

APPENDIX B
HISTORICAL INFORMATION

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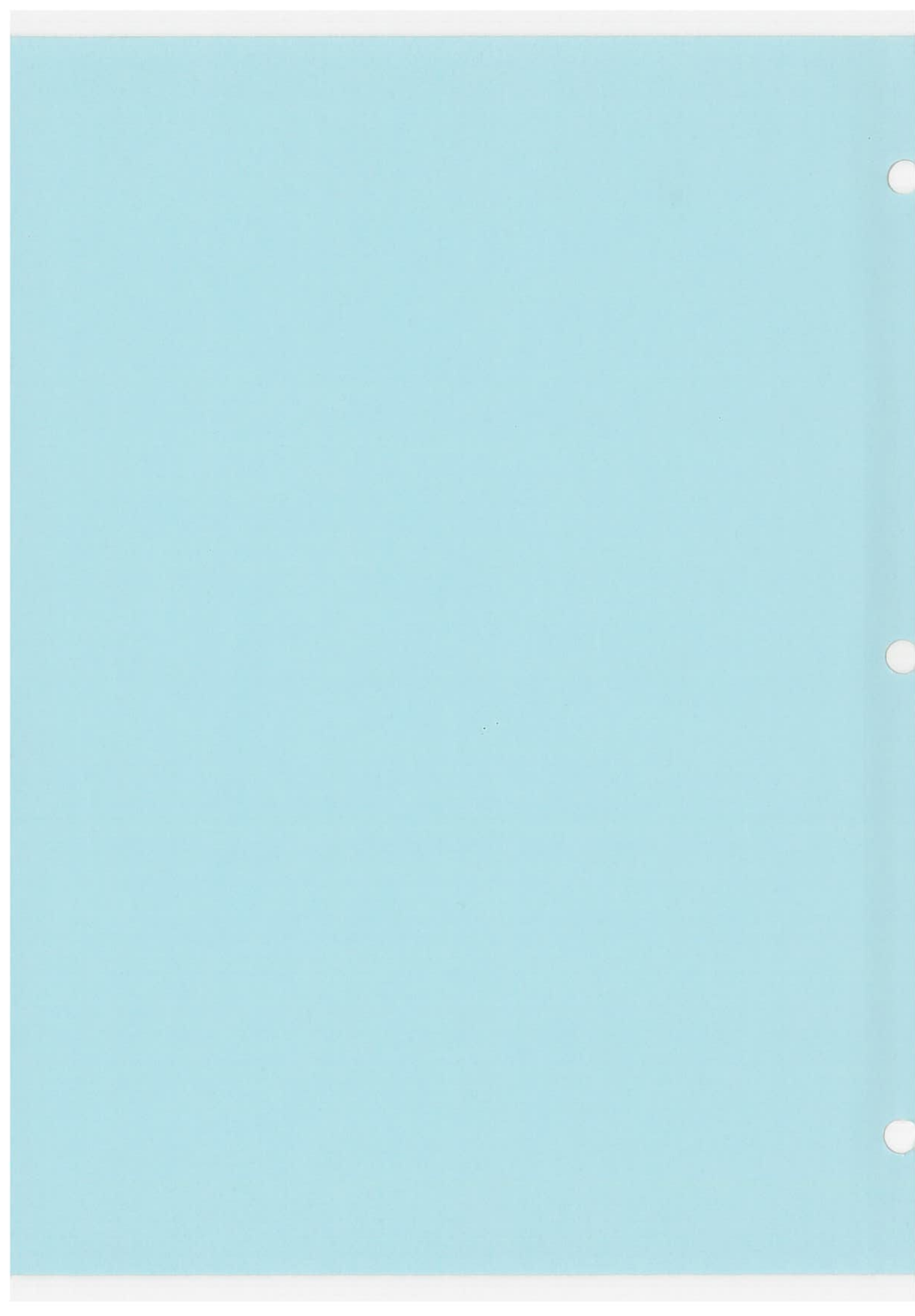
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PAST PARTICIPANTS IN THE WATERSHED PLANNING PROCESS

Over the last five years various people have contributed to the watershed planning process in the Methow Basin. These persons are listed below:

Craig Boesel, Primary Pilot Project
Ray Campbell, West Lower Methow
Ben Dennis, Primary Fish
Steve Kreider, Primary East Lower Methow
Jim Gregg, Primary Early Winters
Bunny Morgan, Primary Beaver Creek
Scott Edson, Colville Tribes
Susan Koptinak, Town of Twisp
Mike Pritchard, Primary Recreation
Jerry Sullivan, Primary Chewuch River
Jim Weed, Okanogan County
Arnold Assmussen, Town of Pateros
Doug Zahn, Alternate GWAC
Dean Neff, Primary Agriculture
Terry O'Reilly, Alternate Early Winters
Carl Miller, Primary Wolf Creek/Goat Creek
Barry Maitland, Alternate East Lower Methow
Dave Schulz, Okanogan County





Methow Valley News



News

April 13, 2000



Endangered Species

WATER: for Farming, Fish and Fighting over.....

A special report of the Methow Valley News

by Lee Hicks

Water has never been as critical to the future of the Methow Valley as now, with issues of endangered fish species affecting livelihoods and the local economy.

The debate over availability of water was a factor in the now-abandoned quest to build Arrowleaf resort. Water rights are in question as the Methow Valley Irrigation Ditch begins a reorganization program that was opposed by many smaller ditch users.

Irrigators diverting from federal land face more uncertainty over permits that determine whether they'll have water for crops. A job-producing expansion of the Valley's largest single employer, Sun Mountain Lodge, has been threatened because of water issues.

The National Marine Fisheries Service, which listed salmon and steelhead trout under the 1973 Endangered Species Act, is putting pressure on state and county governments, and other federal agencies, to conserve water for fish habitat.

The history and terminology of water rights and water use is complex, sometimes obscure and intimidating.

This special report of the *News* attempts to summarize water law and

terminology, and to explain the key issues related to uses of water in the Methow basin.

A short history of water rights in Washington:

Water rights in our state, and many others, evolved from English common law. A principle of territorial water law, the riparian doctrine, held that landowners adjacent to rivers had the right to use the resource.

As Washington moved from territory status to statehood, courts and then the state legislature increasingly favored the appropriation doctrine for water rights. Users could appropriate water to develop a water right even though they were not adjacent to a river or stream. Rights could be held to ground water, that originating in aquifers and obtained through wells.

The 1917 Water Code adopted by Washington state recognized existing riparian water rights but required that any new rights be "appropriated" through a state permit system. Proximity to a river or stream was not necessary to establish an appropriative right. The 1917 code also established the principle of "first in time, first in right." Adjudication through the courts also became the primary process for resolving water right disputes.

The water code gave authority over the permit system at first to a supervisor of water resources. The responsibility passed to the state Department of Conservation up to 1967 and for a brief time to a state Department of Water Resources before being assumed by the Department of Ecology in 1970. Today DOE has broad authority under state law and the administrative code to manage many aspects of water use, including issuing water permits and water rights certificates, for the "public welfare."

Some of the terms that might help understand the water issues being debated in the Methow Valley:

Statements of water claims, water permits and water right certificates are all recorded in the Department of Ecology water registry. In the Methow basin there are more than 2,000 entries, some of them a century or more old.

Claims are essentially that, a written statement of a water user's intent and belief in the right to use water.

The Department of Ecology may issue a water permit to an applicant, and eventually a water right certificate if terms of the permit are satisfied. The right is perfected through beneficial use, generally meaning that water must be applied for the purpose in the permit. Once a right has been established through **beneficial use**, the "use it or lose it" principle comes into play.

This was part of the state Supreme Court case that went against the Town of Twisp's effort to use a diversion on the Methow River for the proposed new industrial park. The court held that the Twisp right had been abandoned.

A July, 1998 state Supreme Court decision (*Theodoratus v. the state Department of Ecology*) notes that, "Water must be put to a beneficial use before a water right vests." Beneficial use, the court notes, refers to both the type of use and the "measure and limit" of the water right.

Trust water rights: State legislation passed in 1991 allows water rights to be placed in "trust" and managed in the public interest by the state Department of Ecology.

Water bank: The new basin water rule now being re-drafted will likely include provisions for a water bank in which unused water rights can be "deposited" in a bank for future withdrawal for approved uses, including agriculture, fish habitat, instream flows and development. This might include amounts not used by residences with a 5,000 gallon "exempt" well, irrigation or other rights.

Exempt wells: Most residences in the Methow Valley as part of the building permit process are allowed to use 5,000 gallons of water per day for domestic consumption, including one-half acre of irrigation. In its 1998 discussions with the Okanogan County Commissioners, DOE has said that a realistic amount would be 2,000 gallons a day and has suggested that this "excess" water might be deposited in a water bank.

Group domestic rights: The 1977 Methow basin water plan gave priority to water for single-family and stock watering uses. When water planning efforts focused on the Methow Valley in the 1980s and 1990s, many people argued to "elevate" group domestic water, or community water systems, to similar status in the water code.

At present, however, community water systems are not permitted in the Methow Valley, a situation many argue encourages "grid" development.

Interruptible rights: State legislation passed in 1970 allows the interruption of water use under a specific right if it would impede instream flows to a river or stream. Irrigation rights issued after 1976 are usually interruptible, while wells for single-family domestic use are not. The law is aimed to protect habitat of fish and other wildlife populations. Junior water rights can also be interrupted when there is danger of taking water away from a senior water right within a basin.

Instream flows: This refers to the actual amount of water flowing in stream. The state DOE has said a major objective of watershed planning with Okanogan County agencies is to protect instream flows in the Methow basin. This is even more a critical issue with the listing of several fish species under the US Endangered Species Act.

Groundwater and surface water: Groundwater is water that is drawn from wells and aquifers, while surface water is that which flows within a river or stream and tributaries or is contained in a lake. Irrigation for farmland and ranching is typically from surface water.

Hydraulic continuity: All recent water studies in the Methow Valley have adopted the premise of the connection, or continuity, between ground water (aquifers) and surface water (lakes and streams). The continuing argument is how to identify the effect on the river of groundwater and vice versa. Removing or adding to one of the sources affects the other according to this equation.

Reaches: The Methow basin has seven stream reaches. They are the Methow headwaters above Mazama, Early Winters Creek, the upper Methow from Mazama to Winthrop, the middle Methow to Carlton, the lower Methow to the Columbia at Pateros, the Twisp River and the Chewuch River.

Allocation: The Department of Ecology is responsible for determining the amount of water allocated in a given basin such as the Methow basin. In the Methow, the amount of water available for new single domestic and stock watering uses since 1976 has been set by regulation at 2 cfs (cubic feet per second) in each of the seven reaches of the basin. (See related story describing water measurements.)

Water budget: The term budget is applied to the total amount of "inflow" water that comes into the basin through precipitation and snow melt and water that leaves through "outflow": attributed to evapotranspiration, groundwater withdrawals and surface diversions. The water budget for the Methow according to studies in the mid 1970s was 2,875,000 acre feet per year.

Water demand: The amount of water put to various uses in the basin and that which is subtracted from what is available in the budget is known as water demand. Both water budget and water demand are terms that can be applied to a specific project, such as a development or a town water supply.

Consumptive use: This is water that is actually consumed through such uses as irrigation and domestic residential use. Some water is returned to the water table after being used—such as gray water and water in septic drain fields.

By some engineering estimates, 85 percent or more of water used on a single family lot with a well and septic system is returned to the groundwater system.

HOW MUCH WATER: From where and for what?

by Lee Hicks

The amount of water in the Methow basin is a topic that has been debated energetically for decades, and maybe never more than in the past year.

The National Marine Fisheries Service believes that increasing streamflows is the way to improve habitat for endangered or threatened salmon and trout species.

Many hydrology studies and historical data indicate, however, that flows of basin streams have less to do with the amount of irrigation and domestic groundwater use through wells, than fluctuating snowmelt runoff and spring rains. In other words, it's "mother nature" and not man that has the greatest effect.

A 1974 study by the Department of Ecology with the US Geological Survey established a "water budget" of 2,875,000 annually in the Methow basin.

The "inflow" side of the budget assumed all of that amount came from snow melt and precipitation. "Outflow" was attributed primarily to evapotranspiration of about 1,623,500 acre feet on Forest Service land, which comprises more than 80 percent of the basin. The other factor in evapotranspiration, irrigation, accounted for only 27,100 acre feet.

The next largest outflow was from 1,162,700 acre feet of surface water lost in streamflows leaving the basin. Groundwater withdrawals totaled 61,700 acre feet.

A subsequent Department of Ecology study in 1976, just before the 1977 water rule was adopted, concluded that total annual man-made water uses amounted to only 115,000 acre feet per year, or about 4 percent of the outflow side of the basin water budget. That amount included "non-consumptive" use which does not reflect water that is returned to the water budget after withdrawal.

It may be easier to understand how much water is available in the basin by considering how it is measured.

A cubic foot per second is the amount of water that would pass a given point in one second, or 7.48 gallons. An acre foot is the amount of water needed to cover one acre to a depth of one foot.

In one hour, a 1 cfs diversion would cover an acre of land with one inch of water. In one day or 24 hours, then, 1 cfs would cover one acre with water two-feet deep—or 2 acre feet of water. Therefore, 2 acre feet per day is equal to a 1 cfs irrigation diversion.

A 1 cfs irrigation diversion would result in 448.8 gallons in one minute (usually rounded to 450 gallons per minute, or gpm). That would amount to 26,928 gallons in an hour, 648,000 in a day and 236,520,000 gallons in a year.

A proposed new water rule, now withdrawn, for the Methow basin would have assigned water in the amount of 2 cfs (cubic feet per second) that can be appropriated for group domestic use in each of the seven "reaches" of the Methow basin. These are the upper Methow River headwaters, Early Winters Creek, upper, middle and lower Methow River, and the Chewuch and Twisp river reaches.

What does this mean in practical terms?

We can translate that 2 cfs figure into 14.96 gallons per second. An "exempt" domestic well that doesn't require a Department of Ecology permit can pump up to 5,000 gallons per day for a single-family residence. That would amount to 258 single-family homes (1,292,544 gallons divided by 5,000).

Some senior surface water rights for irrigation ditches allow more than 20 cfs for seasonal withdrawals—or 10 times the amount allocated by

the 2 cfs existing water rule for domestic and stock watering use in the basin.

NEWS

An important point, though, is that few single-family homes actually use 5,000 gallons per day, especially in winter. In-house domestic use is often less than 500 gallons per day for a three- bedroom residence.

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One good example of water use is that a 10-minute shower with a new water saving shower head would use only 25 gallons of water. Leaving the shower running at that rate all day would amount to only 3,600 gallons—still leaving another 1,400 gallons of the 5,000 gallon per day exemption for the well.

Assuming that group domestic systems would allow for 700 gallons of water per day for each residence, as proposed in 1994 by the Pilot Planning Committee study, each 2 cfs reach of the Methow River would support 1,846 homes (1,292,544 gallons divided by 700).

