

MEMORANDUM



MWH
MONTGOMERY WATSON HARZA

TECHNICAL MEMORANDUM: WATER SUPPLY FEASIBILITY STUDY (WSFS) SUPPLY OPTIONS EVALUATION SUMMARY

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The purpose of the Water Supply Feasibility Study (WSFS) is to evaluate reliable, safe and cost-effective water supply options to meet the long term water needs of the Tualatin Basin community. The study began in November 2001 as a collaborative effort led by Clean Water Services in cooperation with the Bureau of Reclamation and local water providers. WSFS will follow National Environmental Policy Act (NEPA) process in anticipation of developing an Environmental Impact Statement for the project.

BACKGROUND

A series of water supply studies have set the stage for the WSFS. In the early 1990's the Regional Providers "Phase I Source Options Study" evaluated 29 different new water source options (options list attached). Expansion of Hagg Lake was not included in this study. Three regional advisory groups were involved in developing criteria and evaluating these options and recommended the following six for further study.

Third Dam at Bull Run

Diversion of the Willamette River

Aquifer Storage and Recovery (ASR)

Expansion of the Barney Reservoir

Full Water Rights Development of the Clackamas River

Diversion of the Columbia River

Phase II of the Regional Water Supply Plan (RWSP), adopted in 1996, detailed how to meet regional 2050 water supply needs and added conservation to the supply options recommended above.

The Integrated Water Resources Management Strategy (IWRM) completed in 2001 is a cooperative agreement among wastewater and stormwater management agencies, municipal water providers, irrigators and county facilities managers on major Tualatin Basin water resource issues. A priority IWRM action is to pursue viable options to ensure a safe, reliable and cost-effective long-term water supply to meet future basin needs. The IWRM strategy estimated that the Tualatin Basin would face supply shortfalls by 2050.

WSFS SOURCE OPTIONS SCREENING

The current Tualatin Basin WSFS is the next step of the IWRM. The WSFS is following the public decision-making process described in NEPA. NEPA applies to the WSFS because one of the source options under consideration – modification of Scoggins Dam – would require federal action by the Bureau of Reclamation. The NEPA process requires the consideration of environmental factors in decision-making, and sets forth a process where decisions are open to the involvement and scrutiny of Federal, State and local agencies, Indian tribal governments, the interested public and private organizations. In the NEPA process, information must be provided as to alternatives, impacts and possible mitigation. A No Action alternative must also be analyzed. A series of four public scoping meetings were held in January 2002. The purpose of these meetings was to obtain early input on significant issues related to the potential source options. Follow-up information distributed by CWS through direct mailing and press releases, presentations at community events, and stakeholder meetings have continued to provide input to the decision-making process.

Using the comprehensive list of potential sources from previous studies and input from the scoping process, a set of options capable of providing a safe, reliable and cost-effective water supply to meet the basin's future needs were identified for more detailed evaluation. The previously identified Clackamas and Columbia River regional options posed numerous challenges as viable, long-term water supplies for the Tualatin Basin. Issues with those options include water rights, engineering and constructability, institutional, legal and public perception. These sources are being further investigated as part of the RWSP Update now underway and may be re-evaluated as new information is made available. Expansion of Barney Reservoir has been completed.

The following set of options was carried forward.

Water conservation. Programs and policies that reduce the demand for municipal/industrial (M&I) and agricultural water supplies.

Wastewater reuse. Infrastructure to distribute treated wastewater for irrigation, primarily for non-food crops. Reuse would result in a reduction in demand in the M&I and agricultural sectors.

New Tualatin Basin storage. Includes several specific options:

Scoggins Dam raise. Constructed dam raise would result in a larger pool behind the dam and increased storage.

New in-line storage on a Tualatin River tributary. New dam on a tributary, similar to the existing Scoggins Dam.

Off-line storage on a Tualatin River tributary. Water impounded away from tributaries in the high flow season and pumped back to the tributary during low flows to satisfy in-stream water needs only.

Stimson Dam. New dam below Scoggins Dam and upstream from Stimson Lumber Mill.

Aquifer storage and recovery (ASR). Injecting treated drinking water into underground aquifers during low demand periods and pumping it to provide supplemental peak use supply. Assumed to satisfy municipal needs only.

Bull Run System Contracts. Two scenarios: Near-term (by 2020) expansion of supply capacity through filtration treatment and a raise of the existing Bull Run Dam Number 2; and construction of a third dam in the Bull Run watershed. Either requires a new transmission pipeline to Washington County and is assumed to satisfy municipal needs only.

Irrigation Exchange Pipeline from the Willamette River. Raw water pipeline from the Willamette River pumped for Tualatin Basin agricultural irrigation use. Provided to Tualatin Valley Irrigation

District (TVID) in lieu of the Hagg Lake storage making that water available for municipal and in-stream use.

WSFS SOURCE OPTIONS EVALUATION

The Washington County Water Managers Group (WVG) evaluated these options based on criteria developed from prior studies (IWRM, RWSP, 1992 Water Source Options Study, and 2000 Regional Transmission and Storage Strategy). Comments received during the NEPA scoping process from the Tualatin River Watershed Council, Clean Water Advisory Council and the general public also helped shape the following evaluation criteria list.

