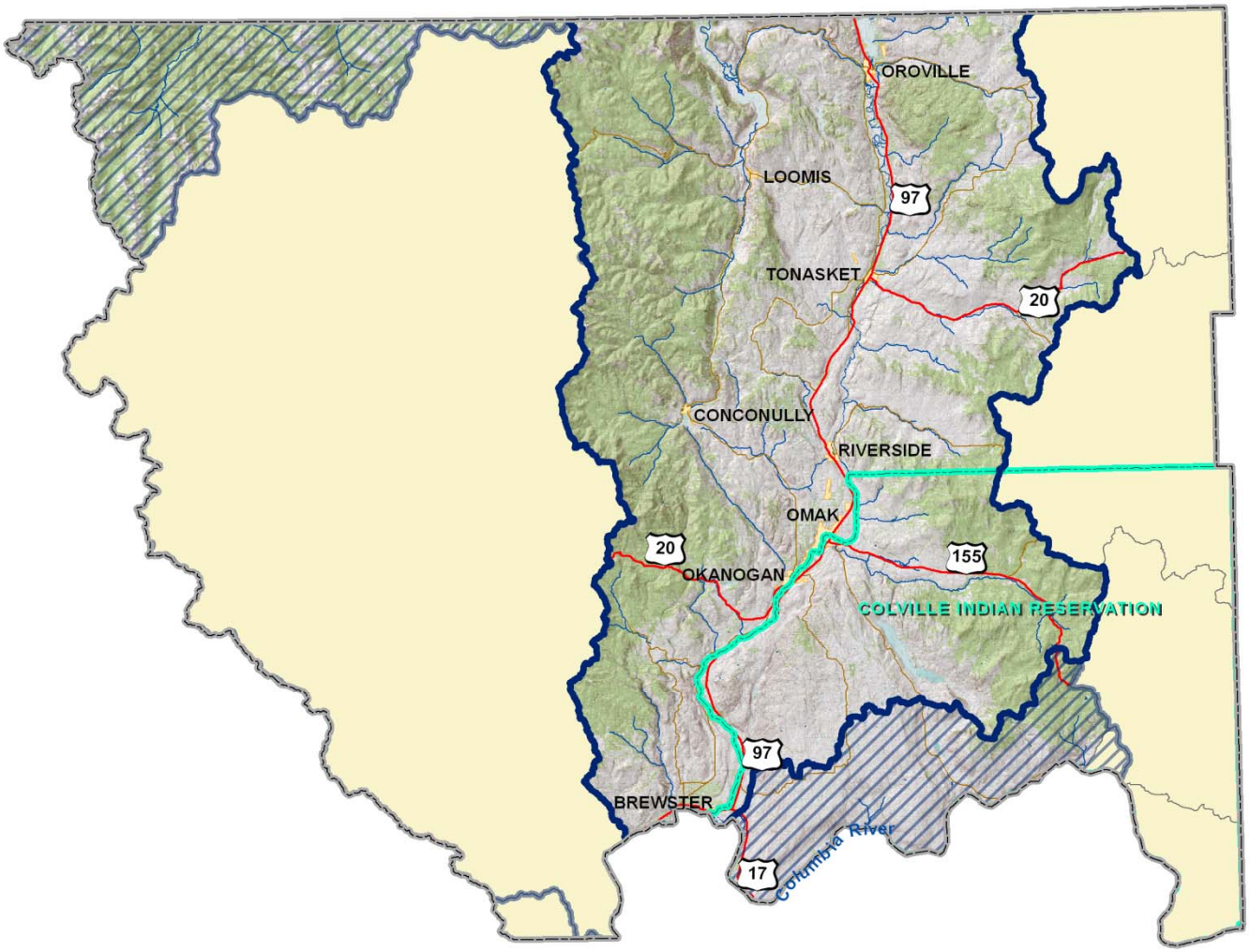
OKANOGAN WATERSHED PLAN

Chapter 3 – Recommendations



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CHAPTER 3 RECOMMENDATIONS

OVERARCHING PRINCIPLES

The Okanogan Watershed Planning Unit agrees that wise use of water now and in the future will be a priority for local residents as well as elected and appointed officials. There is also agreement that there is enough water for all current uses in the watershed and room for growth. However, the type of use, timing of use, and other factors have great bearing on our ability to sustain current activities and growth of our communities. It is clear to the Planning Unit that water is essential to sustaining agriculture, a mainstay of the economy of this watershed. When agricultural lands are converted to a built environment, the loss is generally permanent. When water is lost from agricultural land, very few opportunities for that land remain in our arid region. Therefore, growth should be carefully planned as the water resource is distributed, and when it is redistributed it should be done within this watershed in order to preserve the maximum of the land base in its most productive capability.

The watershed planning unit recognizes water rights and property rights are an important and integral part of property ownership. Within the watershed, nothing in these recommendations should be construed to impinge upon property rights, water rights, or Washington state water law.

MISSION STATEMENT

The mission of the Okanogan Watershed Planning Unit is to develop water management strategies that reflect the social framework and nature of the Okanogan Watershed. In keeping with this mission, a primary objective of this Plan is to keep water rights within the Okanogan Basin to be utilized in a wise and productive manner for the benefit of its residents.

EARLY ACTION ITEMS

The following seven early action items should be focused upon as soon as time, money, and resources are available and should be given priority for consideration for grant funding. The Okanogan Conservation District has requested grant funding from the Department of Ecology for the first two Early Action Items which are a water exchange, and engineering and feasibility study on the top three water storage sites.

1. WATER EXCHANGE

The purpose of this study is to develop a detailed framework for implementation and operation of a water exchange in the Okanogan Basin for the benefit of both instream and out-of-stream uses as well as protection of potential future water uses in the watershed. The Watershed Planning Unit wants to examine the feasibility of creating a local water exchange that will facilitate and implement the goals and objectives of the watershed plan. The development of this Water Exchange will include studying other existing exchanges/banks such as the Yakima Water Bank Work Group to explore ideas specific to the Okanogan Watershed. Other activities will include identifying legal and economic issues and practical feasibility in instituting a water bank or water exchange. The objective of the Planning Unit is to develop a mechanism to facilitate water management. Some of the primary goals are to prevent sale or lease of water out-of-basin and keep existing water rights in the basin, provide additional water to meet needs (such as in drought years), create a mechanism for people to maintain their water rights, to help prevent relinquishment, and participate in water conservation. Other goals and objectives will be identified during the education workshops and information gathering meetings.

2. AN ENGINEERING AND FEASIBILITY STUDY ON TOP 3 WATER STORAGE SITES.

The purpose of this study is to conduct detailed feasibility and engineering studies on three potential water sites that were identified by Montgomery Watson Harza (MWH) during Phase 2, Level 2 of the Okanogan Watershed (WRIA 49) watershed planning process. These studies would identify if these sites are proficient at providing storage and supply capabilities for irrigation, domestic, municipal and instream flow uses in the Okanogan River Watershed. The feasibility study would examine the potential storage sites and see if they will facilitate and implement the goals and objectives of the watershed plan. The study will potentially conduct site visits, cultural resource assessments, water right assessments, and an assessment of environmental effects. An engineering study will include a geotechnical investigation and hydrologic study. A contractor will prepare a final report documenting up to the top three potential water storage sites. This report will include a narrative description of the evaluation and analysis, drawing, maps, and/or sketches, and a detailed discussion of the findings. The proposed project locations identified by the Watershed Planning unit are Salmon Creek near Omak, Johnson Creek near Riverside, and Bonaparte Creek near Aeneas Valley (BP 4) in the Okanogan Watershed.

3. WATER RIGHTS EDUCATIONAL PROGRAM IN OKANOGAN COUNTY.

The Planning Unit would like to promote the development of a water right educational program. There is a need to coordinate efforts within the WRIA 49 to provide the education and outreach on water rights and how they affect a landowners land and the community. The planning unit supports organizations such as Washington Water Trust and Washington Rivers Conservancy to provide information to landowners on water rights through consultation, workshops, and publications.

4. DEVELOP WATER CONSERVATION PROGRAMS FOR HOME AND BUSINESSES.

The Planning Unit supports such entities and organizations, Okanogan Conservation District, Natural Resource Conservation Service, Okanogan County, and WSU Cooperative Extension to provide information on services and resources available to assist landowners in the development of a water conservation program.

5. CLEAN-UP OR UPDATE WATER RIGHTS DATABASE.

The Planning Unit supports efforts to develop a pilot program that is similar to what was used in the Foster Creek/Moses Co. of updating the Department of Ecology water rights website. The Department of Ecology maintains official records of water rights in Washington. Ecology maintains a database, called the Water Right Tracking System (WRTS), containing information about water rights and claims in Washington. While WRTS is a useful tool in assessing water rights and water use in WRIA 49, it is not the official record and in some cases is not up-to-date. The Planning Unit encourages the Department of Ecology to update the WRTS database to include all recognized water rights and claims, reconcile duplicate entries, complete blank fields (where possible), verify water right locations, and identify those rights subject to relinquishment under Washington water law.

