

Oregon Water Resources Monitoring Strategy

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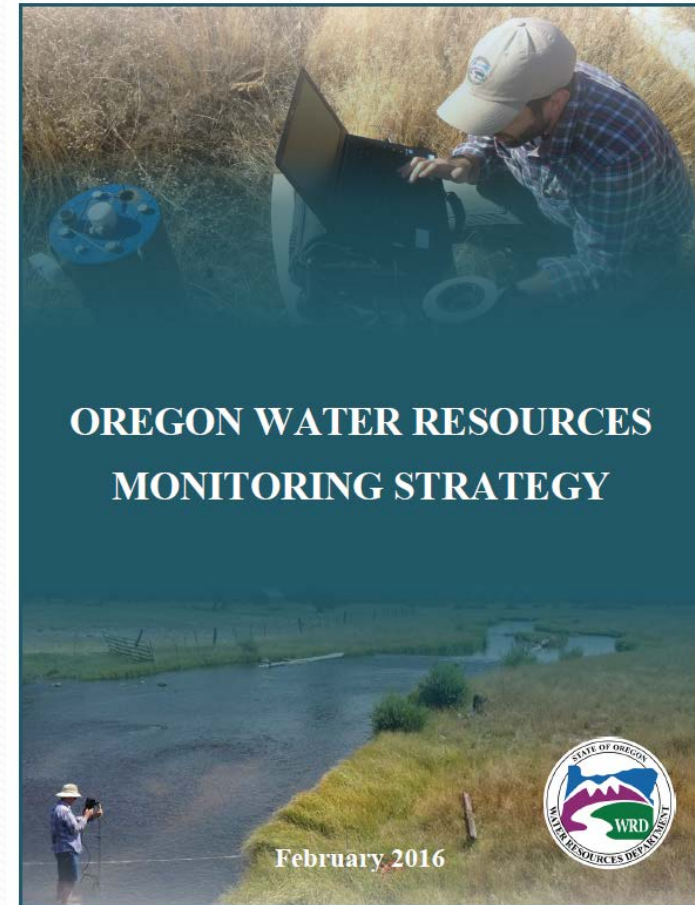
February 26, 2016



Oregon Water Resources Commission Meeting
Agenda Item L

Overview

- Reasons for development
- Monitoring Priorities
- Recommended Monitoring Actions
- Implementation



Reasons for Development

- **Key Performance Measures (KPMs)**
 - Better understanding of surface water and groundwater resources across the state
 - Increase number of gaging stations and observation wells
- **Efficient and effective use of resources**
- **Coordinate monitoring efforts**
 - Federal and State agencies
 - Tribes
 - Local monitoring groups
 - STREAM Team
- **Integrated Water Resources Strategy**
 - 2012 – Recommended Actions 1b and 1c
 - Improved water resources data collection and monitoring
 - 2017 – Coming Pressures (Monitoring Priorities)

Monitoring Priorities

- Climate Change
- Extreme Events
- Groundwater Protection
- Water Management
- Instream Needs
- Water Supply
- Partnering with other agencies



Recommended Monitoring Actions

The Department has identified and recommended specific monitoring actions that should be taken to address each monitoring priority.

Recommended Monitoring Actions

- Identify streamflow type
- Record is long-term, year round
- Data are transmitted in real-time
- Monitor snow-rain transition zones
- Monitor groundwater levels in declining areas
- Early warning indicators of high flows

Climate Change

- Altered hydrology of streams
- Rising temperatures
- Precipitation as rain instead of snow
 - Reduction in summer flows

Recommended Monitoring Actions

- Natural streamflow
- Record is long-term, year round
- Located in areas of rain-snow transitions

Mt. Ashland Ski Bowl (April 1, 2015)



Climate Change

- Altered hydrology of streams
- Rising temperatures
- Precipitation as rain instead of snow
 - Reduction in summer flows

Recommended Monitoring Actions

- Natural streamflow
- Record is long-term, year round
- Located in areas of rain-snow transitions

Mt. Ashland Ski Bowl (Typical April)



Extreme Events

- Floods
- Drought
- Wildfires
 - Flash flooding
 - Severe debris flows

Recommended Monitoring Actions

- Early warning indicators
- Effective monitoring
 - High flows
 - Low flows
- Rapidly deploy gages in recently burned watersheds



Groundwater Protection

- Groundwater Levels
 - Inform conjunctive use management
 - Issuing new groundwater permits
- Studies of Oregon's aquifers
 - Capacity, location, extent
 - Assess groundwater availability
- Surface water/Groundwater Interactions