CLASSIFIEDS

Local
Nationwide

An early draft of a proposed new basin water rule encouraged the use of "group domestic" or community water systems in an effort to concentrate density, preserve open space and discourage "grid" development on five to 20-acre lots throughout the Methow Valley. That provision has been withdrawn, however, as Ecology grapples with a new proposed rule that responds to endangered fish species issues. The state Department of Fish and Wildlife had been expected to conduct a winter fish mortality study of local streams to provide information for decisions on the water rule. But officials say the agency does not have the resources, although it has submitted a summary of winter flow information based on existing studies.

LINKS

LOCAL WEATHERWATCH

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DOE officials and others have said that parts of the basin could already be "overallocated," or could have water appropriated in excess of the 2 cfs reservation. Research by the county's watershed planning unit tends to contradict that assumption.

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Methownet

HOW TO

A planning unit committee has discovered that many pieces of property in the basin have as many as three water claims—not water rights—recorded on the Department of Ecology's Yakima register.

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THE ADJUDICATION PROCESS

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A possibility in the discussions over endangered fish and water issues in the Methow basin is that the state Department of Ecology could "adjudicate" water rights if no inter-governmental agreement can be

reached.

Adjudication is a legal process that results in a determination of an existing water right, not creation of any new rights.

There are an estimated 165,000 water rights claims in Washington State according to the state Department of Ecology. Since 1918, only 82 adjudications of small drainage systems have been completed, and 39 more petitions to adjudicate have been filed.

In the Methow basin, there have been seven adjudications, beginning in 1921 with Beaver and Libby creeks. Gold and Black Canyon creeks were adjudicated in 1929 and Bear Creek and Davis Lake in 1930. There was a half century hiatus until completion of the Wolf Creek adjudication in 1984.

One of the longest-running adjudications in the state involves the Yakima Basin, where the process had been grinding along for 17 years. Just recently the Ecology, the Yakima Indian Nation and US Bureau of Reclamation entered an agreement that will continue to tie up water use in the basin until a \$6 million study of ground and surface water continuity is completed.

An adjudication may be filed by an individual citizen, an organization or Ecology. In any case, Ecology becomes the plaintiff in the action which is carried out in the county superior court.

A summons is issued to known water rights holders and users who then become defendants. The defendants, or others, may then file a statement of claim to a water right with the court, in effect making them claimants as well as defendants.

The claim process is not the same as filing a "statement of water right claim" for the Ecology water register. That information is recorded in the department's central region office in Yakima.

QUESTIONS ABOUT REGARDING WATER USE

The current discussions of water rights issues in the Methow Valley have left many people concerned about obtaining and keeping water for their property.

Relying on a number of sources, the *News* has identified several key questions that most often arise. The questions and answers cannot address all details or specific, individual situations.

It's best to do careful research and consult specialists—such as a well-drilling contractor, planner or engineer—and state and county agencies before making any decisions involving water for your property. In some cases you may need an attorney with water rights experience.

In all cases, a new well or water system must meet "water adequacy" standards of the state health department, as administered by the Okanogan County Health District. These include providing well test data showing capacity for a minimum of 360 gallons per day for in-house use in a three-bedroom residence.

Question:

I've heard that some sub-basins in the Methow are considered "closed basins." What does this mean?

Answer:

In 1976, the state Department of Ecology closed more than a dozen sub-basins in the Methow watershed to further surface and groundwater withdrawals "hydraulically connected," including drilling of 5,000 gallon per day wells that are otherwise exempt from DOE permitting. The basins include: Wolf Creek, Bear Creek, Thompson Creek, Beaver Creek, Alder Creek, Benson Creek, Texas Creek, Libby Creek, Cow Creek, Gold Creek, McFarland Creek, Squaw Creek, Black Canyon Creek and French Creek.

Lakes that were closed include Alta, Black, Black Pine, Crater, Davis, Eagle, Libby, Louis, Middle Oval, North, Patterson, Pearrygin, Slate, Sunrise, Upper Eagle and West Oval.

Question:

I am beginning to look at a number of areas in the Valley where I might buy property. Besides those areas that are "closed" to well-drilling, can I drill an exempt 5,000 gallon well in most other areas?

Answer:

A 1997 state Attorney General's opinion reaffirmed that property owners do not need to obtain a permit from the state Department of Ecology for "5,000 gallon exempt wells." However, applying for and obtaining a water right permit for an exempt well could provide the property owner with additional flexibility to transfer or change the place of withdrawal or purpose of use—under specific conditions.

Property owners should thoroughly research any plans with the state Department of Ecology and Okanogan County agencies.

Question:

I purchased about five acres up the Twisp River Valley in 1993. There is a well on the property but it hasn't been used. I have a water certificate for the well that was transferred with the property sale. Will I have any problem using this well when I build my house.

Answer:

Your situation raises an important question regarding water rights. Under the "beneficial use" standard of water law, a water right must have been used in at least one of five consecutive years to be valid. This principle has consistently been applied to irrigation rights and other permitted uses. And the Town of Twisp recently "lost" water it had anticipated could be used for a new industrial park because a diversion right had not been put to beneficial use for many years.

"Use it or lose it," is the phrase often applied to this principle. There is no clear answer to your question as it applies to domestic wells. The county planning department's position is that a water permit is not needed to use an existing exempt well. However, as with new wells, a property owner must demonstrate adequacy of water for a dwelling. The county health district requires evidence that a well can produce at least 360 gallons per day for a three- bedroom residence. Again, it's important to consult the health district and a licensed well contractor.

Question:

I am a partner in a 42-acre property partnership. The property has been subdivided into 14 lots of about three acres each. There is a well on the property, but it has not been used for more than 20 years.

1) Can that well be used for the property?

Yes, according to the county planning department.

2) Can we build a community water system?

In this case there are different opinions from the county planning department and county health district.

The planning department says, yes, if the department of health

approves the system.

The county health district, which acts as an "operating partner" with the state health department says community systems are not allowed because of potential conflicts with "senior" surface water rights.

3) Rather than build one water system for all lots, can we drill several wells and tie them in to serve multiple lots without a permit?

Probably not. Each exempt well can serve only one single domestic use, or else it would be interruptible to meet minimum instream flow requirements. Multiple exempt single domestic wells could be drilled as long as the total does not exceed 5,000 gallons per day. Under certain circumstances, the water code allows consolidation of exempt wells with permitted wells.

4) Can persons who buy the lots each build a well?

Yes, with the caveat that the lots must meet standards for septic and water systems including soil percolation and separation between well and septic--and the previously mentioned well pumping capacity.

A 5,000-gallon well means a lot of showers

By Lee Hicks

Terry Cooper doesn't consider himself a miserly water user. He doesn't waste water, though, and uses a drip irrigation system at his Chewuch River area home.

Cooper is one of hundreds of Methow Valley residents whose home and property is served by an "exempt" well that allows use of up to 5,000 gallons per day without requiring a permit from the state Department of Ecology. Cooper's water system is metered by choice.

On average, Cooper says he uses about 175 gallons per day in summer months when the drip irrigation system is operating. The amount drops to about 75 gallons per day in winter.

The county health department only requires that a potential new homebuilder show "water adequacy" of 360 gallons for indoor use in order to complete the building permit process.

A typical water-saving shower head allowing water to run 2.5 gallons per minute would require more than 33 hours to use 5,000 gallons of

water. Assuming a very leisurely 10-minute shower, that's enough water to keep about 200 Methow Valley residents squeaky clean.

Cooper may be more typical than not of Methow Valley homeowners whose water usage barely scratches the surface of what they are entitled to use each day. Many Valley homes are "second" or vacation residences that go unused for many months of the year.

The "use it or lose it" standard to establish beneficial use of a water right and the 5,000 gallon exempt well provision most likely distort the discussion of just how much water is needed or actually used in the Methow Basin.

Jay Lucas, who lives in the Mazama area, says he uses even less water, an average of about 50 gallons per day in summer and maybe 140 gallons in winter.

Lucas, director of the Methow Valley Sport Trails Association, is one of the homeowners who was required to install meters under the 1980s county ordinance anticipating development of the Early Winters Ski Area. It is one of numerous monitoring programs and studies initiated in response to the now-abandoned plan for a destination resort in the upper basin.

DOE moves to meter water use

by Lee Hicks

Reacting to a court decision, and possibly continued pressure from environmental groups, the state Department of Ecology is proposing a water rule to step up metering of surface and ground withdrawals.

In a recent announcement, DOE said it wants to amend an existing 1969 rule in order to comply with a 1993 state law that requires metering and recording of water withdrawals from specific locations.

State law now requires metering of water use related to new water rights for agriculture, municipal industry or other uses, and for new diversions from rivers, lakes and springs.

The law also says DOE must require meters for existing surface diversions of more than 1 cfs, or 450 gallons per minute, and for water use where salmon runs are in danger.

The Thurston County Superior Court case involves a May 1999 lawsuit by environmental and fishing groups, which claimed DOE was not enforcing state law. This February, the court ruled that DOE must update the metering rule.

According to DOE, "court calendar conflicts," resulted in recent postponement of the trial to hear additional arguments on, "the amount of effort" the agency must put into metering existing water rights.

Keith Phillips, DOE water resources program manager, said metering of about 125,000 water right claims, permits and certificates related to salmon runs would burden the agency, "with an enormous budget dilemma...since the legislature has never provided funding to do that work.

"We believe metering is important, but we need to prioritize...along with the many other demands for water management."

DOE's announcement that it would propose the new metering rule came just after release of a report by a Puget Sound area environmental writer that harshly criticized state and federal agencies for neglecting to enforce laws to protect salmon.

That report was sponsored by the Bullit Foundation, an environmental group financed by some heirs of KING broadcasting. The report was later condensed in a lengthy article published March 19 in the Seattle P-I's editorial section of the Sunday Seattle Times.

The writer, Daniel Jack Chasan, began with a conclusion, "...DOE's failure to obey or enforce the law represents business as usual."

Referring to salmon issues in the Puget Sound area, Chasan wrote:

"Before we spend a fortune and disrupt people's lives to restore wild salmon runs in Puget Sound, we should take a long look in the mirror. The same government agencies that have started tapping the cornucopia of federal salmon restoration money have ignored, selectively enforced or actively violated the laws that are already supposed to protect salmon and salmon habitat. Investing more money in business as usual will not save the fish."

Metering of irrigation and other water use in the Methow basin is included as a provision of several water and fish agreements now being negotiated with state and federal agencies. Most members of the local water planning unit appear to support the provision.

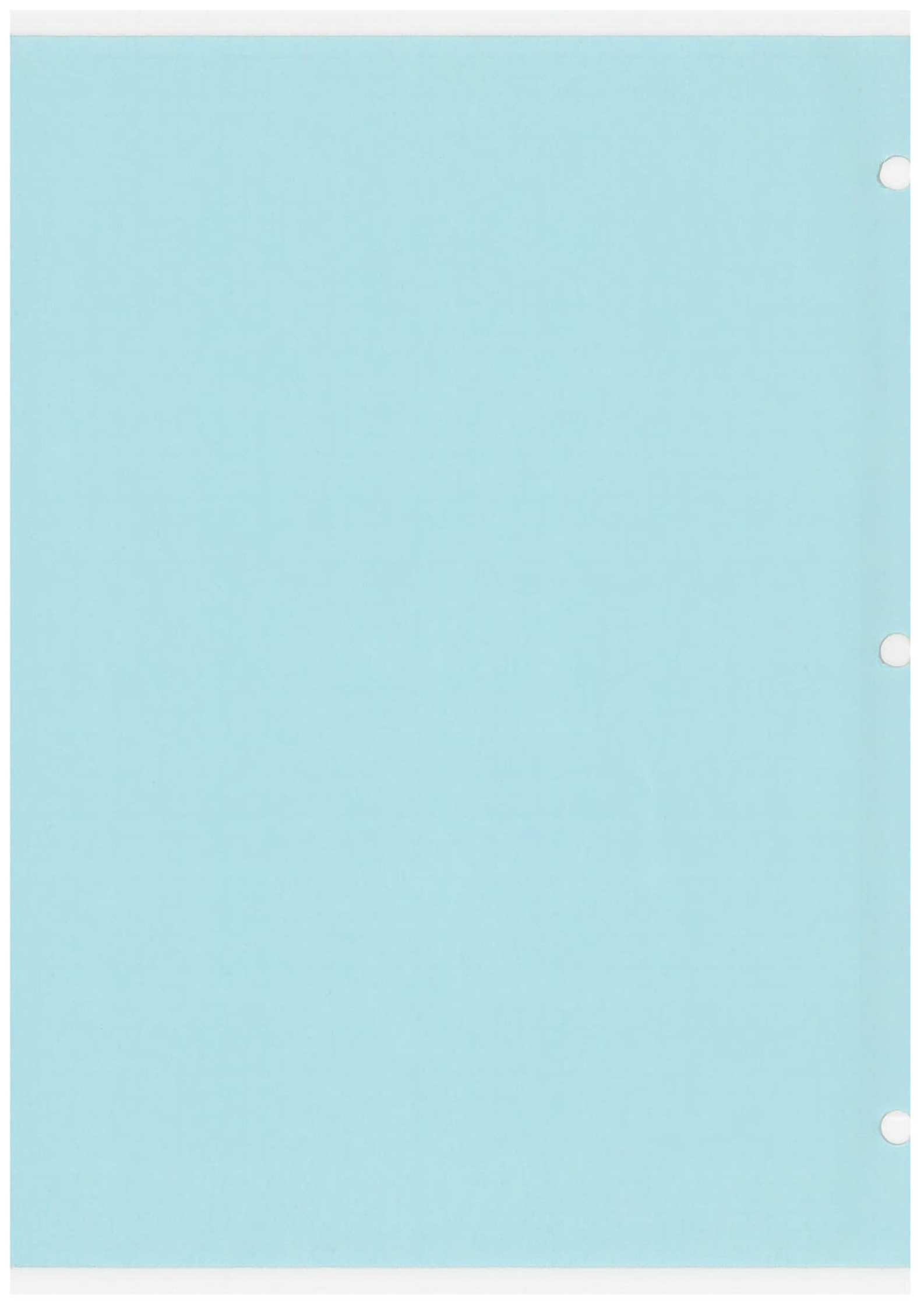
DOE officials have also said the agency has been unable to maintain data on actual water use and has encouraged the basin planning unit to identify unused surface diversions and other uses.



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Methow Valley News




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June 3, 1999

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WANT TO KNOW MORE and MORE ABOUT OUR METHOW VALLEY!

HOW TO

Ghosts of the past...clues to the future?

1971:

The state Water Resource Act of 1971 establishes the principle of protecting water for the public benefit in Washington.

1976-77: The Methow Basin Plan, and the state administrative code, through WAC173-548, require that growth be accomplished through government planning. The basin plan, effective in 1977, does not affect existing water rights but sets aside 2 cubic feet per second appropriations in seven reaches of the Methow, with first priority for single family use and stock watering, followed by instream flow needs. Some citizens argue, however, the basin plan should be amended to encourage "cluster style" development with open space and group domestic water systems rather than single family platted projects with individual wells and septic systems.

