivation viruses
  - (gw) Minimum chlorine residual:

- **Yes No:**
  - Does the contact chamber have effluent flow meter or adequate alternative?
  - If no, how is peak flow determined for CT calculations?
  - Has a tracer study been conducted or adequate alternative?  Tracer Study Date:
Chlorine residual significant deficiencies:

- No DPD or other EPA method used
- No NSF 60/61 certified product/equipment
- Distribution residuals not recorded at least 2x weekly

Non-NSF approved bleach
### Treatment

- **Treatment details**

<table>
<thead>
<tr>
<th>Process Used*</th>
<th>Chemical Added**</th>
<th>Purpose</th>
<th>Location in System</th>
<th>Code***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Maint: Hypo</td>
<td>Sodium Hypochlorite</td>
<td>Residual Maintenance</td>
<td>WTP-A</td>
<td>X421</td>
</tr>
</tbody>
</table>

**Corrosion Control**
- C441 Inhibitor, Bimetallic Phosphate
- C443 Inhibitor, Hexametaphosphate
- C445 Inhibitor, Orthophosphate
- C447 Inhibitor, OrthoPolyphosphate Blend
- C449 Inhibitor, Silicate
- C501 pH/Alkalinity Adjustment-Lime
- C502 pH/Alkalinity Adjustment-Soda Ash
- C503 pH/Alkalinity Adjustment-Caustic Soda
- C504 pH/Alkalinity Adjustment-Sodium
- C505 pH/Alkalinity Adjustment-Calcite Contractor
- C506 Calcium Carbonate Precipitation
- C550 LCCA for L/C
- C999 Blending

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*DRINKING WATER SERVICES*
Public Health Division

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*Oregon Health Authority*
Storage and Pressure Tanks

- Setting up the form

### Storage and Pressure Tanks

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Tank Type (Ground, Elevated, Pressure)</th>
<th>Tank Material (Concrete, Steel, Wood, Plastic, Other)</th>
<th>Year Built</th>
<th>Volume (gal.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clifford Reservoir</td>
<td>Ground</td>
<td>Concrete</td>
<td>1984</td>
<td>100k</td>
</tr>
<tr>
<td>2</td>
<td>Big Red Reservoir</td>
<td>Ground</td>
<td>Steel</td>
<td>1991</td>
<td>50k</td>
</tr>
<tr>
<td>3</td>
<td>Well 5 pressure tank</td>
<td>Pressure</td>
<td>Steel</td>
<td>2016</td>
<td>5000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reservoir Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir Features</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Fence/gate?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Hatch secured (e.g. locked, bolted, etc.)?</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>All tank access points watertight?</td>
<td></td>
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<td></td>
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<tr>
<td>Screened vent?</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Overflow?</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Overflow protected (screen/flap/valve)?</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drain to daylight?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Water level gauge?</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Bypass piping? (● if used for contact time)</td>
<td></td>
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<td>Alarm for high or low levels?</td>
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<tr>
<td>Separate inlet/outlet?</td>
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<tr>
<td>Approved interior coating?</td>
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<td>Exterior in good condition?</td>
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<tr>
<td>Annual interior/exterior inspection?</td>
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<td>Cleaning schedule?</td>
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<tr>
<td>Continuously disinfected? (● post ’81 redwood)</td>
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### Pressure Tanks

<table>
<thead>
<tr>
<th>Pressure Tanks</th>
<th>1</th>
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<th>4</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>Accessible for maintenance?</td>
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<tr>
<td>Bypass piping?</td>
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<tr>
<td>Drain?</td>
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<td>Pressure relief device?</td>
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<tr>
<td>Air bladder/diaphragm?</td>
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<tr>
<td>Valve for adding air?</td>
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</tbody>
</table>

**Comments**
Storage and Pressure Tanks

Significant deficiencies:
- Access hatch not secured
- Roof & access hatch not watertight
- Overflow not protected
  - Flap valve or screen
- No screened vent

Drilled hole in concrete tank
Storage tank overflow flap valve
Storage and Pressure Tanks

Vent not protected from rain or windborne contaminants

Mushroom-style screened vent

Vent not completely screened
Distribution System Information

- What to look at?
- It’s all underground!