6. ACQUIRE A MAP OF POTENTIAL AQUIFER RECHARGE AREAS.

The Planning Unit supports the efforts of other entities to develop a map of potential aquifer recharge areas.

7. MAP OF HABITAT RESTORATION SITES.

The Planning Unit supports the development of a map through GIS to identify habitat restoration sites that have occurred in the Okanogan Watershed. This map can be used as a monitoring tool. As other restoration occurs in the Okanogan Watershed apply those areas to the map.

GENERAL RECOMMENDATIONS

The Planning Unit believes that recommendations, actions, and strategies found in this plan and related to water management should be implemented without regulatory enforcement wherever possible and with the idea that community collaboration will lead to greater resolution to community resource concerns. Local sub-watershed representation is critical to the long-term successful implementation of the watershed plan. Local residents must be proactively involved in the decision making process for prioritizing project implementation, identifying resource concerns, and maintaining quality conditions.

Planning Unit members believe that long term economic stability is derived from ensuring adequate water for agricultural and domestic needs alike. This does not necessarily mean that both uses must be provided everywhere. Rather, Planning Unit members agree there are locations best suited to agricultural uses and activities and in those locations water should be prioritized for those uses. In areas that have been developed, or are likely to be developed for residential use (urban or rural) water must be prioritized for domestic consumption.

Water quality in the Okanogan River Watershed (WRIA 49) is of high enough quality in most areas to not restrict uses. There are concerns with temperature of water and low dissolved oxygen levels in the mainstem Okanogan River. However, most data collected from tributary streams indicates quality water for all uses is present except when streams dry up naturally or due to irrigation and other withdrawals. Protecting existing water quality conditions is an equally high priority as addressing the areas where water bodies don't meet current regulatory standards.

GOAL 1: MAKE A CLEAR, CONSCIOUS CONNECTION BETWEEN WATERSHED PLANNING AND LAND USE PLANNING IN THE OKANOGAN BASIN

There are many planning processes that occur from time to time and are concurrently taking place as this watershed planning process continues. All of these processes have

connections to each other in some way. The Planning Unit wishes for the entities involved to link the programs more clearly and explicitly in the development of these plans and most importantly in the implementation. When land use, water use, and other community decisions are made they should be made with the full weight of all plans ensuring that the use is compatible in all plans. Strategies to accomplish this goal may include:

1) **Give substantial attention and weight to municipal water needs where it is demonstrated that water conservation is being practiced, where growth is planned and concentrated in the effort to control sprawl, and where utility and infrastructure planning and investments are evident.**

2) **The Planning Unit acknowledges that agricultural lands will be converted to other uses. Options should be pursued to keep those lands that are not identified for such conversion in viable production.**

3) **Continue to develop detailed data for water resources in all portions of the watershed to determine and address the impacts that may be posed by continued incremental growth in rural lands.**

4) **Utilize zoning provisions to guide growth where it is appropriate, avoiding those areas for higher density subdivision where it is obvious that water is scarce and senior water rights may be affected.**

5) **Participate in water planning activities in British Columbia where most of the flow of the basin originates.**

GOAL 2: MAKE PASAYTEN AND ASHNOLA RIVERS PART OF WRIA 49 THROUGH ADMINISTRATIVE RULE

Currently, the Watershed Resource Inventory Areas set by Washington Administrative Rule has the portions of the Pasayten and Ashnola Rivers in the United States as a portion of the Methow WRIA (48). These rivers flow north from the North Cascades National Park to Canada where they contribute to the flows of the Similkameen which later flows into the United States and the Okanogan River. The strategy identified to accomplish this goal is:

1) **Request a rule change by Ecology.** The Initiating Governments of this planning process should petition the Washington Department of Ecology to move the administrative boundary of the watershed to include the Pasayten and Ashnola Rivers in the United States so the Okanogan Water Resource Inventory Area includes the hydrologic boundaries of the upper portions of the Similkameen River.

GOAL 3: MAKE COLUMBIA RIVER INTERFLUVE (SW PORTION OF THE COLVILLE RESERVATION) PART OF WRIA 49 THROUGH ADMINISTRATIVE RULE

Currently, the Watershed Resource Inventory Areas set by Washington Administrative Rule has the portions of the Colville Reservation in South East Okanogan County as a portion of the Foster Creek WRIA (50). This area is largely comprised of fresh and saline lakes that have no surface flow to any other waterbody. However, the Okanogan Watershed Planning Unit believes the area's water should be managed by policies established in Okanogan County and not Douglas County where the remainder of WRIA 50 is located. The strategy identified to accomplish this goal is:

1) **Request a rule change by Ecology.** The Initiating Governments of this planning process should petition the Washington Department of Ecology to move the administrative boundary of the watershed to include the portion of the Foster Creek WRIA (50) located in Okanogan County to the Okanogan River WRIA (49).

WATER QUANTITY

GOAL 1: PROVIDE MECHANISMS TO KEEP WATER RIGHTS IN THE BASIN

The Planning Unit strongly believes that because we are in a dry summer climate we as a community must provide all necessary and viable mechanisms possible to keep legal water use in place in our watershed for all future generations. All possible ways to keep water and the right to withdraw and/or use water should be implemented rather than a single or minimal number of options implemented. Strategies to accomplish this goal may include:

1) **Establish a locally controlled water bank or exchange.** This would have to be authorized under Washington State Law. Then local citizens should be elected or appointed to control the activities of the bank/exchange. The purpose of the bank/exchange would be to secure water rights for redistribution to other uses in the Okanogan River Watershed.

2) **Implement an educational campaign to inform irrigators and other water rights holders about the availability of water trusts/banks/exchanges.** Local water rights holders must be shown the benefits of such programs and how they work. Conducting an education and information sharing campaign using local examples will lead to a greater understanding and higher participation rates.

3) **Create a list of water right buyers and sellers at the watershed level.** It is envisioned by the Okanogan Watershed Planning Unit that this work will be done by the local bank/exchange once approved and operating. However, to provide a mechanism for water trades and sales in the interim such a list will be useful to those wishing to gain additional water rights to have a way to make contact and begin negotiating for such exchanges.

GOAL 2: ENHANCE/IMPROVE IRRIGATION RESOURCES

Providing irrigation water users with the technology and management strategies to increase or maintain production with the minimum amount of water use has many benefits. These benefits often include reduced pumping costs, more water for other uses, decreased wear and tear on equipment, improved crop production, and decreased leaching/runoff of nutrients to water. Strategies to accomplish this goal may include:

1) **Review and recommend changes to the eligibility requirements for the irrigation efficiencies program.** Irrigators who withdraw water from the Okanogan River are extremely unlikely to qualify for the Washington State Conservation Commission Irrigation Efficiencies program. The program should be closely evaluated and either an exemption to rules that restrict qualification in the Okanogan be given or a new program targeted for the Okanogan should be developed to increase flows in the Okanogan River.

2) **Planning Unit should seek funding for on-farm irrigation system improvements.** While much of the irrigation in the Okanogan River basin is sprinkler, the majority of systems are aging and not as efficient as newer systems with micro-emitter sprinkler heads. Funding should be secured to assist producers with replacing irrigation heads with new sprinkler heads, replacing mainlines that are leaking, and other improvements that save a minimum of 10% of the total water diverted.

3) **Develop an education program to inform all water users about proper irrigation management.** Many irrigators have the ability to save water through the efficient and timely application of water on fields. Furthermore, the proper timing and application of the correct amount of water generally increases production and crop quality. The saved water can be left instream for use by junior water right holders, and in-stream flows.

4) **Promote xeriscaping and low-water use landscaping.** Low water using trees, shrubs, and grasses used in yards and gardens will reduce overall water demand by homeowners. The corresponding water can be used for higher priority uses such as human consumption, food production, and industry. Providing home owners with

information and incentives to use native and other low water use landscaping will lead to saved water.

5) **Update WSU crop water budgets.** The Planning Unit recommends that the Washington State Climatic Stations for Consumptive Use in Washington State Irrigation Guide be updated with current information.

GOAL 3: REDUCE THE NEED TO SHUT DOWN JUNIOR WATER RIGHTS DURING LOW FLOWS

The Okanogan Watershed Planning Unit believes that maintaining flow in the Okanogan River and its tributaries at levels high enough to prevent the involuntary shut off of junior water right holders is a priority goal. Furthermore, if sufficient water can be developed through storage, water should be prioritized to go to irrigators whose water rights are junior to the current instream flow. Strategies to accomplish this goal may include:

1) **Explore seasonal exchanges of water during low flow.** If a water right holder does not need water during a specific time that water could be used by a junior water right holder who could use the water during that specific time. Implement an informal agreement through the local conservancy that a senior water right holder may rent or lease the water temporarily to a junior water right holder.