1977:

The state Department of Ecology closes the Methow River Basin to further water appropriation unless a permit applicant can show that adequate drinking water is available.

1982:

The Okanogan County Comprehensive Plan regulating growth and development is adopted.

June, 1983:

A special program to protect groundwater in the Mazama area is adopted by the county as part of the 1982 county Comprehensive Plan. The Mazama area is targeted for attention as the result of anticipated development related to the proposed Early Winters Ski Area. After an appeal to the state Pollution Control Hearings Board the county and DOE agree to establish a "utility" to protect water in the Mazama area. The plan would include water monitoring devices.

1986:

A Methow Water Monitoring Program (for Mazama): DOE order (DE 86-0289) requires the county to limit development that would generate domestic wastewater in the Mazama "planning area."

November, 1986:

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The state Department of Ecology issues a moratorium on all new septic permits, building permits and subdivision of existing property until a groundwater protection plan is in place.

February, 1987:

The state Pollution Control Board grants an order lifting the DOE moratorium providing the county meets deadlines for establishing the Mazama groundwater protection system.

October, 1987:

The county creates the Mazama Water Quality Protection System by resolution, No. 11-87, and subsequently sells \$250,000 in bonds for construction.

December, 1987:

The county sets rates for the monitoring system. Affected property owners subsequently form a citizens group and pursue legal action arguing that improved water quality will benefit the entire valley and should not be subsidized by one group.

September, 1988 to January, 1990:

MWQPS rate collections are suspended, then reinstated. The system includes 14 monitoring wells that began operation in January of 1990.

February, 1990:

Nearly 400 people pack the Winthrop Barn to discuss with DOE officials several proposed changes to the Methow Basin plan that would favor new public water supplies and promote "clustered" development over proliferating single family lots, each with individual septic systems and wells.

March, 1990:

DOE officials respond to a federal Fish & Wildlife manager's request for a moratorium on new water withdrawals with the statement, "It has never been our intent to place a moratorium on new water use permits in the Methow Valley."

June, 1990:

DOE informs the Methow Valley Irrigation Ditch directors that the agency favors converting the ditch system to one made up of individual or community wells. Ditch chairman Ray Walsh is quoted in the Methow Valley News as saying members, "will not lose our legal priority with a conversion as proposed." Nine years later the issue is still being debated and is the subject of a lawsuit by members who oppose conversion to wells or enclosing the ditch.

August, 1990:

DOE officials say they have "definitive information" that "proves there is not enough water for any further development" in the Methow Valley without infringing on senior water rights. Okanogan County officials disagree with DOE's opinion and continue issuing building permits.

1990: The so-called Chelan Agreement establishes the basis for creating "pilot" watershed

planning efforts in the Methow and Dungeness-Quilcene basins. The agreement aims to establish a "collaborative" process to set water management policies and avoid water litigation. It intends to bring together government, business, environmental, agriculture, recreation and tribal interests in the basins.

November, 1990:

The Yakama Indian Nation representatives write county, DOE and Colville Confederated Tribe officials that the Yakamas' goal is "long-term instream water resource management" to achieve gains in fish and wildlife habitat, "to their full productive capacity." The Yakamas argue that regulations, "must be changed to establish base (stream) flows that have a biological basis on fisheries needs."

January, 1991:

The Methow Regulation Review Advisory Committee recommends that DOE place a moratorium on drilling of new wells--except for upper reaches of the Methow River including the Mazama area. MRRAC also recommends Okanogan County stop issuing building permits and not approve new plat applications and requests for planned unit developments.

January, 1991:

The Methow Valley Ground Water Advisory Committee, formed by the county and DOE in 1988, passes a resolution opposing the MRRAC vote for a moratorium.

January, 1991:

The state Department of Ecology enforces the 1977 basin plan with announcement of an "emergency rule" (AO#: 91-07) closing 30 Methow Valley basins to "future building and well drilling." DOE says the rule is necessary to protect existing water rights and instream resources in the closed areas.

January, 1991:

The county commissioners follow the DOE's "emergency rule" action in a separate announcement that the county will not issue building permits in the closed basins unless an applicant can show proof of available drinking water.

March, 1991:

DOE issues "guidelines for new domestic water supply development" for property owners in affected closed basins.

April 1, 1991:

The Yakama Indian Nation tribal council informs the county and DOE that the tribe will seek "cooperative solutions rather than...legal remedies," if "good faith efforts" continue to be made to address "serious water resource issues in the Methow River drainage..an important spawning and production area for the Columbia River salmon.."

April, 1991:

The concept of a "Pilot Planning Project" for the Methow Basin is presented to local residents in a presentation by Frank Gaffney of Northwest Renewable Resources. Gaffney

says the project would follow the spirit of the Chelan Agreement of 1990, which attempts to set guidelines for state water management and to resolve water issues outside the courtroom. Gaffney tells residents that the Methow was "nominated" by Carlton residents Lee Bernheisel and Lucy Reid, later to become principals in the Okanogan Wilderness League. OWL has in years since then filed suit on numerous water issues in attempts to stop local developments.

May, 1991:

Saying "enough is enough," Methow Valley contractor Ernie Chenel presents county commissioners with a petition signed by nearly 450 (which later grows to 650) residents who oppose the county's participation in the Pilot Planning Project. Chenel predicts that competing interests would likely mean that water issues end up in court anyway.

May 1991:

More than 200 people gather at the Winthrop Barn to discuss the Pilot Planning Project with DOE director Christine Gregoire. Residents are told the pilot project could involve more than eight "caucuses" of special interest groups and that decisions would be made by consensus. DOE would review recommendations and either accept or reject them. Gregoire, now the state Attorney General, told those attending, "Government is not the best decision maker for the Methow Valley." Water decisions have traditionally been made in Olympia, Gregoire said, and the pilot project would be a way to increase local input.

May 23, 1991:

County commissioners decide to participate in the Pilot Planning Project, while acknowledging considerable negative sentiment and opposition to participation. "This is our best alternative," says commissioner Boyd Walton. "If we don't plan for water uses and conservation, the DOE will act in its enforcement role and local citizens will lose the chance to participate."

July, 1991:

The pilot planning project kicks off with a public meeting in Twisp. Initial caucus members include mayors of Winthrop and Twisp and a county commissioner. Contractor Ernie Chenel, who tried to head off formation of the project, is named as the business caucus representative.

October 2, 1991

The county's (then) civil deputy prosecuting attorney advises county commissioners that the county legal office believes that DOE's assertion that some areas and reaches of the Methow Valley drainage, "are over appropriated, are based on faulty assumptions. Chief among them is that all exempt wells produce 5,000 (gallons) per day. In fact research shows that individual domestic wells use, on an average, less than 1/10 of that amount. The county attorney also argued that another "faulty assumption, the county believes, is that all use is consumptive, whereas most domestically used water returns to the aquifer."

December, 1991:

The pilot planning committee meets for more than four hours to discuss administrative matters including hiring a project coordinator.

May, 1992:

Concern is raised over possible overlapping efforts of the ground water advisory committee, established in 1988, and the new pilot planning committee. Both committees are working under 1993 deadlines. GWAC members concentrate on water conservation measures and the pilot committee considers raising the priorities for group domestic water systems.

April 19, 1993:

A report from EMCON Northwest, a Spokane engineering firm, informed the Okanogan County Department of Public Works that "Area development has not progressed as rapidly as was envisioned during the past two decades..and that given the rate of development, it would appear that operation of the water monitoring system at its present level would not be necessary." to comply with the DOE/County stipulated agreement. The firm, however, noted that compliance with the agreement would require the completion of the Mazama Wastewater Facilities Plan and continued but reduced frequency of monitoring existing monitoring wells.

April 1993:

The state Supreme Court upholds a lower court decision denying a claim of the Yakama Indian Nation for a larger share of water in the Yakima River and its tributaries.

January, 1994:

The pilot planning committee submits recommendations to DOE, some of them requiring new or amended state legislation. Ecology begins the rule-making procedure to implement recommendations. The centerpiece of the pilot planning committee's report is a "water bank" to feature mostly agricultural water conservation. The report recommends lining irrigation ditches or enclosing with pipe, on-site irrigation improvements, conversion from ditch irrigation to groundwater irrigation from wells, and converting seasonal irrigation to year-round domestic rights.

January, 1994-January, 1996:

Ecology and the state legislature enter into a long-running debate over whether the agency has the authority to make rule changes related to the pilot planning committee's recommendations.

A briefing report concludes:

"The (pilot) planning committee, having worked on this project for over five years now, is somewhat disgruntled over seeing no tangible changes resulting from their efforts. To them, the thought of continuing their efforts for a Habitat Conservation Plan seem futile, given the inaction by the state agency and legislature over their current work."

July, 1994:

Through efforts of the pilot planning committee, DOE issues an emergency rule effective for 120 days that gives group domestic water systems the same permitting consideration as single family wells.

March, 1995:

The GWAC and pilot planning committees reach apparent agreement that in-house domestic water use will not be restricted in new water plans.

1995

Under pressure from Yakama Nation, the Methow Valley Irrigation Ditch board of directors considers measures to enclose the deteriorating irrigation channel and to downsize the 360 member district. About \$4 million in funds from the Bonneville Power Administration, Yakamas and the state could be available. The plan is opposed by some members who later organize as Methow Valley Canal Associates.

March, 1996:

A status report of an Olympia consulting group concludes "the opportunity is upon us" to build support for the new basin plan and water rule. "Or we can choose not to and risk continuing conflict and uncertainty about water usage in the Valley." The report cites the "parallel existence" of two water planning groups, the pilot planning committee and groundwater advisory committee, acknowledging there

has been "limited communications..in the past." The report says the separate committees should "come to the same table and shift their discussions toward developing a common understanding of the revised water management plan."

May, 1996:

After nearly four years of effort, members of the pilot planning committee conclude the prospects of legislative funding and implementation are slim. The final report calls for a "water bank," fish habitat improvements and greater instream flows for fish. As if to signal an open ended and uncertain future for water planning, the final newsletter of the Pilot Planning Committee is undated.

July 25, 1996:

Dissident ditch members file suite in Okanogan Superior Court to force the MVID membership to complete an environmental impact statement for the project.

August, 1997:

The National Marine Fisheries Service (NMFS) lists the steelhead trout as endangered under the 1973 Endangered Species Act, affecting mostly sport fishing for this ocean-run rainbow trout species, but setting in motion potential new water regulations for the Upper Columbia River and its tributaries, including the Methow basin.

December, 1997:

Twisp officials call "ludicrous" a state Supreme Court decision that cuts town water rights in half. The court ruling came on a lengthy appeal by Lee Bernheisel and Lucy Reid of the Okanogan Wilderness League of a 1993 DOE decision granting a water diversion change. The decision leaves in doubt the proposed Twisp industrial park and prompts town officials to seek relief from the state legislature.

1998:

NMFS lists the bullhead trout as "threatened" in the Methow basin and other Columbia River tributaries.

August, 1998:

Under threats from DOE of a potential water permit moratorium in the Methow Valley, and the specter of NMFS intervention regarding endangered fish, county commissioners sign a memorandum of agreement with DOE addressing water issues. The MOA calls for a new watershed planning unit, measures to create a "water bank" to deposit unused water rights and renewed water conservation programs

September, 1998:

Okanogan County hires Dennis Beich, a former DOE water manager, to head the county's new water resources department and guide watershed planning efforts.

December, 1998:

A Wenatchee engineering firm presents a draft sewer plan for the Mazama area that would establish some of the highest standards in the world for nitrate concentrations in groundwater. Estimated costs for installation of new septic systems to meet the standards range up to \$10,000.

January, 1999:

The "initiating government" members of the watershed planning unit agree to expand the unit to include representatives of various Methow River sub-basins. With special interest caucuses, the unit will have more than 25 members.

January, 1999:

The state Supreme Court generally favors developers of Wilson Ranch in a ruling on earlier water decisions by the state Department of Ecology. The DOE decisions had been challenged by the Okanogan Wilderness League and the late rancher Aaron Burkhart.

March, 1999:

About 200 people attend the organizing session for the new watershed planning unit. NMFS water analyst Mike Grady warns that federal agencies could intervene if local efforts to protect and conserve ESA listed fish are believed to be inadequate.

March, 1999:

NMFS lists the spring run Chinook salmon as endangered in the Upper Columbia Basin, along with adding eight other salmon species in the Northwest to the ESA roster, spurring salmon recovery debates and legislative proposals, and creation of a gubernatorial task force.

Spring, 1999:

The county watershed planning unit expands to more than two dozen members and begins drafting rules for a "water bank" aimed at conserving water for fish while making it available for agriculture and economic growth.

May, 1999:

NMFS informs the Forest Service that many irrigation ditches and stream diversions on Forest Service land need improvements. Some are shut down and then allowed to re-open after "7d determinations," a federal agency consultation process required under the ESA. Others face more severe problems, including the Wolf Creek Reclamation District which

feeds Patterson Lake and is the source of water for the area's largest employer, Sun Mountain Lodge.

