Oregon
John A. Kitzhaber, MD, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

MEMORANDUM

TO: Water Resources Commission

FROM: Phillip C. Ward, Director

SUBJECT: Agenda Item C, March 6, 2014
Water Resources Commission

Willamette Basin Reservoir Study Update

I. Introduction

In federal fiscal year 2013, the U.S. Army Corps of Engineers (Corps) completed a small-scale pilot project in the Coast Fork Willamette River watershed to analyze whether stored water could be used to meet water supply needs for the City of Creswell. The "Draft Surplus Water Letter Report, Coast Fork Willamette River Basin" (Water Letter Report) was released in December and informs the larger Reservoir Study.

The Corps and Department staff will provide a summary of the Water Letter Report, discussing its relevance to the Willamette Basin Reservoir Study. Staff will also discuss the Department's recent decision not to pursue a WaterSMART Basin Study proposal.

The Water Resources Commission will be asked to support continued funding of the Reservoir Study.

II. Background

The Willamette Valley Project, a series of thirteen reservoirs in the middle and upper Willamette Basin, were authorized for construction beginning in the late 1930s. The dams are owned and operated by the Corps. The Willamette Valley Project is authorized for a variety of purposes: flood damage reduction, navigation, hydropower, irrigation, water supply, recreation, and flow augmentation for pollution abatement and fishery needs. The U.S. Bureau of Reclamation (Reclamation), the agency responsible for issuance of stored water contracts for irrigation, filed storage applications for water rights in 1954 and 1968. Although the Project reservoirs are authorized for multiple uses, the two water right certificates allow storage of 1.64 million acre-feet of water for irrigation uses only.

In 1996, the Corps partnered with the Department to complete the "Willamette Basin Reservoir Study," and set out to accomplish five goals (see insert). Funds for the Study were provided by both agencies and more than 60 cities, special districts, and various organizations, including commercial and industrial firms. In 2000, the Study was placed on hold to allow for a federal consultation process related to several fish species listed under the Endangered Species Act (ESA). The release of the 2008 Willamette Biological Opinion opened the door to re-launching the Study; however, neither agency had resources to support efforts during that time.

Original Study Goals (1996)
1) Authorize a full range of beneficial uses (including anadromous fishery and water quality needs, municipal and industrial water supply, recreation). 2) Develop an operational agreement for low-flow years. 3) Determine appropriate institutional arrangements. 4) Investigate options to improve reservoir refill and reduce downstream erosion during reservoir drawdown. 5) Address municipal and industrial water demands and constraints.

Today, there is significant interest and support for re-launching the Reservoir Study, which will examine various storage allocation alternatives involving the Willamette Valley Project in order to meet the needs of a broad range of beneficial uses in the Willamette Basin.

III. WaterSMART Discussions and Data Needs

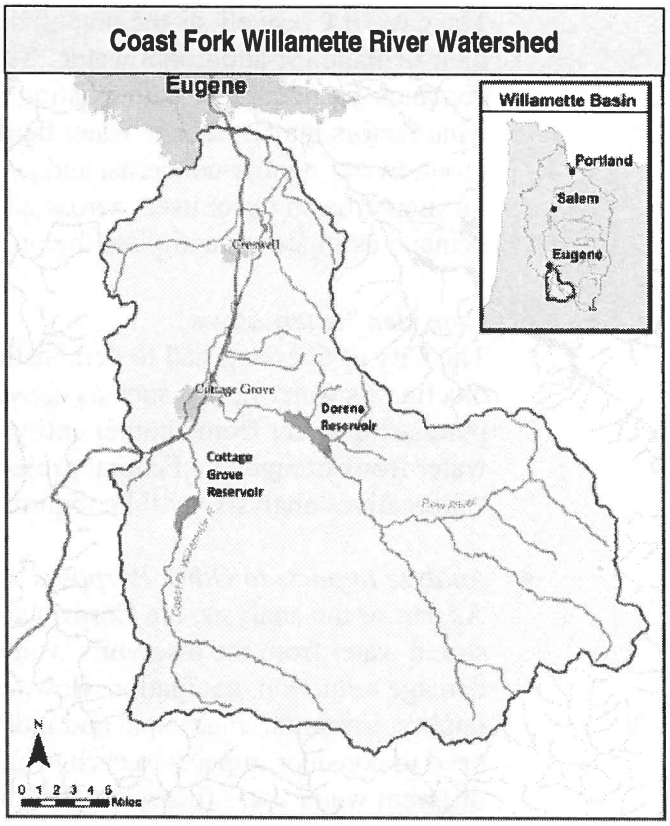
In 2013, the Department partnered with the U.S. Bureau of Reclamation to explore whether a WaterSMART Basin Study could provide some of the data needed for the Willamette Basin Reservoir Study. WaterSMART studies can be used, in part, to examine water demands within a basin and assess climate change impacts on water resources management, both of which are needed to complete the Reservoir Study.