2) **Assist junior water holders to acquire water rights senior to the instream flow rule.** Public and private organizations involved in water management in the basin should prioritize resources to assist irrigators with water rights junior **to the current instream flow rule with acquiring additional water and water rights th**at will make their water use senior to the rule.

3) **Work with Canada to provide the maximum stable flow possible during July, August, and September.** Local, state, and Federal agencies should work with Canadian counterparts to develop a water management strategy that maximizes flows fro**m** Canada to the United States during the lowest flows of the year.

4) **Develop new water sources to provide water to junior water right holders during low flows.** Flow increases resulting from increased irrigation efficiencies, storage, and increased flows from Canada should be prioritized to fulfill junior water rights before additional appropriations are made.

GOAL 4: MAINTAIN WATER RIGHTS ON AGRICULTURAL LANDS

Agricultural lands are a significant land base in the Okanogan River watershed. Furthermore, the climate dictates that irrigation is necessary to grow most crops and several can grow very successfully in the climate of the Okanogan watershed with application of irrigation water. The agricultural land base is being lost to other uses in some cases and in others it is sitting fallow which may be leading to the abandonment of irrigation water rights. Both of these scenarios will make future irrigation of arable land difficult if not impossible. The Okanogan Watershed Planning Unit believes that the best method to preserve agriculture and the protection of resources on these lands is to maintain irrigation water rights on the land. Strategies to accomplish this goal may include:

1) **Develop an education program to help landowners preserve their water rights. Increased awareness about junior and senior water rights and exempt well usage should help resolve issues during low flow years.** Public workshops and other events should be held whereby speakers can explain then current water rights law, how water right holders can protect their water rights. Speakers should address the ways water rights can be lost through relinquishment and abandonment and what options are available to water right holders to ensure unused water can be saved for future use.

2) **Identify and encourage state legislatures to add additional exemptions to the current relinquishment law.** Current, as of 2008, Washington water resource laws stipulate that irrigation water not put to beneficial use for five consecutive years shall be relinquished by the water right holder. This law essentially encourages water right holders to apply their full water right even if it is not necessary. Amending this rule to allow for longer periods of non-use or allow irrigators to more freely market the saved portion of their water rights (such as changing irrigation methods) will allow for greater flexibility and ultimately greater savings. Another recommended change to the law is to identify additional exemptions to the relinquishment statutes such as specific irrigation practices. For example, when not using all of a water right, allow specific declaration of intent to leave it in stream without relinquishing the water. Use the same amount of water, but allow it to be spread.

GOAL 5: PROVIDE LANDOWNERS WITH A ROAD MAP AND INFORMATION ON ALLOWABLE USES AND/OR RESTRICTIONS

The Okanogan Watershed Planning Unit believes disinformation on allowable water uses and water rights law abounds in the region. Information and education provided by qualified individuals and groups will effectively combat this situation. Landowners who have or wish to acquire water rights should have readily available information on the process to acquire and maintain irrigation water rights. The information should also

include what water right holders may use water for and what restrictions apply to water use. Strategies to accomplish this goal include:

1) **Increase buyer awareness – water rights may or may not be with property due to transfer, sale, or relinquishment/abandonment. It is a buyer's responsibility to investigate and determine if water rights will be acquired with the purchase of property.** It is the purchaser's responsibility to ensure that all property rights including water are fully investigated prior to completing a purchase of property. Ensuring that Washington state law for disclosure is followed fully and that all potential buyers are made aware that the water rights must be fully investigated by a qualified individual to ensure all or part of the water right has not been abandoned or relinquished.

2) **Recommend to the County Commissioners that they develop policy to distribute water rights information during all property sales/transfers.** Water rights information related to legal water uses, important contacts for water right information, current water use law, and other pertinent information should be given to all purchasers of property with water rights.

3) **Recommend that the County and municipalities update their notification procedures regarding water rights for various land segregations, boundary line adjustments, separations, and the like. Work with elected officials.** Okanogan County and municipalities should update as necessary their notification procedures to the public when land segregations, boundary line adjustments, separations, and other similar activities take place. Greater public awareness of such activities will lead to greater community involvement in how water and land is managed.

GOAL 6: AFTER INTERRUPTIBLE WATER RIGHTS HAVE BEEN MADE WHOLE (SENIOR EQUIVALENCY) GET WATER RIGHTS BACK ON PREVIOUSLY IRRIGATED LAND THAT HAD WATER RIGHTS SOLD, TRANSFERRED, LOST, ETC.,

The Okanogan Watershed Planning Unit believes that land that has previously been under irrigation is likely better suited to irrigation if additional water can be appropriated than to apply irrigation water to land that has never been irrigated. If new water rights can be appropriated they should first be made available to holders of interruptible water rights. Then any additional water available for appropriation should go to land previously irrigated.

1) **Use a water bank/exchange as a means to accomplish this goal**

    a. **A water bank will store water from increased flows to increase availability to junior exempt well users during times of critically low flows.**

    b. **[further functions]**

2) **A notification process that if someone is relinquishing water rights (selling, transferring, losing, etc) that those water rights may be used toward those that have interruptible water rights.** Notifying those that have interruptible rights about the potential availability of water rights senior to the instream flow rule will greatly enhance operators' ability to plan and grow crops which will lead to a stronger agricultural economy.

GOAL 7: AS NEW WATER IS DEVELOPED (SUCH AS THROUGH STORAGE PROJECTS), PRIORITIZE INTERRUPTIBLE WATER RIGHT HOLDERS TO RECEIVE WATER FOR SENIOR EQUIVALENCY.

The Okanogan Watershed Planning Unit believes that prior to issuing new water rights that will be junior to the instream flow rule on the Okanogan River existing junior water right holders should have the opportunity to acquire those water rights which may allow them to irrigate further into the irrigation season. Making irrigated land as productive as possible before breaking out new irrigated land should be the priority.

1) **Through the development of new water, fulfill junior rights.** The Okanogan Watershed Planning Unit believes that water made available for appropriation through storage and other methods should be assigned to existing junior water right holders where possible and feasible. This will increase the productivity on the lands that receive the additional water rights without creating further areas of partial season irrigation that may not lead to sustained and productive agriculture.

GOAL 8: DEVELOP A LOCAL WATER BANK/EXCHANGE THAT WILL FACILITATE AND IMPLEMENT THE GOALS AND OBJECTIVES OF THIS PLAN.

The Okanogan Watershed Planning Unit believes a locally controlled water bank/exchange is a key to successful water management in the future. The Planning Unit envisions a water bank/exchange that has the authority and scope to allow the trade, lease, and/or sale of water rights within the Okanogan Watershed between consenting parties. The local water bank/exchange should have maximum flexibility to accomplish the effective management and distribution of water rights. Strategies to accomplish this goal include:

1) **Develop a first right of refusal process by water users in the watershed for proposed water sales out of watershed.** Local Control of the water bank should include the legal opportunity for the water bank board to have the first right of refusal on any proposed water transfers/sales outside of the WRIA. The purpose of this proposal is to give local water users the greatest opportunity to maintain water rights in this watershed because it is essentially impossible to bring water rights into this watershed.

2) **Work with Washington State Legislature to change law to prevent out of basin transfers.** The Planning Unit feels very strongly that however possible water rights and use should be maintained in the watershed. Educational and informational presentations should be given to local irrigators to inform them of the hazards of out of basin transfers and opportunities available to maintain water rights in the basin. Also, entities should work collaboratively with an Okanogan Water Exchange program to ensure that comprehensive programs are put in place to maintain the maximum amount of water in the Okanogan Basin.

3) **Facilitate the lease and/or sale of water right transfers within the basin.** The Planning Unit strongly feels water rights in Okanogan County should be maintained for future allocation and use in Okanogan County. Developing a locally controlled water exchange should be the highest priority to facilitate the lease, sale, and transfer of water rights within the basin.

4) **"Managers" of water bank should be Okanogan County residents appointed by Okanogan County Commissioners.** The water bank's charter shall be written so that the voting members are then current residents of Okanogan County. Further, the voting members shall be appointed by the Okanogan County Commissioners. The Commissioners should develop and approve criteria for selection of members using a public process whereby the criteria are vetted in a public process with citizen input.

5) **An objective of water exchange is to assist with preventing relinquishment.** The water exchange should be focused on preventing relinquishment. The water exchange will work in many areas such as transferring water rights from one holder to another and purchasing water rights that no longer are needed by an irrigator. However, the first priority will be established in its charter to help irrigators prevent relinquishment of their water rights.