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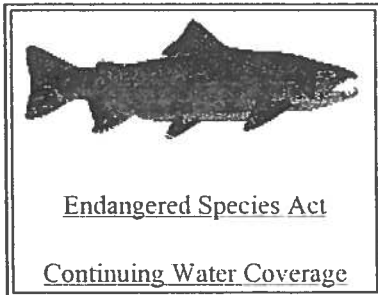
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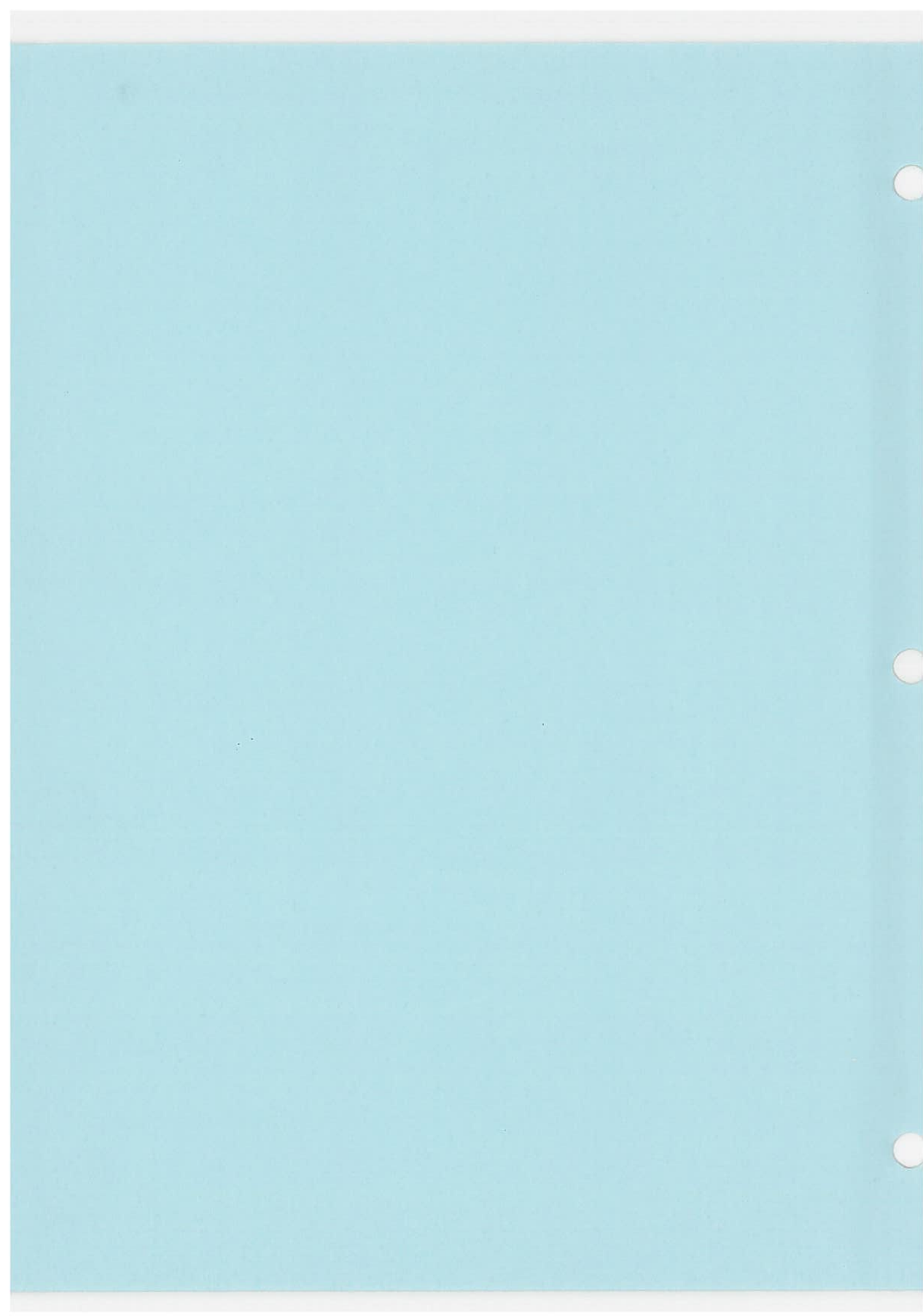
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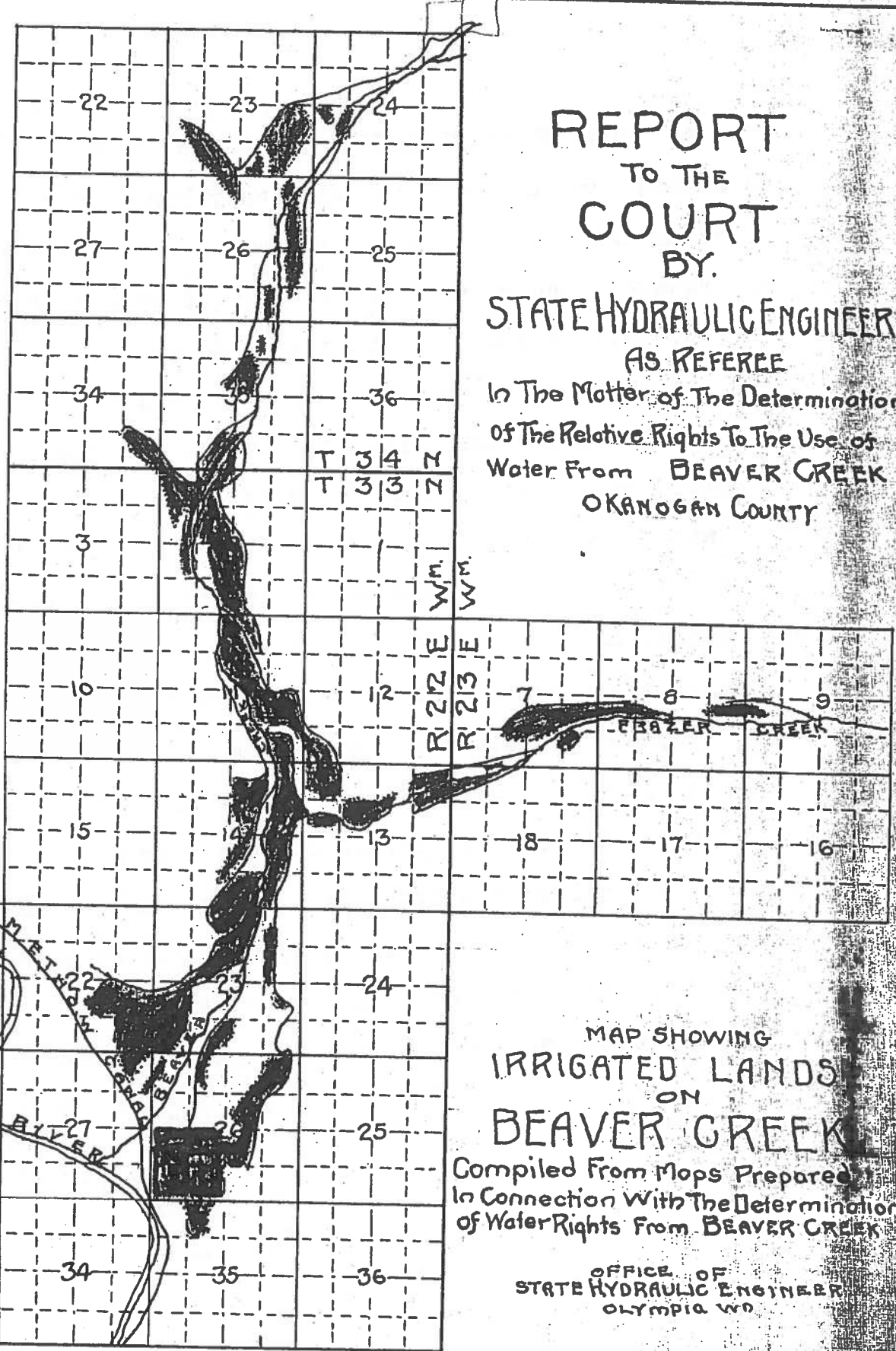
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REPORT TO THE COURT BY.

STATE HYDRAULIC ENGINEER
AS REFEREE
In The Matter of The Determination
of The Relative Rights To The Use of
Water From BEAVER CREEK
OKANOGAN COUNTY

MAP SHOWING IRRIGATED LANDS ON BEAVER CREEK

Compiled From Maps Prepared
In Connection With The Determination
of Water Rights From BEAVER CREEK

OFFICE OF
STATE HYDRAULIC ENGINEER
OLYMPIA, W.D.

4. CONDITIONS AFFECTING THE WATER SUPPLY.

As stated the watershed is relatively high, being the cause of a substantial flow of the stream during the entire irrigation period. However, the stream reaches a flood peak during the month of June, usually, caused by warm rains and melting snow in the mountains. Aside from the spring floods the stream often reaches a flood peak during the winter months caused by snow falling on a frozen watershed in the mountains, followed by heavy rains and a Chinook wind, causing the snow to melt in a short period. Floods of this nature are of little value for irrigation purposes, but the same waters may be used for irrigation if reservoirs were provided to hold the water until required during the summer.

Topography and geology of the valley are such that the early irrigation of lands cause water to seep through the soil and return to the stream in form of springs at such time when the water in the stream is naturally at a low stage, adding greatly to the stream's water supply for irrigation. An investigation made under the direction of the State Hydraulic Engineer showed that above all the diversions the discharge of Beaver Creek was seven second

I, Jackie Bradley, County Clerk, and ex-officio Clerk of the Superior Court for the State of Washington, for Okanogan County, do hereby certify that this instrument is a true and correct copy of the original as the same now appears on file and of record in my office. IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of said Court this

August / / 6th day of

2002.

Jackie Bradley, Clerk

By Jackie Bradley
Deputy Clerk

Testimony in these proceedings show that the duty of water for irrigation in Beaver Creek valley can be greatly increased if a greater use is made of the water during the early part of the irrigation period when the stream is at its maximum flow. By irrigating heavily at this period the water is held in storage in the soil, thereby reducing the amount of water to be applied during the latter part of the growing season when the stream is at its minimum flow. That part of the water which is not held in ground storage returns to the stream during the low water stage at a time when the crop demand is the greatest. It was also shown that the duty can be greatly increased if a system of rotation of the water were practiced among the diverters.

The following table shows the net duty of water in





METHOW BASIN PLANNING UNIT WATERSHED WORKPLAN

22 June 01 FINAL DRAFT

INTRODUCTION

BACKGROUND:

The purpose of this document is to set forth a plan that enables the citizens in WRIA 48 and Okanogan County to gain control and have input over resource management in the Methow Watershed. The conflict between local versus federal control and state control has arisen due to the enforcement of the Endangered Species Act with respect to spring Chinook Salmon, listed as endangered on 2/26/98, Steelhead, listed as endangered on 8/11/97 and Bull Trout listed as threatened on 6/12/98. The fact that 85% of the Watershed is managed by the Federal Government or the State of Washington makes the issue of self determination on privately owned land more difficult. If Okanogan County and local citizens are to obtain a measure of control, they have an acute responsibility to participate in the recovery of listed species.

In response to the listing Okanogan County and three other governments, the Colville Tribes, the City of Twisp and Methow Valley Irrigation District initiated the 2514 Watershed Planning Process. They selected a committee of twenty-seven (27) interests groups and entities to address this task.

MISSION:

The mission of the Methow Basin Watershed Planning Unit (MBPU) is to develop a watershed plan that:

- Is developed by Methow residents who have the greatest knowledge of both the resources and the aspirations of those who live and work in the watershed, and who have the greatest stake in the proper, long-term management of the resources;
- Provides an agreed upon, long-term solution, based upon adaptive management principles, to the key water resources issues in the watershed;
- By adopting a multispecies approach that ensures water resources are used wisely by protecting existing water rights, by ensuring sustainable habitat for all native fish and wildlife species, and by providing for the well-being of our citizens and communities;
- Is supported by the best available scientific evidence;
- Can be sustained over time and can respond to changing conditions, new information and evolving public priorities by providing a framework for long-term adaptive management of water resources;
- Maximizes, to the extent possible, local control of water resources;
- Is supported by commitments to implement the plan from appropriate county, state and federal agencies; and

- Fulfills the requirements of the Washington State Watershed Management Act (RCW 90.82), including all four components: water quantity, instream flows, water quality and habitat.

SCOPE OF THE PLAN:

The scope of the MBPU plan is broadly defined by RCW 90.82. The MBPU has chosen to address all four elements:

- Water Quantity
- Water Quality
- Instream flows
- Habitat

The MBPU has also identified issues related to the presence of salmonids listed under the ESA that make water planning more complex. These issues include providing minimum instream flows consistent with recovery of these species and defining the relationship of human development such as earthen canal systems and riparian habitat modifications to listed salmonids. In addition, the MBPU feels the RCW 90.82 elements are best addressed with a the ridgetop to ridgetop approach to water planning that includes recommendation of upland forest management practices.

HISTORY OF PLANNING IN THE METHOW BASIN:

1972 marks the beginning of the planning efforts and the identification of issues in the Methow Basin. The issues of water quantity and quality, population densities, fish habitat, zoning, lowland and upland habitat have been a concern. Key studies as they affect the present watershed planning process under RCW 90.82 include:

- ◆ The 1976 Basin Plan which sets water use priorities and base flows for fish now reflected in current WACs for WRIA 48 and summarizes the rural and agricultural vision for the Valley;
- ◆ The Ground Water Advisory Committee report which evaluated water quality;
- ◆ The Pilot Project proposal which developed a water management scheme that offered a solution for fish and development; and
- ◆ The USFW study on Mid Columbia River Tributary Systems by James Mullen, *et.al.*
- ◆ The Methow Limiting Factors Analysis completed by the Washington Conservation Commission. The MBPU contracted Ken Williams to review the LFA.

The MBPU must evaluate these plans or projects along with their supporting background information and studies to identify problems, identify where more information is needed and develop a plan. To date no new water use policy has been enacted since the 1976 Basin Plan.

METHOW BASIN CHARACTERISTICS

(The information for this section was derived from the Methow Valley Water Planning Project, DRAFT 09/27/93 and 01/27/94)

Planning Area

The Methow Basin is the area that drains into the Methow River and its tributaries.

Topography

The Methow River Basin encompasses the entire Methow River drainage, which extends approximately eighty (80) miles from the headwaters near the crest of the Cascade Range to the confluence of the river with Columbia River at Pateros, Washington. The river drains a 1,792 square mile catchment. Topography within the Basin is varied, and ranges from mountainous sub-alpine and alpine terrain along the Cascade Crest to the gently sloping wide valley found along the middle reaches of the Methow River. Elevation mean sea level changes from 9,000 feet in the headwaters of the Basin to 775 at the confluence of the Methow and Columbia Rivers at Pateros.

Most of the land within the Basin is forested, with Douglas fir, spruce and lodgepole pine, at moderate altitude. Smaller trees, shrubs, and grasses are found in the higher altitudes and reflect the alpine conditions encountered at these altitudes. Vegetation in the lower altitudes of the Basin is somewhat sparse in response to semi-arid conditions that prevail. Sagebrush and grasslands are common in the lower elevations of the valley between Winthrop and Pateros, although narrow belts of deciduous trees and shrubs are common along the Methow River and its tributaries.

The upper Methow River Valley is u-shaped, glaciated intermountain valley within the Cascade Mountain range. The valley floor elevation within the upper valley varies from 1,765 feet mean sea level at Winthrop to approximately 2,600 feet about Lost River, a distance of approximately twenty-one (21) miles. The valley floor from Winthrop to Lost River is generally 0.5 mile to 1.5 miles wide and is formed of numerous irregular terraces, alluvial fans, and floodplain meadows. The valley margins are bounded by bedrock uplands which rise steeply, and at some locations near vertically, from the valley floor to elevations over 5,000 feet. Valley sediments are comprised primarily of glacio-fluvial outwash sands and gravels, with common cobbles and boulders. These upper sediments have been significantly reworked since deposition during the Pleistocene.

The Methow River is the principal hydraulic feature in the upper valley, generally bisecting the Valley, displaying the characteristics of a braided stream, with interlaced and divergent channels and the development of gravel and boulder bars. Downstream from Winthrop to below Twisp, near Calton, the river channel is better confined within the fluvial valley fill sediments. From Carlton to its confluence with the Columbia River, the lower Methow River is confined primarily to a channel eroded in bedrock, with discontinuous depositional terraces immediately adjacent to river.

CLIMATE AND WEATHER

The climate of the Methow Basin is influenced by topography, elevation, and its location on the leeward side of the Cascade Mountain Range. The Basin lies within the "East Slope-Cascades" climatologic region, a zone that extends from the crest of the Cascade Range to 25 to 75 miles east of the Cascades summit, throughout Washington.

Precipitation within this region decreases significantly with lower elevation and increased distances from the Cascade Crest.