The Department hosted two workshops with stakeholders and agency partners in September and December to compare the WaterSMART Basin Study requirements with the Reservoir Study needs. With input gathered during these workshops, the Department decided not to pursue a WaterSMART Basin Study during the FY14 solicitation period. The challenge of meeting two federal cost-share requirements (a 50% match requirement for both) and the possibility of duplicating efforts formed the basis of this decision. Instead, the Department offered to form workgroups focused on (1) estimating agricultural water demand, (2) examining and filling instream flow data gaps, and (3) incorporating climate change analysis into the Willamette Basin Reservoir Study efforts.

In early January, the Department held an Agricultural Demand Workgroup meeting. Dr. Bill Jaeger shared initial results that detailed the Willamette Water 2100 approach for estimating agricultural demands in the Willamette Basin. Several stakeholders representing diverse interests attended the meeting. Agricultural organizations, such as the Oregon Farm Bureau, Oregon Association of Nurseries, Oregon Water Resources Congress, and the Santiam Water Control District attended as did the Oregon Department of Agriculture, U.S. Bureau of Reclamation, and the U.S. Army Corps of Engineers. The Project researchers offered valuable

insights into the Willamette Water 2100 modeling process, explaining how existing water rights are being considered, and how other factors such as crop type, soil type, elevation, and land rental prices can influence the demand for irrigation water.

IV. Corps Releases Draft Surplus Water Letter Report



In FY13, the Corps received $200,000 to support efforts that could inform the Reservoir Study. Considering the funding available, resources were targeted to answer one of the larger questions facing the Reservoir Study: How much will it cost to purchase storage space for municipal and industrial water users in the basin? Answering this question early in the process will help water providers plan for future infrastructure investments and determine their role and participation in the larger Reservoir Study. Determining the purchase price was a major task of a smaller pilot study to use stored water from two reservoirs located in the Coast Fork Willamette River watershed for the City of Creswell (see map). A draft Water Letter Report for the pilot study was released in December for public review and comment. See Attachment 1 for a copy of the Executive Summary.

The Water Letter Report evaluates the use of 437 acre-feet of surplus water from Dorena and Cottage Grove reservoirs to meet the City of Creswell's municipal and industrial (M&I) water needs. The analysis shows that the additional flow needed to satisfy 437 acre-feet over the months of June through September equates to approximately 2 cubic feet per second and would not measurably alter the minimum releases from Cottage Grove and Dorena reservoirs. In addition, this volume would not measurably decrease the surface water elevations of the reservoir or increase water velocities downstream.

The Water Letter Report also establishes a system-wide method for determining the price per acre-foot for storage space from the Corps' Willamette Valley Project reservoirs. Taking a systems approach means the purchase price for stored water is the same for any municipal or industrial user in the basin, regardless of the diversion location. In the draft report, the Corps calculated the capital cost as $2,345.00 per acre-foot of water. If a municipality were to finance this cost over a thirty-year repayment period at the current federal interest rate of 3.125 percent, the annual cost would be $130.00 per acre-foot of storage. This price includes a portion of current operations and maintenance (O&M) costs, which can vary from year to year. A municipal or industrial water user is also responsible for a portion of any repair, rehabilitation, or replacements costs.