GOAL 9: ESTABLISH A BASELINE OF WATER/STREAM CHANNEL FLUVIAL GEOMORPHOLOGY AND IMPACTS ON WATER QUANTITY.

It is important for the Planning Unit and future water managers to know what changes in stream channel dynamics have upon base flows, seasonal flow characteristics, and how much the dynamics affect water quantity. Very little information exists on the channel fluvial geomorphology and it's affects upon stream flows in the Okanogan River Watershed. The Planning Unit believes that information about these conditions and their effects will greatly enable water managers with decisions on water use, management, and appropriation. Strategies to accomplish this goal include:

1) **Conduct reach assessments/analysis to identify water quantity characteristics and their effects.** Reach assessments should be conducted with the purpose of determining how the channel characteristics affect instantaneous and seasonal stream flows. The assessments should be conducted for priority watersheds as identified in the future by the Planning Unit.

GOAL 10: WORK WITH STATE LEGISLATORS AND THE DEPARTMENT OF ECOLOGY TO CHANGE STATE LAW TO PREVENT OUT-OF-BASIN TRANSFERS

The Planning Unit strongly believes that a significant threat to long-term ecologic and economic stability to the Okanogan Watershed is the ability for water rights to be legally transferred out of the watershed. This ability is allowed for in current state law. Therefore, the Planning Unit believes locally elected representatives and Senators should work to effect changes in state law that would prohibit the transfer of water rights out of watersheds. Strategies to accomplish this goal include:

1) **Help develop language for a proposed law change.** The Planning Unit and local elected officials should work with legislators and policy analysts to develop proposed changes to current Washington Laws that will restrict the transfer of water rights from one watershed to another.

INSTREAM FLOWS

In the arid climate of North Central Washington and particularly the Okanogan River Watershed, stream flows vary widely from one stream to another and from one year to another. Stream flows of sufficient level to allow for spawning, rearing, and passage of resident and anadromous fish in addition to providing sufficient water for other uses is a high priority for local residents and regulatory agencies alike.

Increasing stream flows means that junior water right holders can use their water longer.

GOAL 1: WORK WITH CANADA TO STORE WATER IN OKANAGAN LAKE TO BRING WATER THROUGH THE SYSTEM TO ENHANCE SOCKEYE AND OTHER FISH SPECIES RUNS AT CRITICAL TIMES.

Because the majority of Okanogan River's flow comes from Canada, it is imperative our local, state, and federal elected and agency officials work cooperatively with their Canadian counterparts to ensure the maximum sustainable management of our water resources. Much of the Okanogan River is well suited to intensive management for maximum use and sustainability. However, that management must be done in a coordinated fashion. Strategies to accomplish this goal include:

1) **Build a coalition to enhance the habitat through water management.** The Okanogan Watershed Planning Unit recommends a coalition of US and Canadian officials meet on a regular basis to find ways for water to be managed to the retest extent possible. It will only be through collaboration and clear communication that we find new and innovative ways to manage our shared water resources.

GOAL 2: DEVELOP/ENHANCE/MAINTAIN WETLANDS IN HEADWATERS

The Planning Unit believes one of the greatest opportunities to increase seasonal stream flows is the rehabilitation and/or creation of wetlands in and near the headwaters of streams. Reconnecting streams with wetlands and marshes which can significantly augment late season stream flows is very important to water management and stream flow augmentation. Strategies to accomplishing this goal include:

1) **Develop constructed wetlands where feasible.** Constructed wetlands are being used more frequently in lieu of wastewater treatment plants due to their ability to remove pathogens, trap sediment, provide cooler water, and reduce flooding risk. Developing wetlands in the upper reaches of streams will increase flow for more stream reaches than anywhere else and will help regulate flows during critical low flow periods.

2) **Restore and enhance existing wetlands where feasible.** Improving and/or enhancing existing wetlands are likely to be less expensive than constructed wetlands and have the added benefit of already being connected to streams and rivers.

GOAL 3: NARROW OKANOGAN RIVER MAIN STEM AND CREATE SIDE CHANNEL HABITAT

The Okanogan River has increased its width in the past few decades. The River moves slowly in a North to South orientation with little disturbance for improving dissolved

oxygen levels. This leads to increased temperatures and lower dissolved oxygen levels which impairs aquatic habitat qualities. Narrowing the river and providing side channel habitat where possible will improve these critical water quality components and may possibly increase surface and ground water interaction. Strategies to accomplish this goal include:

1) **Stabilize eroding river banks.** Eroding river banks have reduced ecological integrity, allow for the river to continue to migrate laterally and add sediment to the water column at increased rates. Stabilizing eroding stream banks will reduce lateral migration and reduce sedimentation.

2) **Where feasible provide side channel habitat.** Opportunities for side channel habitat are very limited in the Okanogan River Watershed due to the increased lateral migration and increased sediment levels. However, where possible side channel habitat will provide critical habitat for aquatic species and increase hydrologic function.

GOAL 4: ACKNOWLEDGE IRRIGATION RECHARGE ON QUANTITIES AND QUALITIES OF INSTREAM FLOWS

The Okanogan Watershed Planning Unit believes irrigation recharge, water that returns to streams and groundwater from irrigation canals or fields should be acknowledged and quantified where possible. Irrigation water that returns to water bodies in these methods may improve stream temperatures, and increase late season flows to critical stretches. Strategies to accomplish this goal include:

1) **Develop an understanding of the quantity and timing of return water flow for effective water management for downstream water users.** A detailed study should be conducted to determine areas where irrigation recharge is occurring and quantify the amount and timing of the recharge. This information should be used by the Planning Unit at the completion of the study to determine future steps.

2) **Assess habitat and wildlife benefits from recharge.** Part of the study of irrigation recharge should be to qualify the improvements to wildlife habitat from the irrigation recharge.

GOAL 5: EVALUATE HOW TO IMPROVE INSTREAM FLOW IN OKANOGAN RIVER TRIBUTARIES

Further evaluation of methods and techniques that could be used to improve stream flows in tributaries to the Okanogan River will lead to increased opportunities to restore more uses of all affected streams. The Planning Unit recognizes that technology, and understanding of stream flows will improve and increase over time. This information and

improved understanding should be used to better manage water resources for current needs. Strategies to accomplish this goal include:

1) **Work with local partners to implement instream flow rules and develop a flow enhancement program.** The Planning Unit believes that through collaboration, local resource agencies can develop programs and partnerships that help irrigators maintain irrigation for longer durations in water short years. It is imperative that irrigators, regulatory agencies, and conservation organizations work together to develop shared strategies for meeting instream flow rules and maintaining viable, productive, agriculture.

2) **Develop water conservation measures that leave water in the streams.** Water conservation efforts on farm, at home, and in the city should be developed that will lead to more water being saved for instream flow. Increasing instream flow will lead to fewer days junior water right holders are shut off. Example programs include improving delivery efficiencies through piping upgrades for irrigation and mainline systems, improved irrigation systems on farm, increased irrigation efficiencies and conservation plantings at home, and increased efficiencies in homes and businesses.

3) **Conserve existing or re-establish riparian zones/avoid reduction of habitat for fish and wildlife.** Riparian vegetation provides shade which helps maintain low water temperatures. In addition to providing important shade and temperature control, proper functioning riparian areas increase water exchange between surface and ground water. This improves opportunity for bank storage and release later in the water year which will augment stream flows during critical flow periods.

GOAL 6: DECREASE STREAM TEMPERATURES TO IMPROVE FISH HABITAT

Water temperature is a critical water quality criterion for fish survival and quality habitat. Higher water temperatures lead to increase stress to resident and anadromous fish populations. Water temperatures in the Okanogan River are often above State water quality standards. Water temperature is often influenced by a multitude of factors. These factors include latitude, elevation, season, depth of flow, ambient air temperature, shade, water source, irrigation/industrial/municipal return flows, and groundwater influence. Strategies to accomplish this goal include:

1) **Implement projects that provide shading along stream banks (e.g., C.R.E.P.)** Providing shade along streams will help maintain lower water temperatures and increase ground and surface water interaction. Shading provides a critical benefit in the arid Okanogan Watershed as it limits direct solar radiation and helps reduce ambient air temperature.

Landowners should be encouraged to voluntarily improve riparian vegetation and stream shading by conservation groups and agencies.

2) **Creating pools with LWD and other methods will decrease water temperature providing habitat for aquatic life.** Deeper water is generally cooler and provides opportunities for aquatic species to find cool areas in pools. Providing deeper water with large woody debris will increase pool size and water depth providing greater opportunity for lower stream temperatures. Greater flow with restricted channels due to pool creation and large woody debris placement will provide critical cool water refuge for aquatic species.

GOAL 7: DETERMINE ANADROMOUS FISH HABITAT VALUES IN TRIBUTARY STREAMS TO THE OKANOGAN RIVER.