Distribution System Information

Service Area and Facility Map

- Does the system have a service area and facility map (indicate features on map):
  - Water lines (including size and material)
  - Treatment facilities
  - Storage facilities (reservoirs)
  - Sampling points
  - Sources-wells & withdrawal points
  - Pressure zones
  - Pressure regulating valves
  - Booster pumps

Distribution Data

- System pressure ≥ 20 psi?
- Water system leakage < 10%?
- Hydrants or blowoffs on all dead ends? N/A
- Routine flushing? (How often)
- Adequate valving?
- Routine valve turning? (How often)
- Does the distribution system have asbestos cement (AC) pipe?

If yes, verify asbestos sampling is completed on Water Quality Monitoring Page (CWS, NTNC).

Cross Connection Control (CWS, NTNC, and TNC)

- Assemblies tested annually? (CWS, NTNC, TNC)
- Ordinance or enabling authority? (CWS)
- Annual Summary Report submitted? (CWS)
- Certified Cross Connection Control Specialist? (CWS > 300 connections)

Comments:

DRINKING WATER SERVICES
Public Health Division
Distribution System Information

Distribution system significant deficiency:
• System pressure < 20 psi

Cross Connection Control significant deficiencies:
• No Annual Summary Report (CWS)
  – Online survey now available
• Devices not tested yearly
• No ordinance or enabling authority (CWS)
• No certified specialist on staff (CWS only if ≥ 300 connections)
Distribution System Information

- Cross connection control

Cross connection questions? Talk to Molly Keller: cross.connection@state.or.us
# Water Quality Monitoring

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>N/A</th>
<th>Number &amp; Frequency</th>
<th>Next Tests Due</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Point Sampling:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td></td>
<td></td>
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<tr>
<td>Inorganic Chemicals (Including Nitrite)</td>
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<tr>
<td>Inorganic Chemicals (Including Nitrite)</td>
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<tr>
<td>Nitrates</td>
<td></td>
<td></td>
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<tr>
<td>Radionuclides (Community Water Systems Only):</td>
<td></td>
<td></td>
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<tr>
<td>Gross Alpha</td>
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<tr>
<td>Radium 226/228</td>
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<td></td>
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<tr>
<td>Uranium</td>
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<tr>
<td>SOCs</td>
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<tr>
<td>VOCs (sw)</td>
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</tr>
<tr>
<td>VOCs (qw)</td>
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</tr>
<tr>
<td><strong>Distribution System Sampling:</strong></td>
<td></td>
<td></td>
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<tr>
<td>Coliform Bacteria</td>
<td></td>
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<tr>
<td>Asbestos (for AO pipe/asbestos ceding areas)</td>
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<tr>
<td>TTHMs and HAAs</td>
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<tr>
<td>Lead and Copper</td>
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<tr>
<td>Other Sampling</td>
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<tr>
<td>TOC</td>
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<tr>
<td>Turbidity</td>
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<tr>
<td>Source Water Coliform</td>
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<td></td>
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<tr>
<td>Other (specify)</td>
<td></td>
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<tr>
<td><strong>Yes</strong></td>
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<tr>
<td><strong>No</strong></td>
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</tr>
<tr>
<td><strong>Are samples collected at the correct locations in the system?</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Discuss correct sampling locations for all sampling (SRC, EP, DIST)</strong></td>
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<tr>
<td><strong>Discuss proper way to collect representative samples at all locations</strong></td>
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<tr>
<td><strong>Discuss possible sample reductions</strong></td>
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<tr>
<td><strong>Yes</strong></td>
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<tr>
<td><strong>No</strong></td>
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<tr>
<td><strong>Have all MCL violations or LCR AL exceedances been addressed?</strong></td>
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<tr>
<td><strong>DBP’s collected at correct locations?</strong></td>
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<tr>
<td><strong>Does the system have a written coliform sampling plan?</strong></td>
<td></td>
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</tr>
</tbody>
</table>