In many ways, completing the tasks under the Water Letter Report helped define some of the expectations for the larger Willamette Basin Reservoir Study. Below are a few examples of similarities:

- *Determining the Need for Water*
  The City of Creswell, as the potential purchaser of stored water, needed to demonstrate their demand for additional water. This was completed by considering how existing demands are being met with existing water rights and supply sources, and articulating what factors may influence water demands in the future, such as population growth, groundwater quality concerns, and possible curtailment during low water years. Similarly, basin water users across all sectors will need to provide current and future demand estimates to complete the modeling analysis needed under the Reservoir Study.

- *Consider "Alternatives"*
  The City of Creswell had to demonstrate a suite of options had been considered for meeting its water needs, such as conservation, natural flows, groundwater, and purchasing water from another entity. The Corps uses this information to determine if water from storage in a Federal project is the most efficient water supply alternative. An "alternatives analysis" will be required for the Reservoir Study.

- *Analyze Impacts to Other Purposes*
  As part of the analysis, the Corps was required to consider how releasing 437 acre-feet of stored water from the reservoirs would impact other authorized purposes, such as flood damage reduction, navigation, flow augmentation, hydropower, fish and wildlife, water quality, irrigation, municipal and industrial water supply, and recreation. The Corps will need to consider impacts to each of these uses when allocating the storage space among different water users (instream and out-of-stream) under the Reservoir Study.

The Department and the Corps hosted a meeting in early January to provide an opportunity for stakeholders to pose questions and discuss any issues regarding the draft Water Letter Report. The public comment opportunity closed on January 14, 2014. The Oregon Water Utilities Council and the Oregon Association of Nurseries submitted comments on the draft report, prior to the deadline. The Corps' Portland District expects to submit the final report to the Division Engineer of the Northwestern Division office for review by early February.

V. Next Steps

If the Surplus Water Letter Report is approved, the federal agencies will need to file a transfer application with the Department to change the character of use to authorize storage for municipal and industrial uses for the portion requested (437 acre-feet). If the City of Creswell chooses to purchase storage space, a secondary application to use stored water, as well as a signed agreement with the Corps, will be needed. Approval of the Surplus Water Letter Report does not obligate the City to purchase stored water.

The Corps anticipates developing the Project Management Plan for the Willamette Basin Reservoir Study, in consultation with the Department, beginning in late March.

VI. Conclusion

Completing the Willamette Basin Reservoir Study is a key component of implementing the Integrated Water Resources Strategy, Recommended Action 10.B: "Improve Access to Built Storage." The storage of water within the Corps' Willamette Valley Project represents a critical source of current and future water supply for instream and out-of-stream needs. The Water Resources Commission has been supportive of ongoing efforts by the State of Oregon, federal partners, and local stakeholders to work together to re-allocate the water stored in these reservoirs and to develop a means by which to contract for such water. In 2012, the Commission adopted a resolution supporting water storage and allocation in the Willamette Basin (see Attachment 2).

Today, the total cost for the study is estimated at $3.0 million, beginning in 2013-15 biennium and continuing into the 2015-17 biennium. As the non-federal sponsor, the Department is required to provide fifty-percent of the study costs ($1.5 million) as cash or in-kind services. Funding for the Reservoir Study is available through the Water Supply Development Account established by Senate Bill 839 in 2013. The Department is seeking the Commission's support to continue meeting its financial obligation for the Reservoir Study.

The Commission may consider the following options:

1. Support the Department's use of funds to carry out the Willamette Basin Reservoir Study.
2. Direct staff to report back with more information.

VII. Recommendation

The Director recommends Option 1, to support the Department's use of funds to carry out the Willamette Basin Reservoir Study.