Tonasket Creek and Nine-mile Creek underwent significant channel changing flows in 2002 due to a significant rain storm. Following that event the status of steelhead habitat in the creek is unknown. This creek flows within the Urban Growth Area for the City of Oroville. As such it is important to know the current habitat values for Steelhead in the creek. Due to the flood event the interaction between surface and local ground water sources have likely changed and an understanding of the current interaction between the two may lead to solutions to increasing flows in the stream during critical periods of the Steelhead lifecycle. Strategies to accomplish this goal include:

1) **Conduct a more detailed analysis of surface and groundwater.** An analysis to determine areas of gaining and loosing reaches to Tonasket Creek flows should be conducted by qualified individuals to determine areas where flow augmentation is occurring from ground flows and where habitat rehabilitation would significantly benefit Steelhead populations.

GOAL 8: IRRIGATORS SHOULD BE CREDITED FOR WATER THAT RETURNS TO STREAMS WHICH BENEFITS AQUATIC HABITAT IN THE SAME REACH FROM WHICH IT IS WITHDRAWN.

Irrigation water that is withdrawn from surface water that returns to the same stream reach from which it was initially taken should not count towards the irrigators withdrawal. Assessments will have to be done on a case by case and reach by reach basis to show the total recharge to the source water. Currently irrigators' rights are measured by what is withdrawn at the point of diversion and there is no accounting for these return flows that seep back to streams via near surface ground water. Accounting for this water will help identify the opportunity for issuing new water rights and possibly preventing the seasonal turn-off of junior water rights. Strategies to accomplish this goal include:

1) **Run assessment to prove benefit of habitat from recharge.** An analysis by reach to determine the amount of water returning from surface application and transport should be conducted. Quantifying the amount of flow and timing of the return flow is critical to understanding the net impact of withdrawals.

HABITAT

Aquatic habitat is a critical issue in the Okanogan River Watershed. Upper Columbia Steelhead is listed as endangered and Spring Chinook listed as threatened in the Okanogan River Watershed. Lake Osoyoos, and its upstream tributaries, are home to one of the largest runs of Sockeye Salmon in Washington State. While this last species remains strong in the Okanogan, habitat and improvements of water quality in the Okanogan River are important to its survival. Habitat conditions are largely unknown and there remains considerable debate in the community as to the ability of the Okanogan River to produce significantly higher numbers of any of these species. Habitat is a function of many factors which generally include, cool water, high dissolved oxygen, pools and shallow riffles, cover, and sufficient flow for passage. Improving any of these aquatic habitat values in the Okanogan River is a challenge, but not impossible, due to the geology, stream morphology, and climate. The challenge is working to improving values that will lead to the greatest improvements in habitat for the minimum cost or disruptions in human activities. Goals and strategies that help meet this challenge include:

GOAL 1: COLLECT AND ACQUIRE DATA ABOUT CHANNEL AND STREAM MORPHOLOGY FOR PRIORITIZING HABITAT IMPROVEMENT PROJECTS.

Channel and stream morphology is important to aquatic habitat because it is the greatest factor in determining the potential for species production. Channel and stream morphology data is important to identifying areas with the greatest opportunity to improving habitat and where areas of already good habitat exist and should be conserved.

1) **Conduct reach assessments/analysis to identify habitat improvement needs.** Habitat needs are best identified by reach. Use a single data collection analysis method so each reach can be compared against the others to determine the highest priority reaches for improvement projects. Further, the data can show areas with good habitat that should be conserved to maintain quality habitat.

2) **Maintain and provide high quality habitat for fish and wildlife to the extent possible given constraints within each particular reach.** It is important to note that not all reaches of any stream can have high habitat values. Rivers and streams move, shift,

and change over time as a natural process. This leads to areas that naturally improve in habitat value and areas that are naturally declining in habitat values. Working to maintain areas with quality habitat is often less expensive and has longer positive effects than working to improve degraded habitat.

3) **Respond to opportunities for improving habitat for fish and wildlife.** Opportunities for implementing conservation practices that improve habitat for fish and wildlife will come and go. Local conservation groups should be prepared to the best of their ability to respond to these changes in landowner desire and ability to implement projects.

GOAL 2: MAINTAIN AND PROVIDE HIGH QUALITY HABITAT FOR FISH AND WILDLIFE THROUGH WATER FLOW MANAGEMENT.

Actively managing water withdrawals will provide opportunity for maintaining and improving fish and wildlife habitat. Fish and wildlife habitat quality is directly linked to flow levels. Opportunities exist to at least temporarily augment flows or reduce diversion of water to maximize flow in critical reaches. Strategies to accomplish this goal include:

1) **Educate the public on habitat conservation, distributing materials/handouts.** Educational programs informing the public of the benefits of conserving fish and wildlife habitat should be offered to all ages. Educational programs should be delivered frequently and where possible should include hands on activities and field visits.

2) **Restoring and maintaining water quality as the basic component of habitat protection and enhancement.** Water quality parameters such as temperature, dissolved oxygen, and suspended sediments are the key criteria for aquatic habitat in the Okanogan River Watershed. Programs that monitor changes in these water quality parameters or that improve water quality criteria should be implemented.

3) **Develop or rehabilitate areas to provide habitat while managing water quality such as channels, wetlands, riparian buffers, bank stabilization.** Local conservation groups should implement conservation practices with landowners on a voluntary basis. Conservation projects in this strategy may include riparian plantings, stream bank stabilization, wetland rehabilitation, and channel reconnection.

GOAL 3: DEVELOP/ENHANCE/MAINTAIN WETLANDS IN HEADWATERS.

One of the greatest opportunities for increasing late season flows to smaller tributary streams is the improvement and/or creation of wetlands in headwater areas. Wetlands act as a sponge for watersheds that absorb water during spring snow melts and slowly release the water throughout the year. Wetlands regulate flow during spring freshet which reduces risk of flooding in lowlands, provide critical habitat for a many aquatic, avian, and

terrestrial wildlife species, and recycle nutrients which helps maintain biological diversity. Strategies to accomplish this goal include:

1) **Transplant beaver populations into headwaters.** Increasing research has shown the positive ecological benefits to transplanting beavers to headwater areas of watersheds. Beaver dams pool water and create areas of wetlands that will slowly release spring freshet flows later in the year. Where possible beaver colonies should be transplanted to headwater areas of tributary watersheds.

2) **Conserve, enhance, and restore wetland biodiversity where feasible.**

GOAL 4: NARROW OKANOGAN RIVER MAINSTEM AND CREATE SIDE CHANNEL HABITAT.

The Okanogan River is a relatively wide and shallow river system. This creates a situation where the water is more quickly heated by direct solar radiation and exposure to high ambient air temperatures. One method for addressing this issue is to decrease the width of the stream channel thereby giving the stream greater depth and decreasing the surface area of water exposed to direct sunlight and solar radiation. Strategies to accomplish this goal include:

1) **Where possible, reconnect side channels to provide spawning, rearing, flood refugia, and overwintering habitat.** Reconnecting side channels will increase the opportunity for water to slow down, cool off, and return cleaner to the mainstem. Side channels also provide important areas for fish species during high flows for resting and if connected year round can provide very good habitat for spawning and rearing. Work with landowners and other affected parties to increase side channel connectivity.

GOAL 5: INCREASE STRUCTURAL DIVERSITY ALONG AND IN THE OKANOGAN RIVER.

Structure diversity in streams is important for aquatic species because it provides food, shelter, and resting areas. Structure diversity is most often increased in streams by the placement of large woody debris. Large woody debris that is placed correctly not only provides habitat for aquatic species, it also will help minimize soil erosion of stream banks. Strategies to achieve this goal include:

1) **Provide bank/channel and shoreline stability.** Where possible bank stability should be increased by local conservation agencies working with voluntary landowners. These projects should be done in an order that puts the best project first though a cost-

benefit analysis. Projects that will gain the greatest conservation values for the lowest price should be the highest priority.

2) **Create and maintain pools to reduce stream velocities and form eddies where food organisms are concentrated.** Applying conservation practices such as large woody debris placement will help create pools and eddies which are necessary for food organism survival. Implement practices that will stabilize banks and create deep water pools in stream.

3) **Enhance biological diversity important for habitat.** Identify and prioritize critical habitat for protection, enhancement, improvement, and restoration. Activities necessary to enhance or maintain these habitats should be implemented on a voluntary basis.

GOAL 6: DECREASE STREAM TEMPERATURE TO IMPROVE FISH HABITAT.