Annual precipitation within the Basin is spatially highly variable, and ranges from over 80 inches in the higher altitudes of the Basin along the Cascade Crest, to 60 inches in the adjacent uplands area and the upper reaches of the Methow River, Chewuch River, Twisp River, and Early Winters Creek. Mazama averages 22 inches a year, Winthrop 15 inches a year and Pateros, 10 inches a year.

Summers are hot and dry, with much of the summer precipitation coming as thunderstorms. Monthly mean temperature at Mazama for the period 1970 to 1990 averaged 71°F. in July and August. High temperatures of 90oF to 105oF occur in the summertime.

Precipitation increases in the fall and generally peaks in the winter, with roughly two-thirds of the annual precipitation occurring between October and March, most of it falling as snow. Monthly mean temperature at Mazama for the period of 1970 to 1990 was 8.6°F in January. Normal wintertime lows ranged down to -35 °F with the lowest recorded temperature in the Basin -48 °F.

The only significant source of water entering the basin is from the precipitation, which falls as rain and snow. Average precipitation is estimated at 30 inches annually.

POPULATION AND ECONOMY

The Town of Winthrop, approximate population of 400 people, is located at the confluence of the Methow and the Chewuch rivers. It has a small business area, which has shops, restaurants, offices and motels, a small industrial area presently, the location of a lumberyards and a concrete plants and gravel pit locations one-half mile or more from the Methow River.

The Town of Twisp, approximate population 1,000 people, located at the confluence of the Methow and Twisp rivers. Its activities are similar to Winthrop. It has a small light industrial area located approximately one-quarter mile from the Methow River.

The Town of Pateros, approximate population 1,000 people, is at the extreme edge of the Basin, being location at the confluence of the Methow River with the Columbia River.

The private land in the upper part of the basin, is used for homesites, small farms, irrigated hay ranches, irrigated grazing land, and wildlife habitat. This is also descriptive of the Twisp River and the Chewuch River valleys. The southern part of the valley is sued for homes, irrigated hay land, irrigated orchard, grassland and wildlife habitat. Second homes and vacation homes are located throughout the private lands.

The area is well-known as a recreational area with heavy summertime use and increasing wintertime use.

The Methow Valley highway (State Route 20) connects the area to the I-5 corridor. The volume of recreational use is directly attributable to the availability of access on the highway which is open approximately April 15 to December 01 of each year and closed the remainder of the year because of heavy snow.

WATERSHED PLANNING AND MANAGEMENT

DEFINITION OF PROBLEM:

The issues the MBPU has identified are summarized as follows:

The 2 Cubic Feet per Second (cfs) limitation reserved for additional or new domestic wells and stockwatering: The 1976 Basin Plan set a 2 cfs limitation per reach for the Basin for additional or new domestic and stockwater uses. The MBPU will examine the 2 cfs reservation. As of 1990 the DOE has estimated that water use in some river reaches has exceeded this 2 cfs limitation. This is based upon the demand use of 5,000 gallons per day. However, there is not a definitive answer on whether or not the human consumption is affecting water available to stream flows by the 2 cfs. The MBPU may want to consider removing the limitation or readjusting the limitation based upon actual known characteristics of each reach.

Assessment of actual water use: The DOE claims register notes that water use in the basin is 402,177 acre feet per year on 30,000 acres. The 1976 Basin Plan and a recent study for the Pilot Project by Golder Associates notes only 40,800 acre feet on 17,500 acres. The MBPU must assess actual water use and determine how to plan for future use.

Science to support baseflows: Base flows were set by the 1976 Basin Plan for the Basin. Hydrologic studies must be conducted to support or amend these baseflows. The science must address the effects on fish, agriculture, and multiple uses.

Review of Basin closures: The 1976 Basin Plan closed several sub basins to further surface appropriation. In about 1992 these basins were also closed to further ground water appropriation based upon their hydrologic continuity with surface water. Wells may be drilled if the ground water well is drilled through bedrock and the water source is not in continuity with existing surface water). The MBPU must evaluate these closures to see if water is available for further appropriation or if the rule should stand as it is currently stated.

Examine water banking concepts: Water banking needs to be reviewed for practical application to the Valley and water management.)

Examine Changing group domestic wells to same priority status as single domestic exempt wells: The current 1976 Basin Plan restricts new group domestic and public water wells. This is a WAC unique to the Methow Basin. The MBPU needs to examine this type of water use and determine if this type of restriction is appropriate.

Assessment of future population needs and providing water to meet those needs: Some predictive estimates of population growth will need to be made and provision of water for this growth provided. This will have to include what water is available under present consumptive patterns and how water availability can be enhanced to meet any shortfall.

Water Storage: The MBPU will examine methods of storage for meeting future needs of people and fish including surface water storage sites and possible ground water recharge from the earthen canal system. These assessments will investigate the viability of all options and provide a mechanism to initiate development of these.

Improve Forest Management Practices in the watershed: According to the 1992 Golder Associates study, 58% of the available water budget leaves the watershed in evapotranspiration off USFS lands. Forest management practices could have a significant impact on stream flows. The MBPU will examine forest practices and make recommendations that enhance stream flows.

Water for towns: The Okanogan County Zoning Ordinance encourages that the greater development densities occur within existing towns. The MBPU will examine water needs to be set aside for the existing towns to plan for development in these incorporated areas and a mechanism to do this provided.

Habitat preservation and enhancement: Preservation and enhancement of existing habitat is essential. The MBPU will examine ways to accomplish this.

Agricultural water rights and uses: The MBPU will examine existing agricultural practices for distribution and application of agricultural water.

Develop water use alternatives for drought periods: The Methow Basin streams are subject to extreme swings from abundant periods to drought conditions. The last two drought periods have resulted in stream flows that have not met current base flows set by the 1976 Basin Plan. The MBPU will examine and recommend approaches to meeting human and fish needs during these difficult cycles.

ASSESSMENTS AND STUDIES:

The MBPU has identified a series of studies and assessments that should be completed in order to provide answers to problems that have been identified. These are briefly summarized below:

- Work with agencies to locate passage barriers and implement corrections.

- Work with agencies to install new screens where needed.
- Develop a funding program to fund studies and implement projects.
- Complete a Literature Search of all materials that pertain to the study program that will assist in developing studies, planning efforts and avoiding duplication of work.
- Assessment of Actual Water Use: This will be an effort to determine actual water use compared to the water registry.
- Assessment of Future Water Needs.
- Economic, custom and cultural impacts of various water use scenarios.
- Instream Flows: Understand impacts of various factors on instream flows.
- Identify and Prioritize Low Water Areas: Determine effects of low water on fish.
- Hydrology Studies: Assess surface and groundwater relationships, relationship between well levels and irrigation transportation loss and whether or not ditch transportation loss mitigates surface water diversions, by providing other biological factors needed by fish, for water diverted.
- Conduct water quality assessment
- Install Stream Gauge Network
- Develop a Diversion measurement program
- Develop a Methow Basin Water Budget that includes modeling of the surface and ground water relationships
- Examine Storage Opportunities: This may include the ground water recharge from earthen canal systems as a storage site and surface water sites that could provide water in low flow periods.
- Habitat Assessment
- Assessment of Forest Management Practices
- Habitat Acquisitions/Easements
- Develop Long Term Monitoring Program
- Identify interim actions

In addition to these studies and resulting projects, the Watershed Planning process requires that the Planning Unit review historical data such as fish runs, weather patterns, land use patterns, seasonal flows and geomorphic characteristics of the management area, and also review the planning, projects and activities that have already been completed regarding natural resource management or enhancement in the management area and products or status of those that have been initiated, but not completed for such management in the management area, and incorporate their products as appropriate so as not to duplicate the work already performed or underway. (RCW 90.82.110)

The above studies are in addition to the scope of work requirements under each of the categories noted in RCW 90.82.070:

Water quantity:

- 1) An estimate of the surface and ground water present in the management area.
- 2) An estimate of the surface and ground water available in the management area, taking into account seasonal and other variations.

- 3) An estimate of the water in the management area represented by claims in the water rights registry, water use permits, certificated rights, existing minimum instream flow rules, federally reserved rights and any other rights to water.
- 4) An estimate of the surface and ground water actually being used in the management area.
- 5) An estimate of the water needed in the future for use in the management area
- 6) An identification of the location of areas where aquifers are known to recharge surface bodies of water and areas known to provide for the recharge of aquifers from the surface.
- 7) An estimate of the surface and ground water available for further appropriation, taking into account the minimum instream flows adopted by rule or to be adopted by rule under this chapter for streams in the management area including the data necessary to evaluate necessary flows for fish.
- 8) Strategies for increasing water supplies in the management area. The MBPU has so far identified:
 - a. Storage.
 - b. Water conservation.
 - c. Water reuse/use of reclaimed water.
 - d. Aquifer recharge.
 - e. Forest Management practices.

Instream Flow Component:

The MBPU will according to law, review current instream flow requirements set by the 1976 Basin Plan and decide if these shall be amended.

Water Quality Component:

- 1) Evaluation based on existing studies conducted by state federal and local agencies as to the degree that legally established water quality standards are being met.
- 2) Examination of the causes for water quality violations which should identify the pollutants, point and non-point sources of pollution and the pollution carrying capacity of water bodies in the management area.
- 3) An examination of the uses of water in the area.
- 4) An examination of the total maximum daily load (TMDL) established for the management area.
- 5) A recommended approach for implementing a TMDL established for achieving compliance.
- 6) Recommend means of monitoring by appropriate agencies to assess the effectiveness of actions taken to bring about improvements in water quality.

Habitat Component:

Inter-relationships are to be made with other components in the scope of work to assure protection, restoration or enhancement of fish habitat occurs without altering existing water rights. Low instream flow issues and effects of surface and groundwater withdrawals and their inter relationships with habitat, will require that the MBPU justify any water use in relation to impacts on habitat.

The following four components will be considered:

1. The watershed plan shall be coordinated or developed to protect or enhance fish habitat in the management area.
2. The plan shall rely on existing laws, rules or ordinances created for the purpose of protecting, restoring or enhancing fish habitat.
3. The plan shall be integrated with other process to respond to listings under the Endangered Species Act.
4. The plan shall rely on habitat restoration activities developed under the Salmon Recovery Act (Chapter 77.85) as the primary fish habitat component under watershed planning.

STUDIES IN PROGRESS OR COMPLETED

Summary List (this includes but is not limited to):

1. Chewuch Studies and preparation for an Habitat Conservation Plan (HCP)
 - a. Snorkel Survey (Completed Fall 2000).
 - b. Habitat Survey (Completed Fall 2000)
 - c. Chewuch Water User group study program (In progress).
2. Twisp Studies.
 - a. USGS specific ground water site study (Started Spring 2001.
 - b. Pacific Watershed Institute habitat survey (In scoping stage but funded).
 - c. MVID diversion monitoring.
3. USGS Unconsolidated Aquifer study.
4. USGS surface water model in cooperation with Golder and Associates.
5. Stream gauge monitoring program (Installed in Summer of 2000).
6. Summary report of hydrology assessment (Golder to complete).
7. Wolf Creek Reclamation studies and preparation for HCP (In progress).
8. Early Winters studies (Progress terminated Fall of 2000).
9. Tribal Redd survey (Done yearly by Yakama Tribes).
10. Ken Williams evaluated the 1992 IFIM Study by DOE and proposed a scope of work for a new IFIM study.
11. Historical Redd Survey (In process by Ken Williams).
12. Limiting Factors analysis published by the Washington State Conservation Commission but has not been peer reviewed.
13. Ken Williams review of the Limiting Factors Analysis (Fall of 2000).
14. Water Budget Committee Report: A General Assessment of current literature on water use and water use issues.
15. County wide passage barrier assessment by the Okanogan Conservation District and Okanogan County funded by the Salmon Recovery Funding Board.

WORK PLAN ELEMENTS:

COMPLETE A LITERATURE SEARCH-- REVIEW AND COMPILE EXISTING DATA

Review of all historical data:

1. Fish runs/redd survey, Status of threatened and endangered species including federal and State regulatory and funding decisions.
2. Any federal, state or local plan proposed or adopted for recovery of threatened or endangered species.
3. General Basin, Sub-basin studies.
4. Weather patterns.
5. Land use patterns.
6. Seasonal stream flows.
7. Geological Characteristics of watershed.
8. Planning, projects and activities, zoning and enhancement projects regarding natural resource management in the watershed.
9. Tribal priority areas or studies.

Review all studies and available data regarding Water Quantity Component:

1. Previous technical assessments addressing water rights and uses, natural water occurrence.
2. Previous assessments of groundwater and physical interconnections with surface waters.
3. Critical Aquifer recharge area designations.
4. Studies that have discussed water budget, historical use and future use projections.
5. Studies which address strategies for increasing water supply for fish and future use which include but not limited to storage, aquifer recharge and forest management practices on federal lands.

Review all studies that have addressed water quality:

1. Past studies and assessments performed by DOE.
2. Water quality studies from previous water planning groups.

Review all studies that have addressed habitat:

1. Identify and review all projects and assessments done by the Conservation District or NRCS.
2. Identify restoration efforts completed and underway by various volunteer, non-profit or State and Federal agencies.
3. Review all habitat assessments done in watershed.
4. Identify available information that has identified critical habitat or limiting factors.
5. Studies that discuss habitat conditions in relation to the watershed habitat to successfully sustain populations of endangered or threatened species.
6. Review any Draft or Final Environmental Impact Statements or related documents that give information or affects on habitat.
7. Studies that scientifically identify human water use affects on habitat.

Review all information regarding the setting of instream flows:

1. Identify any literature that has related water quantity and human use to impacts on habitat.
2. Review studies that have resulted in setting base flows in the basin.

The key purpose of the literature search is to compose a complete summary of basin status. This summary should detail the areas where more information is needed and serve as a relationship for defining the Phase 2 MBPU assessment work plan.

ASSESSMENT OF ACTUAL WATER USE

Agricultural Use Assessment

1. Compile from the DOE's files a list of all water rights, claims and certificates.
2. Collect and analyze orthographs, aerial photographs and various records to determine an estimate of actual water use over time.

3. Determine the acreage of irrigated lands.

Municipal, Industrial & domestic water use needs to be assessed in this assessment:

1. Identify each type of water user in the Valley.
2. Obtain city records on the various uses.
3. Determine if domestic exempt wells impact instream flows and evaluate current Methow Rule for each river reach.
4. Determine how to quantify domestic exempt well water use.
5. Evaluate this information with past studies and propose how this information will be incorporated into the watershed plan and any proposed actions.

ASSESS FUTURE WATER USE NEEDS

- ◆ Agricultural
- ◆ Municipalities
- ◆ Recreation
- ◆ Habitat
- ◆ Domestic
- ◆ Commercial

ASSESS THE RELATIONSHIP BETWEEN SURFACE WATER GROUNDWATER, AND SURFACE WATER DIVERSIONS AND TRANSPORTATION LOSS ON INSTREAM FLOWS AND DOMESTIC WELLS.