Attachment 1: Executive Summary – Draft Surplus Water Letter Report
Attachment 2: Water Resources Commission Resolution Supporting Water Storage and Allocation in the Willamette Basin

Alyssa Mucken
503-986-0911

EXECUTIVE SUMMARY

The City of Creswell (City), a small bedroom community in Lane County, Oregon, has expressed an interest in purchasing surplus storage for water supply to support municipal and industrial needs from the U.S. Army Corps of Engineers (Corps). The City requested water from Dorena and Cottage Grove Reservoirs, both of which are operated as part of the Willamette Valley Project, a system of 11 dams and reservoirs and 2 reregulating dams located in the Willamette River Basin, Oregon.

To meet the immediate needs of the City of Creswell, the Corps initiated a general investigation study in the Coast Fork Willamette River sub-basin. The Oregon Water Resources Department acted as the non-federal, cost-share sponsor for this study. The purpose of the study was to identify whether a quantity of joint-use storage, up to 437 acre-feet, is available as surplus for municipal and industrial (M&I) use. A major outcome of the study was determining the price charged to municipal and industrial entities for Willamette Valley Project storage space.

This report, titled *Coast Fork Willamette River, Oregon Surplus Water Letter Report,* outlines the study purpose and authority, including a description of the study's relationship to the *Willamette Basin Review Feasibility Study*, which was placed on hold in 2000 to allow for Endangered Species Act consultation among federal agencies.

The City of Creswell's water supply needs and potential alternatives are also discussed in this report. Of those alternatives, using surplus conservation storage from the Willamette Valley Project, specifically Dorena and Cottage Grove Reservoirs, is the most efficient water supply alternative for meeting the City of Creswell's immediate water needs.

The Willamette River Basin was modeled using the Hydrologic Engineering Center (HEC) Reservoir System Simulation Program (ResSim) to assess the individual project and system effects of the proposed action. The authorized project purposes of the Willamette Valley Project, including impacts from the proposed action, were examined as part of the study and are detailed in this report. The small amount of water released from the project reservoirs is not expected to measurably impact the authorized purposes, namely flood damage reduction, navigation/flow augmentation, hydropower, fish and wildlife, water quality, irrigation, municipal and industrial water supply, and recreation. Other considerations, such as the financial feasibility of purchasing storage, environmental aspects, and dam safety considerations were also examined as part of this study.

The ResSim Program was also used to analyze the system-wide impacts of using stored water from all eleven Willamette storage projects to meet projected M&I basin-wide demands in the future. The results from this analysis were used in the cost analysis to determine the price structure for reallocated and surplus storage in the Willamette Project. A discussion of the modeling results and the calculations to determine user costs are detailed in the appendices.

The report closes with steps needed for implementation, findings of the study, and recommendations from the District Engineer.

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Resolution Supporting Water Storage and Allocation in the Willamette River Reservoir System

Adopted by the Oregon Water Resources Commission

Whereas, the Willamette Valley, 11,478 square miles in area, constitutes 12 percent of the landmass in the state of Oregon; and

Whereas, the counties of the Willamette Valley are home to 2.6 million people, representing 70 percent of the population of the state of Oregon; and

Whereas, the Willamette Valley is among the most fertile agricultural areas of the world, with more than 170 varieties of agricultural crops grown and sold; and

Whereas, the Willamette River is home to 60 species of fish, requiring flows to support life-cycle and biological processes throughout the year; and

Whereas, abundant and reliable water supply is critical for all of these inhabitants to grow and flourish; and

Whereas, the natural delivery of water, through precipitation and run-off, occurs primarily during the winter months in Oregon, outside times of peak municipal and agricultural demand; and

Whereas, water right certificates issued to the U.S. Bureau of Reclamation allocate all the stored water available for contract in the Willamette River Reservoir System for irrigation only;

Whereas, other beneficial uses need access to this water as well.

Be It Resolved by the Oregon Water Resources Commission:

That the storage of water in the Willamette River Reservoir System, owned and operated by the U.S.Army Corps of Engineers, represents a critical source of current and future water supply for instream and out-of-stream needs. The Water Resources Commission strongly supports ongoing efforts by the State of Oregon, federal partners, and local stakeholders to work together to re-allocate the water stored in these reservoirs and to develop a means by which to contract for such water.

Signed by John Jackson, Water Resources Commission Chair

March 1, 2012