High stream temperatures are detrimental to fish survival. High water temperatures stress fish by allowing greater bacteria growth which increases disease in fish, and high temperature lowers dissolve oxygen levels. Stream temperature is difficult to decrease once elevated so generally the least expensive and most reliable method for controlling stream temperature is to prevent elevations in stream temperature. Strategies to accomplish this goal include:

1) **Increase and improve riparian shade for streams.** Riparian shade can maintain cooler temperatures, especially on smaller streams, thereby allowing higher levels of dissolved oxygen which are needed by fish and other aquatic organisms. Improve riparian cover as appropriate for specific sites.

2) **Identify priority stream reaches for conducting temperature improvements. Monitor progress and changes.**

GOAL 7: PARTICIPATE IN HABITAT IMPROVEMENT ACTIVITIES AMONG ALL ENTITIES TO MAKE EFFICIENT USE OF AVAILABLE FUNDS.

It is imperative to the Planning Unit members that local agencies and groups involved in conservation activities coordinate activities to the greatest extent possible. Coordinating activities will help prevent duplication of efforts, reduce costs, and help ensure the highest priority projects are addressed first. Strategies to accomplish this goal include:

1) **Participate in developing and implementing a habitat program/pool money to fund activities.** A habitat program with an associated fund source should be developed to

provide opportunities for conservation groups to assist landowners with high priority projects.

2) **Participate in identifying, prioritizing, and implementing improvement activities in the watershed.** Local conservation groups, state agencies, federal agencies, and other interested parties should develop a local list of habitat conservation improvements necessary in the watershed. This list should then be prioritized by the group and all participating entities agreed to working together to get projects implemented. Participate in activities of the Okanogan Watershed Action Team, which is a group of individuals working together to identify restoration and conservation projects in the watershed to be funded.

GOAL 8: SUPPORT RIPARIAN CONSERVATION EASEMENTS.

Riparian conservation easements can ensure that lands will not undergo significant land use changes. Implementing a program to offer riparian conservation easements should fall to groups that specialize in these types of activities. Strategies to accomplish this goal include:

1) **Support the development and implementation of a voluntary riparian conservation easement program.** Landowners may wish to participate in voluntary conservation easement programs. These programs could be supported as one of many tools to promote the importance of riparian systems and ensure they are functioning properly.

GOAL 9: IDENTIFY RIPARIAN AREAS FOR PROTECTION

Protecting riparian areas and associated flood plains from development or other impacts will help maintain hydrologic function of floodplains, allowing flood water to slow, sediment to deposit, and water to enter near surface groundwater aquifers. Development along riparian areas can restrict natural channel migration, reduce floodplain functionality, and increase introduction of contaminants. Some areas of our watershed have seen significant growth near water bodies. The Planning Unit would like an accurate assessment of development and conversion pressures for riparian areas and the lands that are immediately adjacent to riparian areas. Strategies to accomplish this goal include:

1) **Work with interested parties to determine areas of concern for development.** Local groups and Okanogan County should work with interested parties to identify priority riparian areas for protection.

GOAL 10: IDENTIFY SITES FOR POTENTIAL MITIGATION BANKS.

Mitigation banks are natural resources that are improved, restored, and or enhanced in exchange for areas that due to human activity it is difficult or impossible to restore degraded natural resources. Mitigation banks allow the offset of natural resource impairments through restoration of landscapes elsewhere. Organizations can restore sites such as riparian areas, wetlands, or other resources then apply to regulatory agencies (Ecology?) to sell mitigation credits. Once approved the bank can then sell credits to other entities that will degrade natural resources elsewhere but their impact is essentially offset through the purchase of the credits from the previously restored mitigation bank.

GOAL 11: DETERMINE ANADROMOUS FISH HABITAT VALUES IN TRIBUTARY STREAMS TO THE OKANOGAN RIVER.

Tonasket Creek and Nine-mile Creek underwent significant channel changing flows in 2002 due to a significant rain storm. Following that event the status of steelhead habitat in the creek is unknown. This creek flows within the Urban Growth Area for the City of Oroville. As such it is important to know the current habitat values for Steelhead in the creek. Due to the flood event the interaction between surface and local ground water sources have likely changed and an understanding of the current interaction between the two may lead to solutions to increasing flows in the stream during critical periods of the Steelhead lifecycle. Strategies to accomplish this goal include:

1) **Conduct a more detailed analysis of surface and groundwater.** An analysis to determine areas of gaining and loosing reaches to Tonasket Creek flows should be conducted by qualified individuals to determine areas where flow augmentation is occurring from ground flows and where habitat rehabilitation would significantly benefit Steelhead populations.

MULTI PURPOSE WATER STORAGE

Multi-purpose water storage is important for agricultural, domestic, industrial, recreational, and habitat uses in the Okanogan River Watershed. Current storage sites with control structures for regulating water releases in the watershed include Leader Lake, Conconully Reservoir, Conconully Lake, Forde Lake, Connor Lake, Spectacle Lake, Whitestone Lake, Aeneas Lake, Osoyoos Lake, Fancher Lake, and Bonaparte Lake. These reservoirs and lakes with flow control structures help re-time water flows for later beneficial use. While water is stored in these lakes and reservoirs for agricultural use, recreational and domestic uses are often a great demand and a considerable portion of the local economy has resulted from industries supporting these uses. Nevertheless, any water

storage created as a result of this plan must emphasize the primary use for which the storage is created and secondary uses must not be allowed to supersede the primary use.

GOAL 1: IDENTIFY AND PURSUE WATER STORAGE PROJECTS TO PROVIDE WATER FOR IRRIGATION, DOMESTIC, MUNICIPAL, AND INSTREAM FLOW USES.

The Planning Unit strongly feels further development of multi-purpose water storage facilities is imperative for managing our water resources to meet future water demand. Many studies of potential water storage sites have been conducted but few have gone further than cursory evaluations. The Planning Unit believes additional water storage opportunities exist in the watershed as surface and or ground water storage and these areas should be identified and evaluated for feasibility. Strategies to accomplish this goal include:

1) **Capture some of the spring freshet for later use (primarily agriculture).** Additional reservoirs and water storage will allow the capture of the considerable spring freshet for release during low flow periods of late summer and early fall. The retiming of these flows to later in the season will allow junior water right holders to continue irrigation later into the growing season, provide greater flows for aquatic habitat, and provide additional recreational opportunities for local business.

GOAL 2: SEEK STORAGE OPPORTUNITIES BEYOND THE TRADITIONAL LARGE RESERVOIRS (E.G. WETLANDS, BANK STORAGE, AQUIFERS, ETC.)

Traditional storage structures are often the easiest to evaluate because thousands have been designed and constructed and they are easily visualized by the largest number of people. However, opportunities abound in our region for alternative storage. These opportunities include wetland enhancement, beaver introduction to stream headwaters, and ground water storage to name a few that have been identified to date in this planning process. Strategies to accomplish this goal include:

1) **Capture some of the spring freshet for later use (primarily agriculture).** Capturing spring freshet through wetland development and enhancement, beaver introduction, and other methods is important to maintaining higher flows for late summer and early fall.

2) **Develop/enhance/maintain wetlands in headwaters.** Wetlands are critical water storage areas. Wetlands store vast amounts of water, slowly release water throughout the year, remove nutrients and other pollutants, and often cool water. Augmenting existing wetlands to increase their capacity or constructing new wetlands where

feasible will increase the ability of sub-watersheds to maintain late season flows. Wetlands also provide a cooling effect for ambient air temperatures in the immediate area thereby contributing to their aesthetic value. Wetlands are also home to a wide range of wildlife that uses wetlands for water, shelter, and food.

3) **Narrow Okanogan River main stem and create side channel habitat.** Opening side channels to high flows where possible will provide greater opportunity for spring high flows to be diverted to near surface ground water. Further, it reduces the risk of flooding downstream and provides important areas for resting for aquatic species.

4) **Develop map of likely or potential wetland areas.** Local conservation groups should develop a comprehensive map showing known wetlands and areas where geology, geography, and hydrology would like contribute to a functioning wetland. The information developed in this process can be used to prioritize wetland development opportunities.

5) **Determine impact (recharge) on ground water from irrigation.** Often irrigation water transported in irrigation ditches and applied to fields will move to ground water sources. Local conservation groups should evaluate the potential benefits and impacts of this form of ground water recharge. The evaluation should consider what types of application or water delivery leads to the greatest and least recharge and in what areas this is occurring in the watershed.

6) **Reconnect side channels where feasible.** Side channels opened to the Okanogan River and tributaries will provide greater opportunity for water to soak into soils and riparian areas to be slowly released later in the year. Side channels should be evaluated for the ability to remain open naturally before being reconnected.