Cost	Recreation
Institutional and financial feasibility	Flood control
Legal and regulatory feasibility	Environmental impact
Supply reliability	Timeliness
Emergency reliability	Property rights preservation
Efficiency	Security from intentional harm
Water quality	

Existing information was collected and reviewed where possible. For source options where no existing data were available, planning-level studies were conducted to make an initial determination of suitability relative to the criteria. The objective of the screening process was to identify those source options that rated very poorly in terms of their ability to meet the criteria. These source options were not recommended by the WVG for further WSFS analysis. It should be noted that source options not being carried forward in the WSFS may be revisited in the future.

Based on this evaluation, the WVG made the following recommendations for further WSFS detailed analysis.

Source Options Not Recommended for Further Study

These options were ruled out, primarily due to high cost or impact to private property:

Stimson Dam – New dam has the advantage of providing same amount of storage as 40 foot Scoggins raise with impacts similar to 20 foot raise and potential for meeting fish passage requirements on a new facility better than retrofit of existing dam.

Main disadvantages are high cost per acre foot of new storage compared to the Scoggins Damraise options, impacts to fish habitat, Stimson operations and relocation of access roads.

New in-line tributary storage – Storage sites throughout the basin have been studied for years and have been rejected for multiple reasons including high cost, water availability, feasibility, environmental and property impacts, and water rights conflicts.

Off-line tributary storage – Only useful to meet in stream flow needs. Significant drawbacks include area-intensive footprint, cost and competition with existing land use, and impacts to private property.

Bull Run Dam #3 –This source option is being evaluated in a regional context as part of the RWSP Update, now underway. Information will be considered as it becomes available. This source option has the disadvantage of not increasing the diversification of the region’s water supplies.

Qualitative Assessment of Source Options Not Recommended for Further Evaluation

Source Option	Cost	Inst./Financ. Feasibility	Legal/Reg. Feasibility	Supply Reliability	Emerg. Reliability	Water Quality	Recreation	Flood Control	Env. Impact	Timing	Property Impact	Security
Stimson Dam	□	□	▣	▣	■	■	■	▣	■	▣	▣	▣
New In-Line Storage	□	□	□	■	■	■	▣	▣	□	□	□	▣
Off-Line Storage	□	□	□	▣	□	■	□	□	□	□	□	□
Bull Run Dam 3	will be evaluated in RWSP Update											

■ = good ▣ = fair □ = poor

Source Options That Should Be Components of All Supply Alternatives

These options were perceived as strongly positive in one or more evaluation criteria and should be considered as part of any overall water supply strategy:

Water conservation – Reducing per capita demand is an ongoing goal. Water use in the Portland area peaked in the 1980’s and has been dropping ever since (estimated to be a 20 percent drop). An 8 percent Washington County demand reduction assumption has been made for this analysis. Potential supply – 7,600 acre-feet per year (AF/year).

Wastewater reuse –Based on Clean Water Service’s Recycled Wastewater Master Plan, WSFS assumes that an intermediate level of reuse will be achieved by 2050. Potential supply – 3,500 AF/year.

Aquifer storage and recovery – Several Tualatin Basin water providers have tested, or are currently testing, ASR. WSFS assumes 10 million gallons per day (mgd) will ultimately be developed including 4.5 mgd being developed by Beaverton. Potential supply – 5,500 AF/year. (M&I use only)

Near-term Additional Supply from Portland - Assumes that Portland will continue to provide water and that additional water may become available to the Westside by 2020. New transmission pipeline will be required. Potential supply – 9,200 AF/year. (M&I use only)

Source Options Recommended for Further Study

No Action – This scenario considers the impact of no increase in water supply on flow and water quality, on irrigated agriculture and on M&I demand in the Basin.

Scoggins Dam Raise (20 feet) – Raise would increase Hagg Lake storage but would not be adequate to meet projected 2050 water needs unless combined with conservation, reuse, and/or ASR. Potential supply – 26,500 AF/year.

Scoggins Dam Raise (40 feet) - Raise would increase Hagg Lake storage to meet 2050 projected need. WSFS will study the environmental impacts of any dam raise, as well as impacts to property and park facilities. Potential supply – 50,600 AF/year.

Irrigation Exchange Pipeline from the Willamette River – Trading Willamette River water for TVID irrigation supply in Hagg Lake. WSFS will study the engineering feasibility, cost and environmental impacts of the roughly 18 mile irrigation pipeline. Potential supply – 25,000 AF/year. (M/I and in-stream use only)

Qualitative Assessment of Source Options Recommended for Further Evaluation

Source Option	Cost	Inst./Financ. Feasibility	Legal/Reg. Feasibility	Supply Reliability	Emerg. Reliability	Water Quality	Recreation	Flood Control	Env. Impact	Timing	Property Impact	Security
No Action	■	■	▣	□	□	□	▣	▣	▣	■	■	▣
Scoggins Dam Raise - 20'	▣	■	▣	▣	▣	▣	■	▣	▣	▣	■	▣
Scoggins Dam Raise - 40'	▣	▣	▣	■	■	■	■	■	▣	▣	▣	▣
Irrigation Exchange Pipeline	▣	□	▣	▣	■	■	▣	□	▣	▣	□	▣

■ = good ▣ = fair □ = poor