ASSESS IMPACTS ON MODIFICATIONS TO THE CURRENT SURFACE WATER DIVERSIONS ON WATER QUALITY, HABITAT, AND ECONOMIC IMPACTS.

TRANSPORTATION LOSS

The purpose of this study is to assess the actual affect ditch use has on stream flows. The questions that need to be answered are: 1) What positive or negative affects

on ground water return to associated streams are associated with the use of surface diversions in an earthen canal system, 2) How does the amount of water diverted impact fish survival and productivity on the affected reach, 3) What is the actual impact on stream flow at any river stage?

1. Develop a monitoring system to accurately gauge stream flows in areas where water is diverted. This would have to include gauging above and below diversions with a methodology that would determine the actual measurable impact on stream flows.
2. Gauge all diversions so that quantity removed by the diversion is accurately recorded.
3. Identify ground water returns with each diversion and map the associated groundwater influences from each ditch.
4. Do ditch transportation loss studies to determine actual ditch contribution to the ground water.
5. Determine rate at which ground water returns to associated stream.
6. Correlate returns with domestic well use or other ground water wells to see if this use is off set by the ditch contribution and its potential impact on stream flows.

IDENTIFY AND PRIORITIZE LOW WATER AREAS

The basin naturally has a flow cycle that is high at spring run off and low in the fall and winter when very little water is available to contribute to stream flow. The geology of the basin that is glacial alluvium often results in some stream reaches being falling reaches, i.e. the rate of flow decreases towards a stream's confluence because it is going under ground to meet the main river channel. There are also areas that naturally go dry in late summer and remain dry through the winter until spring run off.

1. Catalogue the low water areas.
2. Determine which low water areas are associated with diversions and which low water areas are associated with ground water wells for domestic or commercial use.
3. Perform a habitat survey in low water areas to identify habitat characteristics.
4. Correlate fish movements and presence by fish life cycle, time of year with identified habitat characteristics in low water areas.
5. Use modeling to determine how human water use effects low water areas.

HYDROLOGY STUDIES

The hydrology studies are one of the key components in the Watershed Plan that the MBPU has determined will be the most helpful in resolving water use issues in the basin and their impacts on fish habitat and productivity. The scope of work must address the following areas:

1. Establish a basin wide water budget through reviewing past studies and data.

2. Review all studies and hydrology data and integrate the findings into a hydrology summary for the basin and identify potential methods for addressing impacts of human use on water quantity available in surface streams.
3. Collect study review into an annotated bibliography.
4. Develop a water model for the basin that is able to model human water use impacts on surface and ground water both in general terms and specifically in each stream reach at any time of the year, predict stream hydrographs for each year based upon precipitation and snow-pack and weather influences, model surface and ground water relationships, model the contribution to ground water and its characteristics from the earthen canal system and correlate influences on fish habitat with human water use and the earthen canal system. This model should be able to interact with other information data bases: 1) The ArchView overlay from DOE that documents locations of private property and water rights associated with the properties, 2) County maps which document property boundaries. The model should be able to provide a predictive tool to model various development and water use scenarios that may occur or be proposed for the Methow basin. This should be reach specific so that affects can be localized to the area that the development will occur. The years 1936-1976 has technical validity as a normal climatic baseline and should be used for comparative purposes in the model. Until there is an adequate tool such as this model to simulate normal baseline condition for a given time period, flow exceedance probabilities should be used with caution and if possible only as qualitative guides on the frequency of flow occurrences, and not as targets for demonstrating watershed functionality.
5. Develop a surface water data collection system.
6. Develop a groundwater study program that identifies areas of groundwater recharge and discharge.
7. Develop a study program that documents the relationship between ground water recharge, surface water and surface water diversions and associated streams flows and habitat.
8. Investigate issues of continuity and consumptive use.
9. Develop a study that evaluates the contribution to ground water recharge from irrigation canals and their use as a source of water storage.
10. Develop a formal database structure operating on a single application platform for all current and future data.

CONDUCT WATER QUALITY ASSESSMENT

The following components are required by RCW 90.82:

1. Evaluation based on existing studies conducted by state federal and local agencies as to the degree that legally established water quality standards are being met.
2. Examination of the causes for water quality violations, which should identify the pollutants, point and non-point sources of pollution and the pollution carrying capacity of water bodies in the management area.
3. An examination of the uses of water in the area.

4. An examination of the total maximum daily load (TMDL) established for the management area.
5. A recommended approach for implementing a TMDL established for achieving compliance.
6. Recommend means of monitoring by appropriate agencies to assess the effectiveness of actions taken to bring about improvements in water quality.
7. Develop a study program to determine the effects of groundwater recharge and human use development on water quality.

INSTALL STREAM GAUGE NETWORK

This portion of the work plan is to support the hydrology study, to provide a means of monitoring change in the basin from human use and current improvements, to provide data for developing a predictive model for future planning, water use scenarios and water available in any given year for agricultural and development use.

1. Identify gauging sites in the basin that will provide a complete picture to account for all water entering and leaving the basin.
2. The gauging should be detailed enough to document impacts of each diversion on surface water flows.
3. Establish a data collection and compilation method to maintain data collected from the monitoring program and see that it is entered into the prospective model.
4. Establish long term funding to maintain the monitoring program for at least 10 years in order to establish a contemporary baseline.
5. Hire the personnel necessary to complete the monitoring objectives.

DEVELOP A DIVERSION MEASUREMENT PROGRAM

The intent of this program is to complement/complete the data necessary for the hydrology study to determine impacts from surface diversion water use on stream flows.

1. Determine the number of ditches that will be gauged.
2. Identify who will do this work.
3. Develop a method of collecting this data and integrating it into our hydrology model and database.
4. Implement long term ditch use monitoring.

DEVELOP A METHOW BASIN WATER BUDGET

The intent of this process is to identify from historical and present data the total amount of water that comes into the basin, the seasonable variability of water available, the variation from year to year, present human use and the types of use, what is available for future use and what must be maintained for fish. This should also include addressing extremes such as drought and how water in these extremes will be used to address various uses and fish needs. This analysis of extremes should be done by sub-basin and a monthly time-step intervals and integrated into the hydrologic model. Ground water characterization should be emphasized in the Twisp sub-basin, especially

because it seems unique, as well as other sub-basins. This ground water component should be explored further as a source of supply for water uses and streamflow augmentation and become a part of the water budget. In addition forested lands should be evaluated in the watershed model to examine tree species sensitivity and their extent as hydrologic indicators and different climate conditions. To facilitate a context for the Methow water balance further definition of the importance of mean annual and mean monthly flow from the Methow sub-basin, relative to other sub-basins in the Columbia River, should be developed.

EXAMINE STORAGE OPPORTUNITIES

The purpose of this study should focus on reviewing existing studies that have identified storage opportunities in the Valley, to maintain needed water for fish and human use. The potential benefits of each site should be evaluated with reference to: 1) augmenting instream flows in late summer, fall or winter or during drought, 2) for human uses so streams are not impacted, or 3) recharge to groundwater.

1. Review existing studies related to storage.
2. Select prospective sites.
3. Prepare an engineering evaluation of what needs to be done to make the site a water storage site.
4. Establish cost and time frames.
5. Develop a plan and start the process for building or establishing the selected sites.

HABITAT ASSESSMENT

The following issues will be investigated for habitat assessment:

1. Consult with the Tribes and other vested agencies to select representative sites above and below diversions on key tributaries.
2. Catalogue habitat characteristics for each selected site.
3. Assess of how and when fish are using these select representative reaches: passage, rearing and spawning.
4. Correlate actual fish abundance with habitat characteristics of each site. This should include but not be limited to: Wetable Usable Area, water temperature, stream shading, food supply, groundwater infiltration, stream structure, siltation, cover, surface water runoff, etc.
5. Prioritize site selection.
6. Evaluate potential measures to protect and enhance habitat.

ASSESSMENT OF FOREST MANAGEMENT PRACTICES

An assessment needs to occur to determine the effects of forest management practices on stream flows and water quality within the Basin.

HABITAT ACQUISITIONS AND EASEMENTS

1. Identify properties with key habitat components that should be preserved or restored.
2. Make recommendations to local preservation groups.

DEVELOP A MONITORING PROGRAM

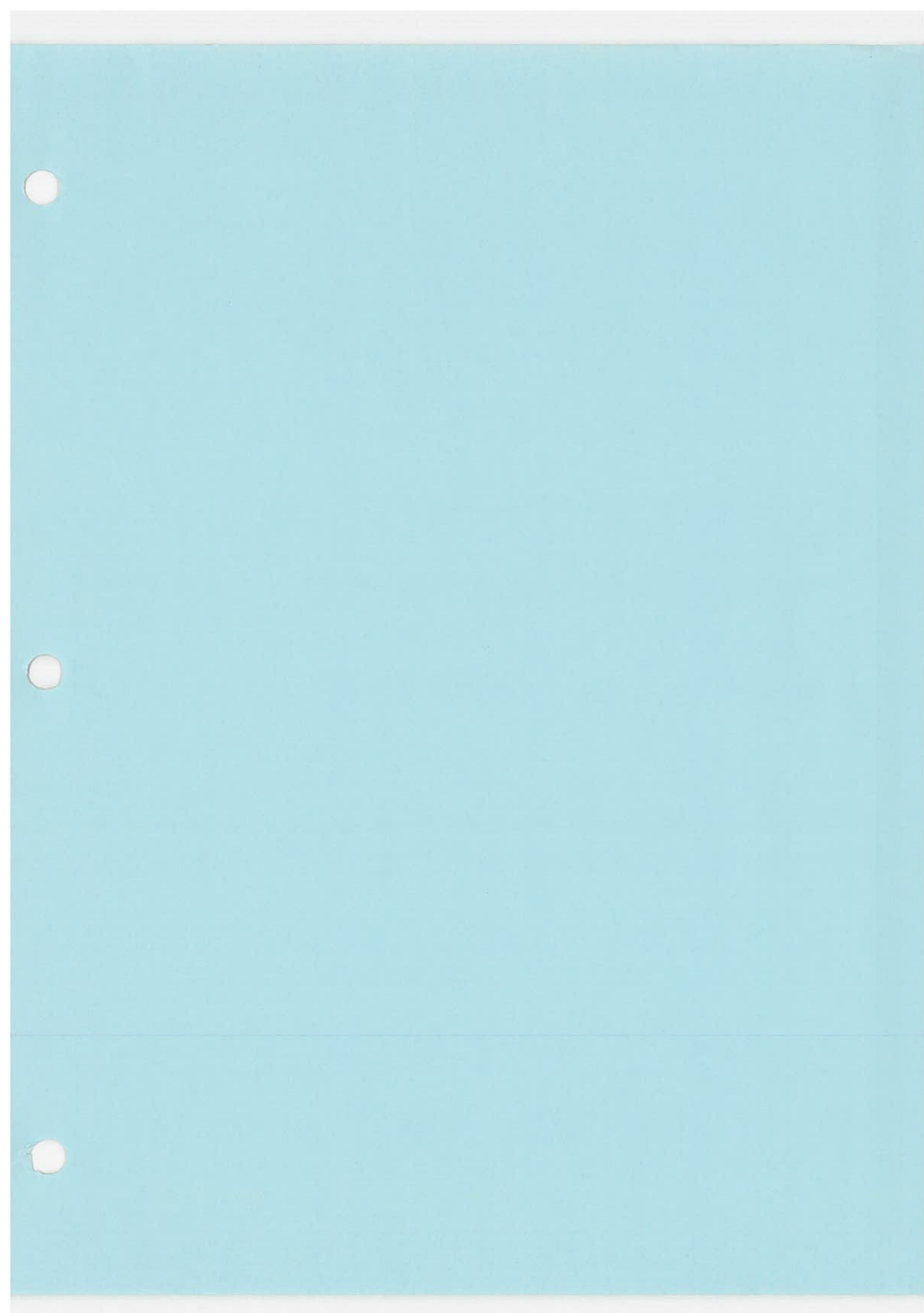
Develop an adaptive monitoring program that collects watershed characteristics and assess the implementation of the watershed plan and recommendations therein.

DEVELOP INTERIM MEASURES

Develop interim measures that address watershed planning and concerns.

Instream Flow

1. Review the 1976 Basin Plan base flows and the method for setting these base flows.
2. The MBPU, with its TAG and Consultants, will review relevant data from its water use projections, hydrology, habitat and water quality studies to develop criteria for evaluating the base flows and the methodology used in the 1976 Basin Plan.
3. From this criteria the MBPU will either recommend retaining or amending the present base flows.





State of
Washington
Department
of Ecology

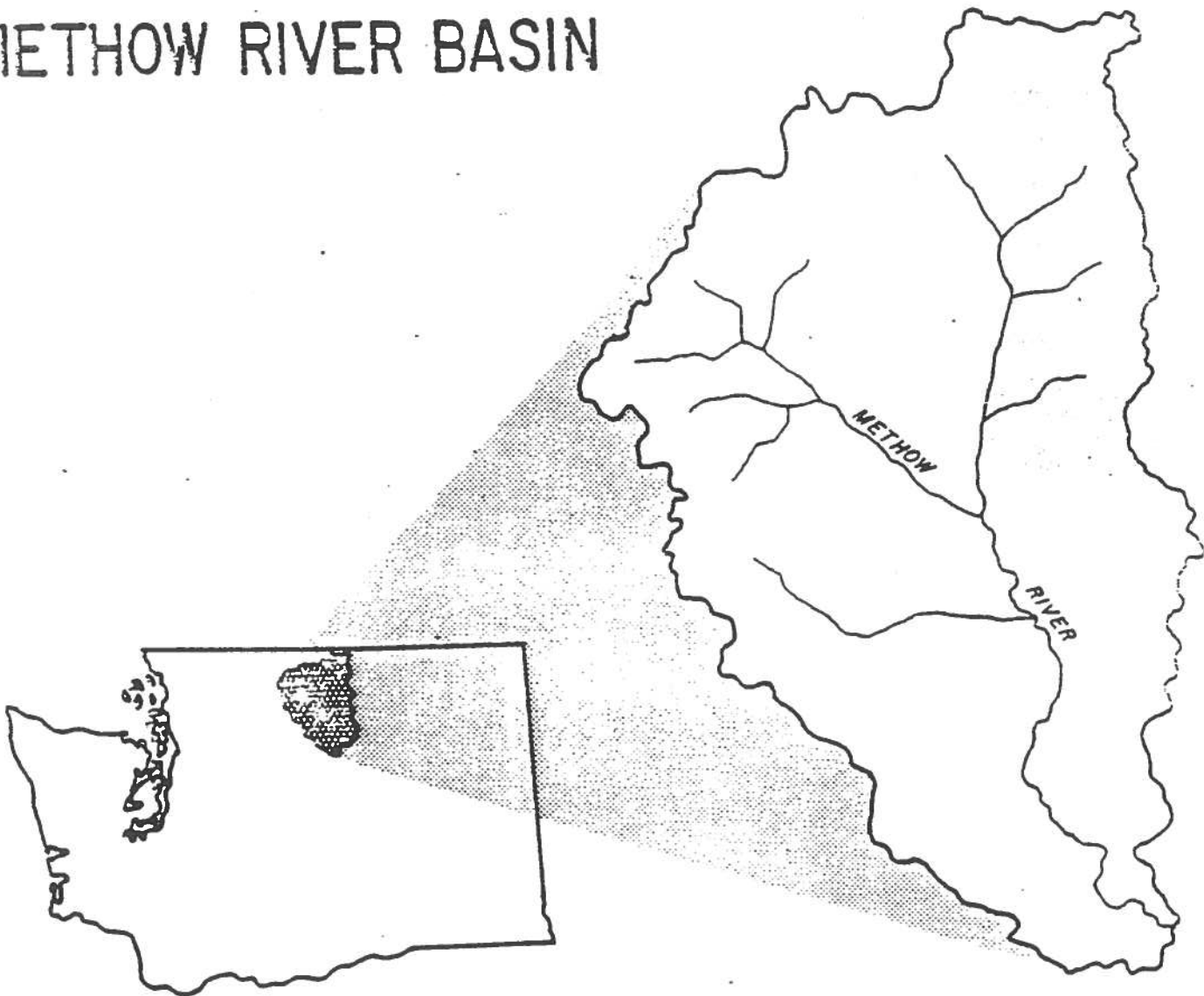


WATER RESOURCES MANAGEMENT PROGRAM



BASIN PROGRAM SERIES 4

METHOW RIVER BASIN



DECEMBER, 1976
OLYMPIA, WASHINGTON

DIXY LEE RAY
GOVERNOR

WILBUR G. HALLAU
DIRECTOR



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18
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State of
Washington
Department
of Ecology