WATER QUALITY

Water quality is measured through many parameters and is regulated by several federal and state laws. Water quality measurements that have regulatory standards that must be met include flow, temperature, dissolved oxygen, pH, heavy metals, pesticides, and others. The many things that affect water quality include climate, geology, wildlife, weather, and human impacts. Water quality standards are based upon beneficial uses for a particular reach of a waterbody. Beneficial uses include domestic consumption, irrigation, recreation, wildlife, and aesthetics. Each of these uses requires specific water quality parameters to be met. If a water body supports multiple beneficial uses it must meet the most restrictive water quality standard for the combined uses. Water quality standards are established first by the United States Environmental Protection Agency. Washington State adopts additional standards and some are more restrictive than the federal standards.

GOAL 1: MAINTAIN AND ENHANCE WATER QUALITY THROUGHOUT THE WATERSHED BY FURTHER IMPLEMENTING THE OKANOGAN WATERSHED WATER QUALITY MANAGEMENT PLAN

Okanogan County and the Okanogan Conservation District worked with local watershed stakeholders between 1996 and 2000 to develop the Okanogan Watershed Water Quality Management Plan. That plan contained more than 40 action items to be implemented to improve water quality in the basin. Many of the action items have been at least partially implemented. The Okanogan Watershed Planning Unit believes the action items that have not been fully implemented should continue to be implemented by local conservation groups using the same voluntary method the water quality plan designated. Other strategies to meet this goal include:

1) **Ensure that the County/City Planning departments have the watershed plan and supporting data and consider these when making SEPA determinations and other planning policies and decisions. Copies of this plan and its supporting documentation should be provided to permitting jurisdictions in the watershed upon completion of the plan's development. The jurisdictions should be asked to agree to use this information and the recommendations in this plan when making future SEPA determinations.**

2) **Assist municipalities with meeting stormwater Phase II requirements.** Municipalities less than 100,000 populations are required to have and implement stormwater management plans and apply for NPDES permits for discharges. Furthermore, under the stormwater plans, all ground disturbances greater than one acre in size will require NPDES permits. Local conservation groups should assist municipalities, businesses, and individuals needing permits with conservation planning and best management practice implementation to meet these requirements and permitting standards.

3) **Implement a long-term water quality monitoring program.** The monitoring program goal is to characterize the water quality conditions of priority streams and where possible show improvements due to implementation of Best Management Practices. Monitoring should include temperature, dissolved oxygen, pH, turbidity, instream flow, and fecal coliform. The data collection methodology should allow the collected data to be compared against data collected from previous studies.

4) **Develop a temperature standard for the Okanogan River and tributaries.** The Washington Department of Ecology should conduct a Total Maximum Daily Load (TMDL) analysis and Detailed Implementation Plan for temperature on the Okanogan River and its tributaries.

5) **Re-establish vegetation along river and stream banks where appropriate.** Vegetation provides important conservation values such as bank stability, shading, and wildlife habitat. Maintaining, improving, or establishing vegetation where appropriate should remain a priority for landowners and conservation groups and agencies.

6) **Implement a voluntary cost-share and Best Management Practice implementation program that will reduce and/or eliminate fecal bacteria inputs from confined animal feeding operations and/or corrals, winter feeding areas, and open range where there are identified negative impacts.** Providing voluntary technical and financial assistance to livestock producers is important for reducing negative impacts where livestock concentrate.

7) **Develop and offer an information and education plan while exploring the possibility of making state revolving loan funds available for landowners to repair or replace existing septic systems.** Individual homeowners face stiff penalties and possible eviction from their home if their septic system is found to be failing by regulatory agencies. Development of a program to offer low interest or deferred payment loans in addition to grants for low income home owners for the repair or replacement of failing septic systems near streams or groundwater recharge areas is critical.

8) **Develop and implement a water quality education program.** The program should inform agricultural producers how they can protect water quality as well as informing local residents what they can do in and around their home to protect and improve water quality.

9) **Implement actions identified in already completed Total Maximum Daily Load studies.** The Washington Department of Ecology completed Total Maximum Daily Load studies for DDT, PCBs, and Arsenic. Each of these studies recommended various actions be taken to reduce the opportunity for further water quality contamination by these substances.

10) **Work with state legislators to provide incentives for water conservation.** Conserving water by permitted water users is often viewed negatively because of the potential to lose all or a part of a water right for lack of use. Legislators should continue to be encouraged to seek ways for permitted water right holders to maintain their full water right even if it isn't used because of conservation efforts they take. This water may be critical for the permitted user in future years due to changes in crop type, climate, or other reasons.

11) **The Planning Unit encourages the Colville Confederated Tribes continue to work cooperatively with the Okanogan Irrigation District and individual irrigators on issues relating to stream flows and anadromous fish in the lower reaches of Salmon Creek.**

Both entities have been working together since the 1990's to reach a collaborative agreement on irrigation district operations and increasing stream flows in the lower 4 ½ miles of Salmon Creek. Their continuing efforts to work proactively and collaboratively should be encouraged and supported.

12) **Identify landowners that are interested in voluntarily water management Best Management Practices on their farm.** Voluntary water management has become an increasingly sought after program of the Okanogan Conservation District and USDA Natural Resources Conservation Service. Voluntary water management can happen through improvement to delivery and on-farm water systems and through water management programs on-farm. Continued implementation of these programs will provide economical methods for conserving water and protecting water quality.

13) **Conduct water availability and needs analysis of the Okanogan River Watershed by sub-watershed. This will also include locating the approximate boundaries of major aquifer regions and critical recharge areas.** Identifying the scope and size of major aquifer regions throughout the watershed is critical to determining what steps need to be taken to protect them. Some general analyses have been conducted as part of this watershed planning effort, but a more detailed and thorough analysis needs to be completed.

14) **Okanogan County should begin discussion with Canadian government officials to establish local control over the management of flows in the Okanogan River Watershed.** Local conservation groups in Okanogan County and British Columbia have met periodically since 2005 to discuss water management issues in an effort to gain a better understanding of how to improve management of our shared resource. Continuing these efforts while maintaining communication with the International Joint Commission which is tasked with setting Osoyoos Lake levels should be supported by Okanogan County and other local, state, and federal agencies.

15) **Local, State, and Federal water quality and human health officials should work with British Columbia officials to establish ways to reduce the amount of mine tailings and associated contaminants entering the streams of the Okanogan River Watershed.** Reducing the level of mine tailings entering streams and rivers should remain a priority for all companies, individuals, and agencies involved in mining. Agencies, companies, and individuals should continue implementation of slope stabilization activities to reduce erosion. Further, individual recreational miners should continue to follow the Gold and Fish rule book published by the Washington Department of Fish and Wildlife.

16) **Survey the Similkameen River from Keremeos B.C. to Nighthawk, WA (in cooperation with the B.C. Ministry of Environment, Lands, and Parks and the Lower Similkameen Band). This survey should identify specific areas that would benefit from the implementation of Best Management Practices for reducing sediment in the river. In addition a sediment survey should be completed that will determine background (natural vs. human caused) erosion and sediment delivery and human caused erosion and sediment delivery.** This recommendation should wait to see the outcome of current efforts by Canadian officials to place a dam on the Similkameen River as well as efforts by United States officials to place a dam on the Similkameen River. If either project is implemented this recommendation should be revisited at that time to determine need.

17) **Develop construction standards and Best Management Practices to be applied to roads, public and private, built in the county. The planning unit strongly encourages state and federal agencies such as DNR and Forest Service to repair and maintain Toats Coulee Road (that portion of which they, in partnership are responsible for) and any other roads they are obligated to maintain that run parallel to a creek, stream or river.**

    With increased sub-division of large acreage parcels private roads continue to be constructed without simple practices that can reduce erosion. Property owners should have the opportunity to be aware of these practices and direct their contractor to implement them. The cities and Okanogan County should seek necessary funding to implement practices to reduce erosion from public streets and right of ways.

    Allowing state and federal access roads to deteriorate causes sediment, rocks, and asphalt to enter the watershed and pollute the waters. For example, Toats Coulee Road is a gateway into the Pasayten Wilderness and was paved 30+ years ago but has been sorely neglected. Pavement has huge potholes, the road is sinking on slopes in some areas (this could cause mass wasting into Toats Coulee creek), it is "alligatored" along the edge where the asphalt is breaking loose and debris and rocks are falling onto the roadway and into Toats Coulee Creek. This road is heavily used during catastrophic fires and in every season by numerous entities and agencies. It must not be allowed to remain in such disrepair as to cause pollution to the Toats Coulee Watershed.

18) **Okanogan County should seek funding to determine impacts of roads on streams throughout the Okanogan River Watershed and identify standards including winter maintenance activities such as sanding and de-icing that may benefit from practice modification.** Okanogan County should seek funding to analyze the impacts of roads on water quality to identify maintenance practices that can be modified to protect water quality. Further, an analysis of winter maintenance activities particularly related

to culverts and bridges should be studied to determine impacts and possible changes in management to further protect the aquatic environment without diminishing public safety.