Recommended Monitoring Actions

- Long-term data collection
- Hydraulic connection between aquifers
- Pair monitoring wells with stream gages



Water Management

- Distribution and regulation
- Water availability
 - Understand
 - Predict
- Water use data

Recommended Monitoring Actions

- Timely and effective
- Install flow meters
- Measures return flows
- Measures consumptive use rates



Instream Needs

- Recreation
- Pollution abatement
- Navigation
- Fish and wildlife populations



Recommended Monitoring Actions

- Sensitive, threatened, and endangered species
- Restoration and conservation activities
- Scenic waterways



Water Supply

- Population increases
- Changing climate
- Shifts in land use
- Water demand
- Water management practices



Recommended Monitoring Actions

- Establish gages and wells in watersheds with predicted increase in demand
- Measures snow-pack and runoff
- Measures actual water use



Partnering with Other Agencies

- Water supply development projects
- Develop flow prescriptions
- Monitor water quality
- Restore and conserve habitats



Recommended Monitoring Actions

- Partner with USGS, ODFW, DEQ, OWEB, tribes
- Develop monitoring protocols
 - Deploying instruments
 - Data collection, management, and sharing



Implementing the Monitoring Strategy

Next Steps

- Database Enhancements
 - Advanced querying capabilities
- Coordinate with external partners
- Network evaluations
 - Evaluate current and potential monitoring sites
 - Meet needs of Monitoring Priorities
 - Determine gaps in monitoring data



OREGON WATER RESOURCES
MONITORING STRATEGY

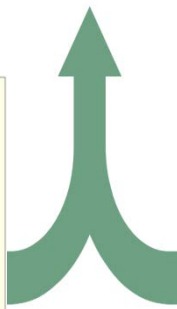
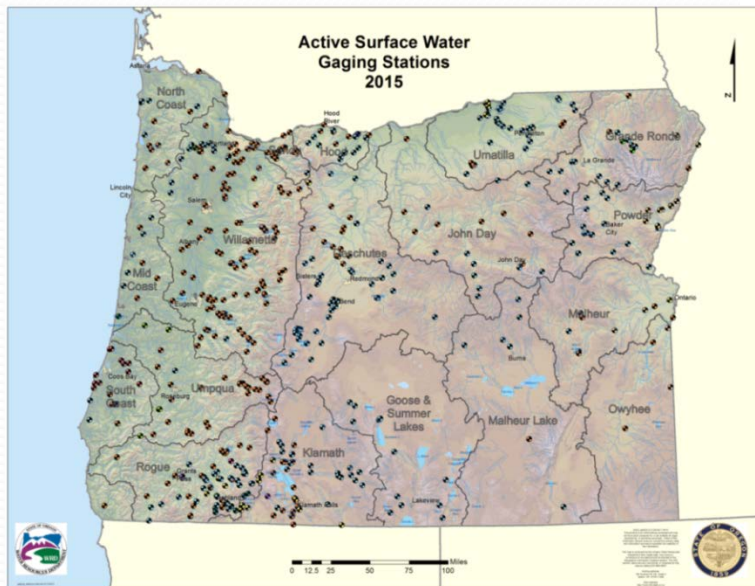


Database Enhancements

- Add new attributes
 - Natural streamflow
 - Regulation of instream water rights
 - Extreme events
 - Surface water/groundwater interactions
- Update/verify current attributes
 - Update elevation
 - Verify streamflow type
- Flag problematic sites
 - Data quality
 - Safety concerns
 - Difficult to access

What can I do with updated data?

- Is the stream flow type regulated or natural?
- Are there significant diversions above the gage?
- Can the gage be paired with local wells?
- What other data is being collected?