- Yes
- No

- Sample collection protocol
- Distribution map
- Sample site locations
- Rotation schedule
- Repeat locations
- Source locations

**Comments:**
Water Quality Monitoring

• Review sampling plans & procedures:
  – # of samples collected at appropriate sites
    • Chemical & coliform
    • Lead & copper tap sites
      – Tier 1 1/1/83 – 6/30/85
  – DBP sampling sites (chlorinated only)
  – Coliform sampling plan represents WQ throughout service area

• Review WQ monitoring schedules with operator
Management & Operations

<table>
<thead>
<tr>
<th>O&amp;M Manual and Emergency Response Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>❑</td>
</tr>
</tbody>
</table>

- Does system have an operation and maintenance manual?
- Does system have an emergency response plan?
- Do any system components have auxiliary power?
  If yes, describe: 

<table>
<thead>
<tr>
<th>Operator Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>❑</td>
</tr>
</tbody>
</table>

- Is the DRC identified and certified at the appropriate level?
- If the DRC is a contract operator, how do they work with the system?
- Does system have written protocols for under-certified operators?

<table>
<thead>
<tr>
<th>Plan Review/Master Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>❑</td>
</tr>
</tbody>
</table>

- Have all major modifications been approved by DWS?
- Does the system have a current (<20 yr. old) master plan? (Not required if < 300 connections)
  What year was the plan completed?

<table>
<thead>
<tr>
<th>Compliance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>❑</td>
</tr>
</tbody>
</table>

- Is water system in compliance (all orders resolved and not a priority non-complier)?
- Does the system issue public notice as required?
- Are consumer confidence reports sent to users each year?

Comments:
Management & Operations

- Discuss open or pending plan review projects
  - Relay information to your PR engineer
- Review O&M manual, emergency response plan
- Cross Connection Control program (CWS)
- Consumer confidence reports completed yearly (CWS)

<table>
<thead>
<tr>
<th>Plan ID</th>
<th>Project Name</th>
<th>Date All Received</th>
<th>Request for Additional Info</th>
<th>Conditional Approval</th>
<th>Preliminary Approval</th>
<th>Date Abandoned</th>
<th>Final Approval</th>
<th>Reviewer</th>
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<tbody>
<tr>
<td>44-2015</td>
<td>New Reservoir/Distribution Improvements</td>
<td>03/25/2015</td>
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<td>03/27/2015</td>
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<tr>
<td>168-2012</td>
<td>Master Plan</td>
<td>11/08/2012</td>
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<td>11/30/2012</td>
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<tr>
<td>244-2005</td>
<td>Mountain View Subdivision - Waterlines</td>
<td>09/14/2005</td>
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<td>09/07/2006</td>
<td>09/30/11</td>
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<td>305-1996</td>
<td>Highlands Subdivision</td>
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</table>
Preparing for survey

- Review PWS data in Data Online
Preparing for survey

- Review WS file
- Schedule survey at least 2 weeks before site visit
- Provide materials to prepare operator
  - Survey prep handout
  - Deficiency checklist
  - Outstanding performance criteria
  - Other resources & templates
Preparing for survey

For Water System Operators:
Preparing for a Water System Survey

A water system survey is an on-site review of sources, treatment facilities, and reservoirs, as well as office time to review the following records:

For all water systems:
1. Written coliform sampling plan.
2. A map of the distribution system.
5. Chemical dosage records if treatment is applied.
6. Proof of NSF Standard 60 certification for each chemical added to the drinking water.
7. Chlorine residual monitoring records if the system is chlorinated.
8. Results of any tracer study to verify disinfection contact time, if applicable.

9. Photos or other documents that provide enough detail to determine the current condition of storage reservoir features:
   a. Access hatch in open and closed/locked positions,
   b. Air vents that show all screening is secure with no gaps, and
   c. Any other openings into the tank interior such as telemetry ports and cathodic protection.