19) **The Cities and Towns of the watershed should seek funding (either individually or collectively) to develop and implement a comprehensive stormwater management plan.** Each city and town in the watershed has a comprehensive stormwater management plan. However, cities should seek grant and loan funds to implement priority activities identified in their individual plans.

20) **Identify unused roads or road sections which are unstable and a sediment source.** Unstable roads lead to increased erosion and the potential for landslides into creeks, wetlands, and other water ways. Identifying where roads are unstable then implementing practices to either remove the road, move the road to a new location, or repair the road to stabilize slopes should be done where possible.

21) **Compile a comprehensive inventory of roads, streams, and wetlands throughout the watershed and input the data into a GIS database.** Okanogan County and other local, state, and federal agencies with Geographic Information System (GIS) databases should work collaboratively to develop a combined comprehensive database of geographic data that can be used by decision makers for analysis and information purposes.

22) **Continue to develop a comprehensive inventory of rural development patterns in order to determine and address impacts to water quality.** Monitoring development patterns on a watershed wide scale may allow decision makers an opportunity to identify areas that need additional assistance to protect and improve water quality.

23) **Develop a comprehensive information and education program identifying the effects of illegal dumps and recommended clean-up practices to the landowners and encourage community service organizations to aid local citizens in the disposal of unwanted and illegal toxic materials.** Illegal dumping is a significant water quality issue in Okanogan County. Funding is needed to identify, quantify, prioritize, and rectify these illegal dumps. Educating residents about the health concerns and public funding costs may help reduce the amount of illegal dumping that occurs in the future.

24) **The Okanogan Watershed Planning Unit should assist with publishing a natural resources information packet for distribution to local residents.** The Okanogan Valley Land Council developed a rural homeowner booklet that explains resources available to landowners and natural resource issues for which they should prepare. The Okanogan

Watershed Planning Unit through its members should seek funding to continue updating, publishing, and distributing this information.

25) **The Okanogan Watershed Planning Unit through its members should develop and host Best Management practices workshops for local private landowners.** Educating landowners on Best Management Practices they can implement is an inexpensive method for protecting and improving water quality. Okanogan Watershed Planning Unit member organizations should develop workshops showcasing what landowners can do to protect water quality.

26) **Implement a historical photo plot monitoring program.** Analyzing changes to landscapes including vegetation, development, and human activities can help identify areas that are meeting pre-European conditions. Many historical landscape photos exist of the Okanogan Watershed so finding the location the photos were taken then taking a photo from the same place to compare the differences between photos may help guide new land use and water quality protection activities.

27) **Develop sub-watershed committees to assist with the implementation of this plan.** Local sub-watershed representation is critical to the long-term successful implementation of the watershed plan. Local residents must be proactively involved in the decision making process for prioritizing project implementation, identifying resource concerns, and maintaining quality conditions.

28) **Provide technical assistance, water quality information, and cost-share assistance to private agriculture producers.** Maintaining quality conservation programs delivered voluntarily and without regulation to agricultural producers is critical to long term water quality protection and enhancement. Conservation practices are always evolving as we learn more about our natural resources and environment so continued technical assistance will increase the speed with which new ideas are implemented to conserve natural resources.

29) **Provide technical assistance, water quality information, and cost-share assistance to private non-agriculture landowners.** With increased conversion of agricultural lands to other uses more landowners affect natural resources positively and negatively. Many of these individuals are not commercial farmers but they still have conservation assistance needs. Providing voluntary, non-regulatory, assistance to these landowners will further protect water quality and other natural resource values.

30) **Okanogan County should work with watershed residents and interested groups to update the comprehensive waste management plan.** The Okanogan County Solid Waste Advisory Committee meets generally on a monthly basis to discuss waste management issues and provide guidance to the Okanogan County Department of

Public Works for operation of the Okanogan County landfill and associated transfer sites. The Solid Waste Advisory Committee should be challenged to find new and innovative ways to reduce illegal dumping and increase recycling opportunities to reduce the flow of waste to the landfill.

31) **Okanogan County should initiate meetings with the regional districts of the South Okanagan to discuss a joint venture to protect, preserve, and enhance the water quality conditions of Lake Osoyoos.** Okanogan County should take the lead, working closely with the City of Oroville, to work with officials from the Regional Districts of the Okanagan and the City of Osoyoos to develop a shared strategy and action plan for improving the water quality of Lake Osoyoos.

33) **Implement Engineer Designed Sediment Control Structures on the Okanogan River.** The purpose of this project is to install engineer designed sediment control structures to control erosion and improve riparian function while reducing sediment loads in the Okanogan River. The high sediment loads in the Okanogan River cause problems for fish such as increased mortality, gill disease, decreased reproduction rates and spawning for resident and anadromous fish including the endangered upper Columbia steelhead trout and also Chinook salmon. Erosion of river banks widens the river and thereby increases the temperature and siltation of redds. Also, increased sediment causes economic stress for irrigators due to damaged irrigation pumps. Improvement with these implemented sediment control structures will provide benefits such as improved aquatic and riparian habitat quality. The two areas that the WRIA 49 Watershed Planning Unit would like to address: the north end of Hegdahl Island and a reach south of the Oroville-Tonasket Irrigation District Cordell pumping unit.

34) **Oxbows re-connection on upper Okanogan.** The Planning Unit would like to support efforts to find funding to reconnect the oxbows on the upper Okanogan River.

GOAL 2: AGGRESSIVELY PURSUE RECYCLING

Electronic waste is quickly becoming a significant portion of materials deposited at the Okanogan County landfill. Not only is the amount of material significant, the material and chemicals often found in electronic appliances can cause significant harm to natural resources such as water quality and wildlife. Strategies to accomplish this goal include:

1) **Educate public on safe alternatives to dumping certain electronic waste products.** Okanogan County and conservation groups should work to educate the public on opportunities available to properly dispose of electronic waste.

2) **Okanogan County and municipalities should work together to develop a more active recycling program to reduce waste disposal in landfills.**

GOAL 3: LOOK TO FUND FREE DISPOSAL FOR APPLIANCES AND OTHER WASTE ON A PERIODIC BASIS

Large household, non-commercial, appliances are often found dumped along roadsides, in creeks, and other areas and create many problems ranging from safety issues to pollution. Developing a program that would allow the periodic drop off of such items at a designated location so it could be disposed of properly would help diminish this problem. Strategies to accomplish this goal include:

1) **Work with community or other entities to develop a fund to provide free disposal of appliances on a periodic basis.** Conservation groups should work together and with private funding sources to develop a fund to pay for periodic disposal of household, non-commercial, appliances at low to no cost to the service user.

2) **Educate the public about the detrimental effects of illegal dumping.** Conservation groups should work with Okanogan County to educate the public about the safety and conservation hazards of improperly disposing of appliances and other waste.

GOAL 4: DEVELOP AND BUILD A BRIDGE TO DRISCOLL ISLAND AND OTHER PUBLICLY-OWNED ISLANDS TO ELIMINATE OKANOGAN RIVER FORD.

The Washington Department of Fish and Wildlife own Driscoll and Eyhott Islands which are located in the upper Okanogan River near Oroville. These areas provide important wildlife habitat and recreation opportunities. Much of the areas in the interior portions of the islands are farmed for hay production. To get equipment there equipment must be currently forded across the Okanogan River. This causes disturbance to spawning areas of the river and sedimentation of redds downstream. These areas are not readily accessible for public use unless individuals wish to swim the river or have access to a boat. Building a bridge to these islands will minimize impacts to the river and provide greater opportunities for recreation and conservation education. Bridge specifications have been determined. Strategies to accomplish this goal include:

1) **Seek multiple funding sources.** Because the projected cost of the bridge is currently estimated at $750,000, and any single funding source will not likely be able to fund the bridge, the Washington Department of Fish and Wildlife should seek to combined monies from various funding sources.

2) **Enlist political support from multiple partners.** The Washington Department of Fish and Wildlife has already garnered letters of support from various state and

local entities. Further broad-based support will only better chances of obtaining funding for bridge construction.

MISCELLANEOUS GOALS

The Okanogan Watershed Planning Unit developed these miscellaneous goals because they either crossed nearly every group of other goals or they didn't really fit within any of them but were tied to water management.

GOAL 1: RECOMMEND NON-CONSUMTIVE USES OF WATER THAT PROVIDE COMMUNITY BENEFIT SUCH AS RUN-OF-THE-RIVER TURBINES FOR ELECTRICAL PRODUCTION.

Non-consumptive water uses that benefit the public should be encouraged as a way to harness additional beneficial uses without impairing existing water rights. A run-of-the-river electrical generating turbine is an example of one use that could provide significant public benefit without impairing existing water rights. Strategies to accomplish this goal include:

1. **Reducing permitting requirements for small-scale run-of-the-river electrical generating turbines.**
2. **Affirming support for Enloe project licensing.**