A screenshot of a Microsoft Access database window showing a table named "gaging_station". The table contains the following columns: physical_location_id, stream_id, stream_name, stream_status, start_operation_date, stream_flow_type, source_type, and streamcode. The data rows list various gaging stations across Oregon, such as "CHRISTMAS VALLEY AGRIMET WEATHER", "RABLER 25 AGRIMET WEATHER", "FRANKLIN CITY AGRIMET WEATHER", "WHELFORD AGRIMET WEATHER", "BANDON AGRIMET WEATHER", "TOWNS BUTTE AGRIMET WEATHER", "MADKAS AGRIMET WEATHER", "CROWT BROSIE AGRIMET WEATHER", "MOOD RIVER AGRIMET WEATHER", "PINE GROVE AGRIMET WEATHER", "SCHO AGRIMET WEATHER", "MEDFORD AGRIMET WEATHER", "SLAHEM HILLS AGRIMET WEATHER", "BAKER VALLEY AGRIMET WEATHER", "LAKEVIEW AGRIMET WEATHER", "MUCKUP AGRIMET WEATHER", "BEND AGRIMET WEATHER", "LAKE BELLY GORING NR CULLER", "NR FK MILL CR AB S FK MILL CR NR THE DALLIS", "BEAVER CREEK AND BEAVER BRIMON AT HOWARD PHARR CANAL", "SOUTH FORK MAHURAT AT FRYSDRUG, OR", "MERRILL CR AT OASER ISLAND, OR", "CLATSkanie NR CLATSkanie, OR", "FALL CR NR CLATSkanie, OR", "BBS CR NR SHARPS, OR", "LITTLE CR NR KNAPP, OR", "SEAK CR NR SEVENSON, OR", "WATERWORKS CR NR SEVENSON, OR (SITE #1)", "WATERWORKS CR NR SEVENSON, OR (SITE #2)", "YOUNG R NR ARNOTON, OR", "NR FK KLASKANINE NR DANEY, OR", "NR FK MEGACANUM NR SEASIDE, OR", "NR FK MEGACANUM NR SEASIDE, OR", "NR FK ECOLA CR AB DTY DIV, NR CANNON BEACH, OR", "NR FK ECOLA CR ABKA ELA CR NR CANNON BEACH, OR", "SEASIDE CR NR CANNON BEACH, OR", "NEHALLEM NR VERNONIA, OR", "ROCK CR NR KEASBY, OR", "ROCK CR AT VERNONIA, OR".

Coordinate with External Partners

- Solicited input on monitoring site locations
 - Shared survey with STREAM Team members
 - DEQ, ODF, ODA, and OWEB utilize water quantity data
 - Feedback considered on future monitoring locations



Salmon River near Otis

Network Evaluations

- Database enhancements
- Input from partners
- Meeting needs of Monitoring Priorities
- Determine future monitoring site locations

OWRD STREAM GAGING NETWORK EVALUATION FOR WATER DISTRIBUTION

Jonathan L. La Marche, PE

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Open File Report SW 2011 – 01



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Acknowledgements

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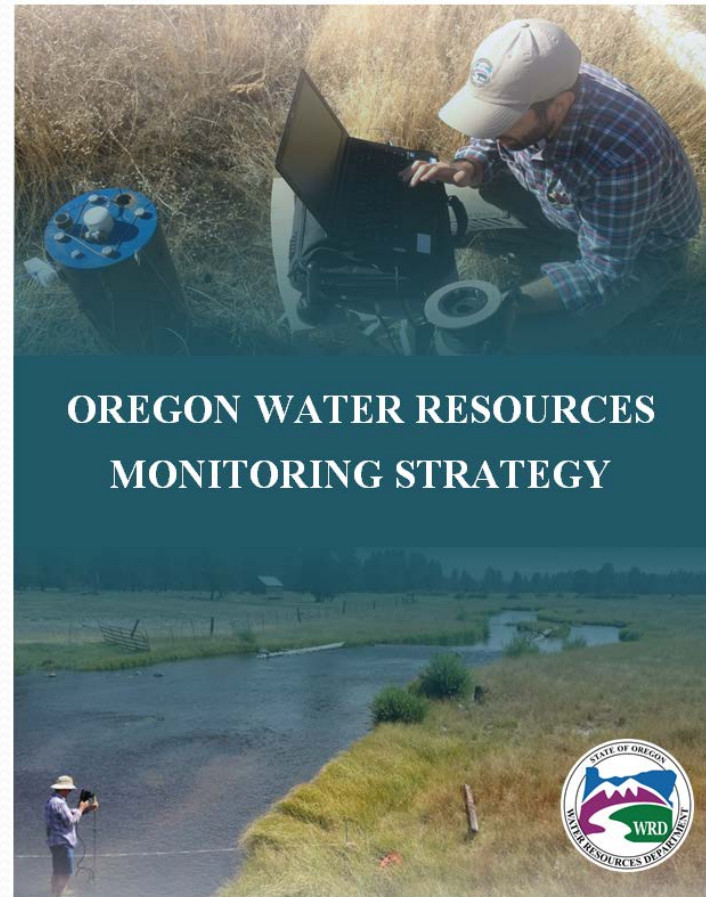
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Questions?

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