In addition, for Community water systems:
10. Cross-connection control program plan, records, latest Annual Summary Report, etc.
11. Written protocols for under-certified operators, if applicable.
Preparing for survey

- Research location
- Research weather
- Equipment needed
  - Flashlight
  - Camera (with charged batteries!)
  - Chlorine test kit
- Proper clothing
- Arrive on time
- Bring contact phone number (cell service?)
On-site inspection

• Follow flow of water from source through treatment to distribution

• Surveys evaluate direct pathways for contaminants to enter DW
  – Multi-barrier concept to reduce human health risk
Multiple Barrier Approach

- Source
- Contaminant
- Treatment
- Physical infrastructure
- Maintenance

Verify barriers are working by monitoring
On-site inspection

- Emphasis on significant deficiencies & rule violations
- List other issues as comments & recommendations
- Verify inventory information with operator.
- Open ended questions

<table>
<thead>
<tr>
<th>Inventory and Narrative</th>
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</thead>
<tbody>
<tr>
<td><strong>Outstanding Performer</strong></td>
</tr>
<tr>
<td>Type</td>
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<tr>
<td>------</td>
</tr>
<tr>
<td>Choose an item</td>
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</table>

<table>
<thead>
<tr>
<th>License</th>
<th>Responsible Agency</th>
<th>Service Characteristics</th>
<th>Ownership</th>
<th>Operator Certification Requirements</th>
</tr>
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<tbody>
<tr>
<td>Choose an item</td>
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<td>Choose an item</td>
<td>Choose an item</td>
<td>WD: Choose an item</td>
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<thead>
<tr>
<th>Primary Administrative Contact (Mailing Address):</th>
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</thead>
<tbody>
<tr>
<td>Contact Name:</td>
</tr>
<tr>
<td>Title:</td>
</tr>
<tr>
<td>Street Address:</td>
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<tr>
<td>City/State/Zip:</td>
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<table>
<thead>
<tr>
<th>Legal/Owner Address:</th>
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<tbody>
<tr>
<td>Contact Name:</td>
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<tr>
<td>Title:</td>
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<tr>
<td>Street Address:</td>
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<tr>
<td>City/State/Zip:</td>
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<table>
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<tr>
<th>System Physical Address:</th>
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<tbody>
<tr>
<td>Contact Name:</td>
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<td>Title:</td>
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<tr>
<td>Street Address:</td>
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<td>City/State/Zip:</td>
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<tr>
<th>Emergency Systems Available:</th>
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<tbody>
<tr>
<td>Name:</td>
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<tr>
<td>Narrative:</td>
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59
# Next week

<table>
<thead>
<tr>
<th>Wednesday, October 17</th>
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<tbody>
<tr>
<td>9:00 – 11:30</td>
<td>Survey Prep</td>
<td>Small Groups – DWS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>577 NE Courtney Dr. Crate Lake Conference Rm. Bend OR,</td>
</tr>
<tr>
<td>Working Lunch</td>
<td></td>
<td>Small Groups – DWS</td>
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<tr>
<td></td>
<td></td>
<td>Field Lunch</td>
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<tr>
<td>12:30 – 2:30</td>
<td>Field Work</td>
<td>Small Groups – DWS</td>
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<tr>
<td></td>
<td></td>
<td>Group 1 Eagle Crest Group 2 Cline Butte Group 3 Sun Mountain</td>
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<tr>
<td>3:00 – 5:00</td>
<td>Survey write up</td>
<td>Small Groups – DWS</td>
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<td></td>
<td>577 NE Courtney Dr. Crate Lake Conference Rm. Bend OR,</td>
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<table>
<thead>
<tr>
<th>Thursday, October 18</th>
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<tbody>
<tr>
<td>8:00 – 10:00</td>
<td>Survey write up</td>
<td>Small groups -DWS</td>
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<tr>
<td></td>
<td></td>
<td>1300 SW Wall St. Barnes/Sawyer Rm. Bend, OR</td>
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<tr>
<td>10:00 – 3:00</td>
<td>Fall Training</td>
<td>DWS</td>
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<td></td>
<td></td>
<td>1300 SW Wall St. Barnes/Sawyer Rm. Bend, OR</td>
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</tbody>
</table>
# Water System Groups