WATER RESOURCES MANAGEMENT PROGRAM



METHOW RIVER BASIN

WATER RESOURCES MANAGEMENT PROGRAM

A D D E N D A

July 1978

As a result of revisions to the control stations in the Methow Basin initiated by the United States Geological Survey in response to Department of Ecology's request, the following changes are necessitated in the Methow River Basin program document (including WAC 173-548):

Page 11, Paragraph 5 is amended as follows:

The ~~six~~ seven principal gaging stations (Nos. 12.4499.50, 12.4495.00, 12.4489.98, ~~12.4473.89~~ 12.4485.00, 12.4475.00, ~~and 12.4473.83~~ 12.4473.74, ~~and 12.4473.82~~) near Pateros, Twisp, Winthrop, Boulder Creek, ~~and Mazama, and Early Winters Creek~~ are the control points for the stream management reaches. These stations monitor the Lower Methow, the Middle Methow, the Twisp River, the Upper Methow, the Chewack River, and the Methow Headwaters, ~~respectively and Early Winters Creek, respectively.~~ Early Winters Creek has also been designated as a management reach although no gage exists at the present time. Snow survey data provided by the U.S. Soil Conservation Service will allow early prediction of problem years.

Page 14, Table 1:

<u>Upper Methow</u>	<u>Methow Headwaters</u>	<u>Early Winters Creek</u>
Methow River nr. Winthrop 12.4473.89 <u>12.4485.00</u> RM-50.2	Methow River nr. Mazama 12.4473.83 <u>12.4473.74</u> RM-65.3	<u>(12.4473.82)</u>

Page 17, Paragraph B:

Monitor Methow River system at control stations Nos. 12.4499.50, 12.4495.00, 12.4489.98, ~~12.4473.89~~ 12.4485.00, ~~12.4473.83~~ 12.4473.74, and 12.4475.00, ~~and 12.4473.82.~~

(Over)

ABSTRACT

This document sets forth certain State management policies on water resources in the Methow River Basin. It is intended to provide a basis for making decisions on future water resource allocation and use.

The program (a) protects existing rights, (b) sets forth "base flows" necessary for preserving instream values, (c) establishes beneficial use priorities, (d) "closes" certain streams and natural lakes in the basin to further consumptive appropriation with certain exceptions for single domestic and stock-watering uses, (e) establishes quantities of public water available for future appropriation by stream management unit, subject to the beneficial use priorities, and (f) sets forth water resources administrative procedures.

The Reference section lists sources of information on basin hydrologic conditions, stream flow characteristics, ground-water resources, recorded water rights and their actual uses, water quality information and related long-range, multi-objective water resource opportunities.

Key Words: Methow River Basin water resources management; base flow; appropriation; allocation; public waters; public interest; closure; reservation; water rights.

INTRODUCTION

The policies recommended here result from the direction of the Water Resources Act of 1971, Chapter 90.54 RCW, which directs the Department of Ecology to formulate a management and use program for the waters of the State of Washington. The policies recommended relate to the Methow Basin's hydrologic conditions with the current level of development and provide for future development with appropriate protection of instream needs.

Credit is due the Methow Basin Citizen's Advisory Committee, which has reviewed information and formulated basin goals which provided direction to this program, in addition to the Methow "Level B" Water Resource Plan and the Sewage Drainage Basin Plan for the Methow Basin. The Advisory Committee consisted of Edna Creveling, Douglas Zahn, Vernon LaMotte, William R. Hottell, Don Ziegler, Mary Gaylord, Lowell Dubbels, Dana Visalli, and Herb Rosenberg.

Particular appreciation goes to Jim Bucknell, Jim Thornton, and Dick Thayer who have worked in association with the Department of Ecology on this and other water resource planning activities.

Doug Clausing of the Department's Yakima office has provided valuable review comments and will be directly involved with the implementation of the Methow River Basin Water Resources Management Program.

SUMMARY

During the past three years a group of Methow Valley residents has been periodically meeting to discuss the basin's water resources. In these meetings, the residents expressed their problems and concerns about water and related resources and how water should be utilized in the future.

In an effort to expand the base of opinion, a questionnaire concerning water allocation and future planning was mailed to all mailing addresses in the basin.

Along with efforts to poll the general public, regular contact was maintained with local government and State agencies. Technical assistance and guidance, when needed, was provided by the staff of the Department of Ecology and other agencies.

A group of Methow Valley citizens known as the Methow River Basin Steering Committee culminated their water resource use and planning effort by issuing a series of basin policy statements. These statements are reproduced in the Appendix.

The Department of Ecology, as directed by the Washington State Legislature, prepared the water resource management program for the Methow River Basin. The management program is intended to provide a basis for making decisions on future water resource allocation and use. The department utilized the citizen committee policy statements and the results of the basin-wide questionnaire in the formulation of the management program.

In an effort to develop a responsible yet flexible water program, the department has established the following priorities of beneficial use, has allocated waters to each use, and has implemented administrative procedures.

Priority I	Existing Rights
Priority II	Single Domestic and Stock Use
Priority III	Base Flows
Priority IV	Public Water Supply, Irrigation, and Other Uses

Quantities of water identified with Priorities II through IV relate specifically to remaining public waters available for future appropriation, both instream and out-of-stream.

In areas where there is clear hydraulic continuity between surface and ground water, the department intends to treat surface and ground water identically. However, when no such relationship exists, ground water development will not be subject to the same criteria as surface water development.

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I. PUBLIC CONCERNS AND FACTUAL FINDINGS

DOMESTIC AND MUNICIPAL USES

Public Concerns

A secure supply of high quality water for existing and future single domestic and stock water uses is the highest priority water use in the Methow Basin. There is concern that the increasing development that is occurring in the area will result in both water supply and water quality problems. 1/ In addition, the recreational use of the area has increased considerably since the opening of the North Cascades Highway.

The citizens are concerned that increasing development of the ground water will affect the availability of surface water in the basin.

The Okanogan County Planning Department is encouraging cluster development in the existing built-up areas in an attempt to preserve the agricultural land in the basin.

Factual Findings

All current municipal supplies are obtained from ground water in the Methow Basin. Some of the municipal wells are near streams and may draw part of their water indirectly from those streams. However, the municipal supplies of Winthrop and Twisp are very small compared to even the low flows of the streams. 2/ It is likely that future municipal supplies will continue to use ground water. There is evidence that there is an adequate supply of ground water for the anticipated level of development. A discussion of the relationship between surface and ground water is included on pages 5-7.

There are only three known significant industrial dischargers in the Methow Basin. In addition, the municipal treatment facilities of Twisp provides secondary treatment and discharges treated effluent into the Methow River system. 3/ A more detailed discussion of water quality is included on pages 7 and 8.

IRRIGATION

Public Concerns

The residents of the Methow Basin feel strongly that the rural and agricultural character of the area should be maintained. There is also strong local support for an expansion of irrigated acreage and additional associated agricultural uses.

Basin residents are concerned that the existing late summer low flows in some stream reaches may be insufficient to meet current needs and that future development might further endanger these existing uses.

The Methow Basin's economy is becoming increasingly recreation oriented and there is concern that recreational subdivisions and related activities will severely encroach upon the amount of land and water available for future irrigation/agriculture.

IRRIGATION - Public Concerns (Continued)

There is concern that irrigation water is not being used at maximum efficiency in the Methow Basin and that excessive leakage occurs in many of the distribution systems. While residents are generally agreed that such leakage should be reduced, there is fear that a complete elimination of leakage would result in an adverse effect on the recharge of the ground-water aquifer. This condition is more thoroughly discussed in the Methow River Basin Level B Study.

Factual Findings

The irrigation of 14,000 acres in the Methow Basin presently requires approximately 100,000 acre-feet of water per year. There are 20,000 acre-feet per year taken directly from sources at the farms while approximately 80,000 acre-feet are diverted and transported through a system of canals and ditches. Of this latter type of diversion, 36,000 acre-feet (45%) does not reach the crops because of leakage from the unlined earth canals and ditches. 4/ This leakage may have some effect on the ground water aquifers.

Approximately 1,000 acres of the 14,000 irrigated acres in the Methow River Basin are irrigated from ground water. This accounts for about 47 percent of the total ground water pumpage or approximately 4,000 acre-feet per year. Because of the unreliability of the surface water canals and ditches in some areas, it is occasionally more desirable to develop ground water sources.

There are currently four irrigation districts providing irrigation water in the Methow Basin. 5/ These districts serve approximately 3,500 acres (25%) of the 14,000 acres currently being irrigated.

The rapid pace of subdivision in the Methow Basin is threatening a decrease in the acreage of land being farmed. Of the 1,150,000 acres in the Methow Basin, approximately 200,000 are in private ownership. While 14,000 acres are currently irrigated, an additional 14,000 acres are considered to be irrigable although a significant increase in irrigated acres is not likely at the present time.

United States Forest Service lands account for approximately 75 percent of the area of the Methow River Basin. The quantity of waters reserved by the United States has not been established and the question of the jurisdiction of the State over waters on United States' lands has not been resolved. The United States' right to use the waters of the Methow River Basin under the Federal Reservation Doctrine may not be quantified with any degree of certainty at this time.

FISH AND WILDLIFE

Public Concerns

There is concern that existing low flows, and those that are likely to accompany increased development in the area, will be inadequate to protect the local salmon and sport fishery. Fish and wildlife have traditionally represented a major economic impact on the basin and

FISH AND WILDLIFE - Public Concerns (Continued)

residents generally regard this as one of the area's most important resources. Many of the citizens of the basin are dissatisfied with current fish and wildlife management practices. Most of the residents seem to have accepted the inevitability of increased recreational use of the area and are in favor of managing access as a means of preserving the resource. The preservation of fish and wildlife habitat is important but the residents do not seem to be in agreement as to how best to accomplish such a goal.

Factual Findings

The fishery resources of the Methow Basin have declined in the past due to the presence of unscreened irrigation diversions, downstream dams on the Columbia, and the diversion or damming of tributaries to the Methow. However, many of these problems have been alleviated and the Methow system has excellent potential for the development of a larger fishery resource. The fishery potential is only partially realized because of physical and management difficulties. An enhancement of the resource could contribute to the Columbia River fishery as well as to the recreational appeal of the Methow Basin.

According to the Washington Department of Fisheries, all spring-run chinook passing Wells Dam are destined for the Methow River, and annual counts of adult fish at Wells Dam from 1968 through 1974 averaged 2,940. An estimated 2,369 adult summer chinook passed Wells Dam annually that were destined for the Methow River. A small number of coho salmon also enter the Methow River yearly. The average Wells count was 211. The fisheries values within the Methow Basin are preserved under the base flows set forth in this document. However, existing water rights are not subject to the base flow. Base flows provide for retention of water to support stream bank vegetation and wildlife water needs. Shoreline habitat is protected only as much as base flow will contribute to the entire shoreline ecosystem. Chapter 90.54 RCW specifies that base flows shall be retained in perennial streams of the State of Washington.

RECREATION

Public Concerns

As previously discussed, the increasing subdivision of land in the Methow River Basin is generally the result of an increase in the demand for recreational property. As recreational use of the basin increases, greater demands will be placed on the resources of the area. The residents of the basin are concerned that the water use related to such land use might result in a decrease in the amount of water available for irrigation and other agricultural uses. The residents of the basin feel that any tract developments that occur in the basin should be strictly regulated to minimize the adverse effects and that the developers should be required to provide many of the related services.

RECREATION - Public Concerns (Continued)

The Early Winters Land and Cattle Company has proposed a major ski area and recreational complex at Sandy Butte. The residents of the basin are divided between those who are opposed to the development and those who favor the development if it is well planned and designed to minimize any adverse effects on the Methow Basin. There is concern that the increased use of the basin accompanying such a development would result in a severe degradation of the agricultural and rural qualities of the area.

As discussed previously, the fishery resource is currently below potential levels and Methow Basin residents are concerned that the management of fish and wildlife resources is not adequate.

The majority of the residents of the area feel that increased public access to the rivers should not be provided in an attempt to discourage recreational use of the basin.

A major contributor to the recreational use of the area has been the North Cascades Highway. The majority of the residents feel that the present policy of closing the road in the fall and opening it to travel in the spring is the best policy.

Factual Findings

As discussed previously, the subdivision of the private land in the Methow Basin is a major concern. This is largely due to the increased demand for recreational experiences in the area. Between 1909 and 1975, 54 plats in the Upper Methow Valley were filed with the County Auditor. The recorded subdivisions account for approximately 4,260 acres which have been divided into 1,700 lots. Eighty-six percent of these plats are North of Township 32. 6/ Total lot sales of 3,600 lots below about two acres in size have been projected by 1990. It has been further estimated that this may result in the construction of 905 second homes by 1990. 7/

The establishment of base flows as set forth in this document will serve to preserve the quality of the riparian ecosystem and, as such, will enhance the quality of the water-based recreation experience. It should be noted, however, that other water uses such as current and potential agricultural water demands were also considered in the determination of base flows for the Methow Basin.

INDUSTRIAL DEVELOPMENT

Public Concerns

The citizens of the basin are generally opposed to increased industrial activity in the area as it is felt that it would degrade the character of the valley. Those that favor industrialization generally favor the encouragement of small nonpolluting industries. The population increase that would accompany such development would lead to a decline in the amount of agricultural land and open space and to environmental degradation. There is concern that existing water rights not be affected regardless of the nature of future development.

