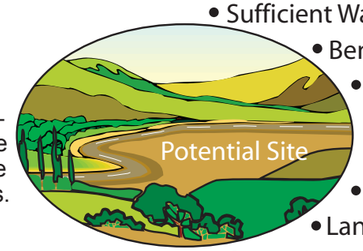
November 2003

INFORMATION SHEET- WATER STORAGE

Water storage is one of several measures being investigated under the Walla Walla River Basin Feasibility Study to improve the aquatic ecosystem of the Walla Walla River Basin in Oregon and Washington. The study is focused on the development of alternatives to improve aquatic habitat by increasing flows. Other measures currently under investigation include Water Exchange, Irrigation Efficiency, and Water Rights Acquisition. Aquifer recharge may also be investigated. For more information on the study, visit our website at: **www.nww.usace.army.mil/wwrbasin.**

The idea of water storage is to capture a portion of the river's flow. The water would be captured when flow is high and when it would not adversely affect aquatic habitat. The water would be stored in a reservoir (to be constructed) and released in two ways: (1) directly into the river or stream during low flows or (2) into agricultural irrigation systems when it is needed most. The need for taking water from the river or stream would be reduced if stored water were put into irrigation systems. Natural flows could remain in the river or stream.

Sample Storage Site Considerations

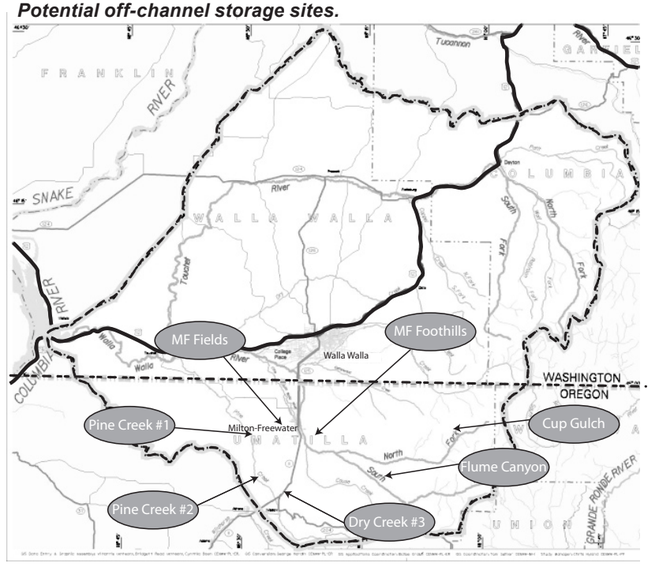


- Sufficient Water Supply
- Beneficial to the Environment
- Strategically Located
- Geologically Suitable
- Construction Cost
- Site Availability
- Landowner Sentiments
- Operation and Maintenance Cost

Stored water could be used early in the irrigation season and/or during summer low flow (critical periods for fish passage and juvenile rearing). For example, water provided directly as in-stream flow during the peak irrigation diversion season (July - October) could improve critical steelhead and salmon juvenile rearing habitat. The additional water could aid riparian growth, thus providing better rearing habitat. Natural flows remaining in the river would create higher flows to push steelhead and salmon smolts (juveniles) out to the Columbia River (April - July). These flows would attract adult spring Chinook salmon into the Walla Walla River.

A number of potential off-channel storage sites were identified during the scoping process, through map analysis, and from discussions with local residents. Various requirements must be met for a potential storage site to be considered. (See graphic above for Sample Storage Site Considerations.)

Potential off-channel storage sites.



More than 45 sites in Oregon and Washington were examined for the possibility of storing water in the basin; 16 in Washington and 29 in Oregon. (See map at study Web site: www.nww.usace.army.mil/wwrbasin). This number of sites has been reduced to seven (all in Oregon) through the application of the screening criteria, including the storage considerations. The screening criteria included the potential for impacts to species listed under the Endangered Species Act and to fishery resources in general, as well as hydrologic capacity.

The seven sites are being ranked from most to least suitable. The two most suitable sites will be examined in greater detail. The same screening criteria will be used for other sites identified during the study.