**Eagle Crest Resort**
01355, CWS, 400 pop
- Helen
- Erin
- Kevin
- Matthew
- Tia

**Oregon Water Utilities - Cline Butte**
01478, CWS, 950 pop
- Lance
- Jazzalynn
- Susan
- Kent
- Casey

**Sun Mountain Water System LLC**
00111, CWS 740 pop
- Jillian
- Nicole
- Max
- Carrie
Things to prepare

- Data online
- Explore forms
- Check weather
Questions?

Drinking Water Services  
Christia.d.skerbeck@state.or.us  
(971) 673-0415

Drinking Water Services  
Phone Duty (971) 673-0405  
dwp.dmce@state.or.us
Overview of Day

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wednesday, October 17</strong></td>
<td></td>
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</tr>
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<td>577 NE Courtney Dr.</td>
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<td>Crate Lake Conference Rm.</td>
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<td>Bend OR,</td>
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<tr>
<td></td>
<td>Working Lunch</td>
<td>Small Groups – DWS</td>
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<td></td>
<td>Field Lunch</td>
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<td>12:30 – 2:30</td>
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<td>Group 3 Sun Mountain</td>
</tr>
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<tr>
<td></td>
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<td>577 NE Courtney Dr.</td>
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<tr>
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<td>Crate Lake Conference Rm.</td>
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<tr>
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</tr>
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<td>Barnes/Sawyer Rm.</td>
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<td></td>
<td>Barnes/Sawyer Rm.</td>
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<tr>
<td></td>
<td></td>
<td>Bend, OR</td>
</tr>
</tbody>
</table>
Survey Prep

- Review files
- Fill out forms
- Check data online
Water System Groups

Eagle Crest Resort
0013155, CWS, 400 pop
• Helen
• Erin
• Kevin
• Matthew
• Tia

Oregon Water Utilities - Cline Butte
01478, CWS, 950 pop
• Lance
• Jazzalynn
• Susan
• Kent
• Casey

Sun Mountain Water System LLC
00111, CWS 740 pop
• Jillian
• Nicole
• Max
• Carrie
Eagle Crest Resort & Oregon Water Utilities

DRINKING WATER SERVICES
Public Health Division
Sun Mountain

DRINKING WATER SERVICES
Public Health Division
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00111, CWS 740 pop
- Jillian
- Nicole
- Max
- Carrie

12:30 @
1230 Golden Pheasant Dr,
Redmond, OR 97756

12:30 @
1706 Central Street
Bend, OR 97756
## Survey Write up

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 10:00</td>
<td>Survey write up</td>
<td>Small groups - DWS 1300 SW Wall St. Barnes/Sawyer Rm. Bend, OR</td>
</tr>
<tr>
<td>10:00 – 3:00</td>
<td>Fall Training</td>
<td>DWS</td>
</tr>
<tr>
<td>10:00 – 3:00</td>
<td></td>
<td>1300 SW Wall St. Barnes/Sawyer Rm. Bend, OR</td>
</tr>
</tbody>
</table>
Survey write-up

- Check all boxes or indicate NA
- Label all facilities on schematic
- Label or describe photos showing deficiencies

Photo 8: Inside South Reservoir. Note areas above center column. Coating may be detaching from the floor.
Survey write-up tips

- Make sure deficiencies in survey match those in cover letter
- Ask someone to review survey & letter before sending to WS
  - spelling errors, readability
Review violations/system score

- Returning violations to compliance (RTC)
- Do violations require public notice?
  - Check Data Online WS public notice page

### Violation History

<table>
<thead>
<tr>
<th>Violation Number</th>
<th>Auto-RTC?</th>
<th>Monitoring Period Begin</th>
<th>Monitoring Period End</th>
<th>Facility ID</th>
<th>Analyte Group</th>
<th>Violation Type - Analyte Count</th>
<th>Enforcement Action - Date</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>901619714</td>
<td>N</td>
<td>Sep 06, 2016</td>
<td></td>
<td>GWR</td>
<td></td>
<td>Failure to Correct Source Contamination - 1</td>
<td>Returned To Compliance - Jun 16, 2016</td>
<td>5</td>
</tr>
<tr>
<td>901619713</td>
<td>Y</td>
<td>May 01, 2016</td>
<td>May 31, 2016</td>
<td>TCR</td>
<td></td>
<td>Routine Coliform - Did Not Report ANY - 1</td>
<td>Returned To Compliance - Jul 22, 2016</td>
<td>1</td>
</tr>
<tr>
<td>901619710</td>
<td>N</td>
<td>Apr 01, 2016</td>
<td>Apr 30, 2016</td>
<td>TCR</td>
<td></td>
<td>Acute MCL for Fecal Coliform or E. coli - 1</td>
<td>Returned To Compliance - Aug 14, 2014</td>
<td>10</td>
</tr>
<tr>
<td>901619708</td>
<td>N</td>
<td>Jun 01, 2014</td>
<td>Jun 30, 2014</td>
<td>TCR</td>
<td></td>
<td>Public Notice Late/Nonreporting (Viol # 901619705) - 1</td>
<td>Returned To Compliance - Sep 11, 2014</td>
<td>1</td>
</tr>
<tr>
<td>901619705</td>
<td>Y</td>
<td>Jun 01, 2014</td>
<td>Jun 30, 2014</td>
<td>TCR</td>
<td></td>
<td>Total Coliform MCL - 1</td>
<td>Returned To Compliance - Aug 14, 2014</td>
<td>5</td>
</tr>
<tr>
<td>901619706</td>
<td>N</td>
<td>Jun 05, 2014</td>
<td>Jun 20, 2014</td>
<td>DIST-A</td>
<td>GWR</td>
<td>Source Sample - Late/Nonreporting - 1</td>
<td>Show analyte</td>
<td>19</td>
</tr>
</tbody>
</table>

### System Score Summary

- Unaddressed Points: 5
- Number of years the oldest violation has been unaddressed (n): 0
- System Score: 5
- Points under formal enforcement: 0
- Points RTC’d: 19
Data Online updates

• Sending WS changes to DMCE
  – Inventory, new sources/treatment, WQ schedules, etc.
  – Highlight items, add post-it notes, or attach a note
Post Survey follow-up

Groundwater systems have…

- **30 days** to respond to survey deficiencies
  - Ensure report was received & corrective action understood
  - Document WS communication in a contact report
- **18 weeks** from cover letter date to correct deficiencies or have approved Corrective Action Plan
  - If it falls on a holiday go to next business day
  - Date calculator [https://www.timeanddate.com/date/dateadd.html](https://www.timeanddate.com/date/dateadd.html)
- Refer to Deficiency Follow-up procedure on website
Web Form

- Updating deficiency status online

(Enter) DEPARTMENT (ALL CAPS)
(Enter) Division or Office (Mixed Case)
Top 10 deficiencies in 2016 surveys

1. No operations & maintenance manual
2. Emergency response plan not completed
3. No coliform sampling plan
4. Annual summary report not issues (CWS)
5. Monitoring not current
6. Annual CCR not submitted (CWS)
7. Chlorine not measured & reported as required
8. Cross connection testing records not current (CWS, NTNC, TNC)
9. Does not meet setback from hazards
10. No certified operator at required level
Summary

- Surveys evaluate any changes since the previous survey
- Pre-survey preparation is key to an effective survey
- Focus on significant deficiencies/rule violations - bulleted items
- Review survey forms before ending the on-site inspection
- Follow-up with WS soon after survey to discuss deficiencies & ensure corrective action is understood
- Send follow-up letter if corrective action due date is missed
- Document all WS communications in case further action is needed

Check with your DWS contact if you have questions!
Questions?

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Christia.d.skerbeck@state.or.us
(971) 673-0415

Drinking Water Services
Phone Duty (971) 673-0405
dwp.dmce@state.or.us