FOR MORE INFORMATION

To learn more about the study, visit our Web site at: **www.nww.usace.army.mil/wwrbasin**. Links to other information include CTUIR and others. If you wish to be added to the mailing list, contact the study's environmental compliance coordinator, Mr. James "Red" Smith, telephone 509-527-7244. Check back regularly for study updates, upcoming meetings, and new material. Comments may be submitted through the Web site or you may mail your comments to:

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section
Attn: WWRBFS
201 North Third Avenue
Walla Walla, WA 99362

STUDY MILESTONES

- ☑ **Scoping of Public Issues . . . . . Fall 2002**
- ☑ **Initiate Stakeholder Meetings. . . . . Spring 2003**
- ☐ **Restoration Measures Evaluation . . . . . Spring/Summer/Fall 2004**
- ☐ **Completion of Study 2006**

☑ ***= Task completed***

FREQUENTLY ASKED QUESTIONS ABOUT WATER STORAGE

Question: Would a storage site in Flume Canyon impact bull trout and steelhead?

Answer: A storage reservoir in Flume Canyon would not likely affect steelhead and/or bull trout. These species use the channel on a very limited seasonal basis. There is no recorded spawning of steelhead or bull trout in lower Flume Canyon where a storage reservoir might be located. Based on the typical time periods when Flume Canyon is dry, summer rearing cannot occur, but spring rearing is possible. However, sudden spring flows through the Canyon can inhibit rearing and spawning. The forested upper end of Flume Canyon is more suitable habitat; however, there is no recorded or known bull trout use. Flume Canyon is a relatively dry channel about 6 months of the year. The canyon is seasonally grazed and exhibits a flashy hydrology typically between December through June. The hydrology of a dammed Flume Canyon could potentially provide benefits to any restricted steelhead and bull trout that may occupy the lower end of Flume Canyon for seasonal refuge. The benefits would occur in the form of increased flows to the South Fork of the Walla Walla River.

Question: Why not explore the site in the Milton-Freewater foothills more? What about a very big storage reservoir there?

Answer: First, the most logical source of water for a reservoir in the Milton-Freewater foothills would be the North Fork of the Walla Walla River. Oregon Department of Fish and Wildlife (ODFW) has indicated the North Fork of the Walla Walla River is flow limited and does not have “extra” water available for storage. Water could be pulled from the South Fork of the Walla Walla River, but it would be much more difficult and more expensive. Second, to get the water into the reservoir, a diversion dam with a very long siphon, or a large pumping station with a pipeline, would be required. Third, there is no natural depression to dam up, so an adequate reservoir would require a very large, long dam. This would result in significantly increased construction costs. Fourth, groundwater seepage problems are more likely in the foothills than other canyons. This is due to the depth of the soils and the shape of the dam. Seepage problems can significantly increase inflow required to achieve desired storage volume. For the reasons given above, a large storage reservoir in the Milton-Freewater foothills would not be practical.

Question: Why not expand Bennington Lake for use as irrigation storage?

Answer: First, the current size of the lake is only 8,200 acre-feet. This size is on the lower limits of the amount of storage needed. The only feasible way to increase storage volume is to excavate the area beneath and surrounding the lake. This would be very costly. Second, the soils and rock below the lake are very porous. Water stored in the lake would rapidly seep out into the surrounding ground, unless the lake bottom were covered with some type of liner. Third, is the issue of water rights and availability of an adequate supply of water to fill the reservoir. The City of Walla Walla has a municipal water right from Mill Creek. When combined with the other irrigation water rights, little or no water above the required minimum flow is available for a new storage water right. Fourth, Bennington Lake’s existing purposes are flood control and recreation. Irrigation storage would require modification of the lake’s existing flood control operation. Other structures for protection, such as an overflow channel bypassing downtown Walla Walla, might be necessary. Also, additon of a new purpose to this facility would require Congressional action.

Question: If you build a storage reservoir in Pine Creek, won’t that be foregoing opportunities to restore steelhead/bull trout to that habitat?

Answer: The effects of a storage reservoir in Pine Creek on steelhead and bull trout depend upon the location and footprint of the dam and reservoir. Different locations would have different affects on fish. In the lower canyon of Pine Creek, suitable habitat and flow for bull trout is low to nonexistent. Steelhead can use lower Pine Creek canyon to a point where Dry Creek converges with Pine Creek. An in-stream concrete structure near that location acts as an upstream barrier to fish passage. The lower canyon of Pine Creek has been rated using the Ecosystem Diagnostic Treatment evaluation methodology developed for subbasin planning (Mobrand and Associates). The evaluation rated the lower canyon of Pine Creek as possessing good potential for steelhead improvement. Any increase or decrease in estimated steelhead production would have to be identified and rationalized. This would be accomplished by comparing Pine Creek’s existing steelhead production without a storage reservoir to any potential increase or decrease in steelhead production with a storage reservoir.

Question: Why not look at a number of small reservoir storage sites, instead of a small number of larger reservoir storage sites?

Answer: There are certain costs associated with storage reservoir construction no matter what the size of the structure. This includes costs to move crews and equipment to the site and site investigations. It is also assumed that the cost of material would be less per unit for the larger size storage reservoir. Real estate costs are assumed to be less for one site than for a number of smaller sites. Based on cost factors, it was determined that one large storage reservoir would cost less than a number of small storage reservoirs.

Environmental considerations also played a role in the decision to look at one large site. It was assumed that water quality (temperature) would be better in one large, deep storage reservoir than in smaller, shallower reservoirs.

Question: Can water be conveyed from storage reservoirs directly to irrigation delivery systems, thus avoiding impacts to in-stream water quality?

Answer: This option is currently under consideration. Conveying water directly from a storage reservoir to an irrigation diversion would eliminate or diminish the need for irrigation withdrawals directly from surface waters. Impacts upon water temperature and turbidity would also be eliminated or reduced. The stored water could be conveyed using gravity to move the water to a lower elevation if the storage reservoir is situated in the right location.

Cost and potential impacts to landowners must be considered. Conveyance structures may likely cross a number of private properties. Conveyance structures may not be compatible with existing land use practices. Additionally, there is the potentially high cost of designing and constructing the conveyance and acquiring the necessary real estate instruments. Conveyance routes may not be available or may require extensive detours due to inaccessibility upon adjacent landowner properties.

Question: Will storage reservoirs, which might impact fishery resources, be automatically eliminated from further study without consideration of the potential beneficial or adverse impacts?

Answer: Storage reservoirs, which might impact fishery resources, are not automatically eliminated from further study. The potential beneficial and/or adverse impacts to fishery resources are considered for each potential storage reservoir. Potential benefits could outweigh adverse impacts.

Storage reservoirs that would receive water from a source stream during critical aquatic life stages are given a lower fish benefit rating. Adversely impacting one habitat for an equal or less benefit to another habitat is not usually justifiable.

An elevated fish benefit rating is given to storage sites where the potential to improve water quality parameters outweighs the potential loss of existing habitat. Such sites are given a more detailed evaluation of their overall benefit.

Storage reservoirs that had little or no potential to improve water quality over existing conditions were given a lower fish benefit rating. Such storage reservoir sites were screened out ahead of warm water storage sites located in non-fish-bearing streams.

Question: Is the study looking at water needs of the basin for purposes other than improving aquatic habitat?

Answer: The U.S. Army Corps of Engineers (Corps) is authorized to cost-share with local sponsors on projects where the purpose is environmental restoration, flood damage reduction, or navigation. This study is about environmental restoration. The Corps can build other purposes or features into projects, but only if costs associated with incorporating other purposes or features are paid 100 percent by a local sponsor. At this time, there has been no local or regional expression of interest in sponsoring the addition of other purposes to the study.

Question: Will storage reservoirs be capable of hydropower generation?

Answer: The study is examining the feasibility of hydropower production in association with storage reservoirs. Another possibility for incorporation of hydropower capability includes low head generation using irrigation water conveyance systems.