INDUSTRIAL DEVELOPMENT (Continued)

Factual Findings

The potential development of an open pit copper mine and related facilities are dealt with below.

The potential for nonpolluting industrial activities exists in the area. Such light industries as forest-product processing, fruit and agricultural production and other nonindustrial activities such as outdoor recreation and tourism each have the potential to provide economic benefits to the area if properly managed to minimize adverse effects. If not properly managed, each of these activities could seriously affect the character and environment of the valley. 8/

MINING

Public Concerns

Public concern is split between those residents opposed to open pit copper mine development and those who would support such a proposal if the environment were adequately protected. The degradation of the quality of the water and the aesthetic impact that accompany such developments are major concerns. The accompanying population increase, while adding to the tax base, would result in a continuation of the existing trend away from the rural and agricultural character of the basin. Because of the relatively low grade ore found in the basin, underground mining is not considered to be economically feasible at the present time.

Factual Findings

Should a mining operation involving a production rate of 30,000 tons/day for a period of 30 years be developed, a maximum estimated work force of 650 would be required. 9/ The influx of such a population would have an impact on the local economy and would tend to support the allocation of water for domestic uses.

While such development might be undertaken in such a way as to minimize adverse environmental effects, "... The Mazama project would create significant environmental impacts." 10/ Based on a 30,000 ton/day operation, the water use is estimated to be approximately 28 cfs with 25 percent being freshwater input. The remaining 75 percent would consist of recycled water. 11/ The possibility of using storage to augment the mining operation's water supply is being considered.

GROUND WATER

Public Concerns

The principal concern of the residents of the Methow River Basin regarding ground water is the relationship between surface and ground water. The residents are seeking a clear indication of the effect of ground water development on surface water and anyone using surface water. A need for an indication of those areas where there is hydraulic continuity between surface and ground water has been expressed.

GROUND WATER - Public Concerns (Continued)

A related concern is the quantity of ground water available for appropriation. The citizens are eager to insure that the ground water source is not depleted.

The quality of ground water is also an important issue because of the shallow water table and the general unsuitability of many areas for septic tank disposal systems.

Factual Findings

Unconsolidated glacial and alluvial deposits are the principal water-bearing materials of the basin.

Although these water-bearing deposits underlie only about 4 percent of the total area of the Basin, they are of great economic importance because they occur beneath the populated parts of the basin where the ground water is most needed for domestic and irrigation use. 12/

The lower reach of the Methow River Valley (downstream from Carlton) is narrow, the terraces that flank it are discontinuous, and bedrock is exposed at many places both on the valley floor and in the valley walls. Many shallow-dug wells are used for domestic supplies and water levels fluctuate with river stage. Ditches to supply irrigation water have not been constructed here and, although much land is irrigated by direct pumpage from the river, many irrigation wells are in use.

In the valleys of streams tributary to the lower reaches of the Methow River, alluvial deposits are thin and domestic water supplies are obtained from shallow-dug wells and springs. However, ground water tends to be unavailable in quantities sufficient for irrigation.

The present development of ground water in the central part of the Methow River Basin (between Winthrop and Carlton) is about the same as in the southern part of the basin. Ground water is used to a considerable extent to supplement surface water for irrigation and for domestic use. In this area, the valley of the Methow River is wider than in the areas to the north or south, and unconsolidated deposits are thicker. Also, two major tributaries (Twisp River and Beaver Creek), part of whose valleys may contain appreciable ground water, enter the Methow River in this area.

Ground water development in the northern part of the Methow River Basin (north and west of Winthrop) is chiefly along the floor of the Methow River Valley, although a few wells have been drilled in the Chewack River Valley and in the Early Winters Creek Valley. Most wells here were constructed merely as sources of domestic supply and, therefore, meaningful data on the maximum yields obtainable are not available. In the Upper Methow Valley, few wells penetrate more than a depth of 90 feet. In a study conducted in 1975 by the Department of Natural Resources, water levels were found to range from 6 feet or less to 85 feet in the unconsolidated materials. 13/

GROUND WATER - Factual Findings (Continued)

Supplies of ground water will generally continue to be adequate for presently projected use in the Methow River Basin for many years to come. The basin contains many perennial streams that empty into the Methow River and the broader, more populated parts of the valley floors are underlain in most places by unconsolidated sand and gravel formations which will yield ground water in quantity sufficient for projected domestic uses and supplemental or standby irrigation use.

The Department of Ecology's existing policy is to treat ground water, in measurable continuity with surface water, as being subject to the same criteria as surface water allocations. The proposed Methow River Basin Water Resources Management Program would not change this policy.

WATER QUALITY

Public Concerns

The citizens are concerned about the potential of proposed residential and recreational developments adversely impacting the basin's ground and surface water quality. The principal concern is the possibility that major recreational developments, such as the one being proposed by Early Winters Land and Cattle Company, would have a negative impact on water quality.

Other concerns are the problems associated with the increasing subdivisions and real estate development in the valley. It is feared that the associated septic tank development may contribute significantly to nonpoint pollution.

The citizens question the adequacy of past and present water quality monitoring systems. They feel that an extensive monitoring system should be initiated covering the drainage basin by management reach to facilitate enforcement of the water quality standards as set forth in WAC 173-201.

Factual Findings

The Methow River system is characterized by high quality water. Water quality standards, as set forth in WAC 173-201, classify the Methow River as Class A from the mouth to the Okanogan National Forest Boundary and Class AA within the National Forest, although the department is considering reclassifying the river as Class AA upstream of the confluence of the Chewack River. Class AA water quality can be generally characterized as waters markedly and uniformly exceeding the requirements for all or substantially all uses.

The Methow River and its tributaries have been tentatively identified by the Department of Ecology as water quality limiting nonpoint source waters. This classification, in essence, requires that municipal and industrial point dischargers achieve best practicable treatment. Best

WATER QUALITY - Factual Findings (Continued)

practicable treatment has been defined as secondary treatment for municipal waste dischargers. The definition of secondary treatment is specified by Federal Regulation, 40 CFR Part 133, which was last published in the Federal Register on July 26, 1976.

In addition to treatment levels required by Federal Regulation, Chapter 173-201-040(b) WAC Water Quality Standards, states that ". . . except where the director determines that overriding considerations of the public interest will be served, wherever receiving waters of a classified area are of a higher quality than the criterion assigned for said area, the existing water quality shall constitute water quality criteria." Under this State regulation, the Department of Ecology requires, in certain instances, treatment in addition to best practicable.

The City of Winthrop presently operates and maintains a sewage lagoon system consisting of two shallow oxidation ponds. At the present time, the primary and secondary lagoons are functioning as nonoverflow storage lagoons.

The City of Twisp has recently constructed and placed in operation a mechanical municipal wastewater treatment facility which was designed to provide a minimum of secondary treatment. The treated effluent is discharged to the Methow River.

Monitoring programs were evaluated and summarized in the "Okanogan County Sewage Drainage Basin Plan", developed by the consulting firm of R. W. Beck and Associates, dated March, 1975. Total coliform organisms with a mean value of 310 and a peak value of over 1000 colonies per 100 milliliters was the only water quality violations noted. Fecal coliform counts have remained consistently between 20 and 40 counts per 100 milliliters.

In October of 1975, the Department of Ecology began an ambient water quality program of monitoring at five stations in the basin on a bi-weekly basis. The water quality samples were taken at Chewack River near Winthrop, below Gate Creek, at the Weeman Bridge, near Twisp, and at the historical station near Pateros. This program confirmed the high quality of the basin's waters with median values for all parameters (for the year of record) being well within the water quality standards. A report of this monitoring program is scheduled to be published by the U.S. Geological Service by July 1977.

II. WATER RESOURCES MANAGEMENT POLICY

INTRODUCTION

"The legislature finds that proper utilization of the water resources of this state is necessary to the promotion of public health and the economic well being of the state and the preservation of its natural resources and aesthetic values." (RCW 90.54.010 Water Resources Act of 1971.)

This management policy section provides for the protection of existing rights; allows for further irrigation; establishes base flows at flow control stations along the Methow River system; and indicates preference among uses. Most future water rights will be subject to base flow levels.

This management policy also sets forth closures and other restrictions relating to the appropriation of surface water with exceptions for domestic and livestock uses as appropriate. In areas where there is hydraulic continuity between surface and ground water sources, these restrictions will also apply to ground-water appropriations. However, in areas where no such continuity exists, ground water development will not be subject to the surface water restrictions established in this program.

All appropriation permits acted upon after implementation of this program shall be subject to this Methow Basin water resources management program. EXISTING WATER RIGHTS WILL NOT BE AFFECTED BY THE MANAGEMENT POLICIES.

DECLARATION OF BENEFICIAL USE AND USE PREFERENCES

The State Water Resources Act of 1971 declares the following uses of water to be beneficial: domestic, stock watering, industrial, commercial, agricultural, irrigation, hydroelectric power production, mining, fish and wildlife maintenance and enhancement, recreational, and thermal power production purposes, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state (RCW 90.54.020(1)).

Among these beneficial uses, the public views and current departmental investigations have led to the conclusion that actual demand for water may be segregated into general use categories with certain categories having a higher priority.

Based on those conclusions, the management of the surface water resources of the Methow River will be in accordance with the following beneficial use preferences:

Priority I Existing rights. Nothing in this management policy will lessen, enlarge, or modify the existing water rights acquired by appropriation, or otherwise. Existing rights is a category consisting of all legal rights to the use of public waters, as of the adoption date of a management

regulation. Maximum quantification of existing rights is well documented for those rights established through the administrative process provided in chapter 90.03 RCW effective June 6, 1917 and chapter 90.44 RCW (1945) or under court decree. Quantification of existing rights relating to claims registered under RCW 90.14.050 is much less certain because not all claims represent valid water rights nor in many cases do the claims accurately reflect the actual extent of the claimed right. Until such time as all rights on a particular stream are confirmed through the general adjudication process, it is extremely difficult to regulate, either for or against, rights associated with claims.

Priority II Single Domestic and Stock Use includes water used by a single household and includes irrigation of lawn and garden not to exceed one-half acre, and livestock use excluding feed lot operations. Water rights perfected for single domestic and stock watering use will not be subject to base flow.

However, such rights will be subject to prior rights and, in designated watersheds, there may not be water available for additional rights for domestic and stock water use because of existing appropriations.

Priority III Base Flows. For preservation of wildlife, fish, scenic, aesthetic, and other environmental values including recreation, instream flows shall be protected. Appropriation of future water rights to Priority IV shall be limited so as not to impair maintenance of base flows in the stream. The base flows proposed herein recognize both the flow and use characteristics of the Methow River and its tributaries in their derivation.

Priority IV Irrigation, Public Water Supply, and Other Uses which are not specified in the preceeding priorities are grouped in Priority IV.

DISCUSSION

- A. Existing Rights: Existing rights are those certified rights to use water under the administrative process provided in Chapter 90.03 RCW (effective June 6, 1917) and Chapter 90.44 RCW (effective June 6, 1945) or under court decree (adjudication) under RCW 90.03.200 and 90.03.240. Other existing rights may be vested in nature and would be represented by a claim registered under RCW 90.14.050: These, however, may not be regulated, either for or against, unless confirmed under due process of an adjudication. As a matter of policy, some claimed uses may be regulated against if, in the opinion of the department, there is conflict with other uses and there is no apparent substance to the claim.

- B. Establishment of Base Flows: It is a fundamental policy of this state that "perennial rivers and streams be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic, and other environmental values, and navigational values." (Chapter 90.54 RCW) Further, lakes and ponds are to be retained substantially in their natural condition.

In consonance with the above fundamental policy of the state, base flows for the Methow River and its tributaries are hereby established as an element of this management program.

No further appropriation of surface water shall be made from the Methow River and its tributaries which would conflict with the base flow levels established through this policy, except as expressly allowed. Enforcement and maintenance of base flows will be in accordance with the administrative procedures established as part of this program (described on page 17) and with existing laws.

In order to manage the waters of the Methow Basin, it has been determined that the basin must first be divided into stream management units. The units are hereby designated according to existing U.S. Geological Survey gaging stations.

The six principal gaging stations (Nos. 12.4499.50, 12.4495.00, 12.4489.98, 12.4473.89, 12.4475.00, and 12.4473.83) near Pateros, Twisp, Winthrop, Boulder Creek, and Mazama are the control points for the stream management reaches. These stations monitor the Lower Methow, the Middle Methow, the Twisp River, the Upper Methow, the Chewack River, and the Methow Headwaters, respectively. Early Winters Creek has also been designated as a management reach although no gage exists at the present time. Snow survey data provided by the U.S. Soil Conservation Service will allow early prediction of problem years.

The base flows will be monitored and maintained at the control stations for the stream reaches specified in Tables 6-14, pages 33-41. Base flows for the 1st and 15th day of April through October are presented in Table 1, page 14. Base flows for the remainder of the year may be found in Tables 6-14.

Base flows for any specific day not identified in the table can be obtained from Figure I, pages 29 and 30. These base flow hydrographs are drawn on a semilogarithmic daily record sheet.

- C. Status of Streams and Lakes for Further Consumptive Appropriation: As a result of an investigation of water availability, certain tributary streams listed in Table 15, page 42, Principal Tributary Streams (Current and Proposed Status), will be closed to further consumptive appropriation during the period specified. It is further declared to be prejudicial to the public interest to allow further consumptive appropriations from certain streams listed in this table. Certain exceptions may be granted for domestic and normal stock watering uses, excluding feed lot operations, during the period from May 1 through October 31, or as otherwise noted. The remaining public waters in those streams are necessary to maintain instream values.

Average monthly flow data for tributary streams are presented in Table 16, pages 43-47.

The proposed status of streams presented in Table 15 resulted from an analysis of the information presented in Table 16 for the critical period of the year. The relationship between stream flow and use is examined. If adequate water supplies for future allocation are not available, the stream will be closed to further consumptive use during all or part of the year, as appropriate. In cases where there exists a major excess of flow over use during the spring and a potential storage site is available, the exception for waters developed solely from an increased storage capacity within the Basin is included.

In order to retain lakes substantially in their natural condition, no rights to appropriate water from the lakes and ponds in this Basin (excluding lakes listed in Tables 4 and 5) will be granted for any consumptive use except for single domestic and stock watering purposes.

Any diversion of surface water which would conflict with the closures in this management policy shall be authorized only on an individual case basis in situations where it is clear that overriding consideration of the public interest will be served (RCW 90.54.020(3)(a)).

- D. Allocation of Unappropriated Surface Waters: Unappropriated surface waters in the Methow River Basin are allocated and managed in the following specific stream management units:

Lower Methow:	Methow from mouth at Wells Pool to confluence with Twisp River. (RM 0-RM 40.0)
Middle Methow:	Methow from confluence with Twisp River to confluence with Chewack River. (RM 40.0 - RM 50.2)
Upper Methow:	Methow from confluence with Chewack River to confluence with Little Boulder Creek. (RM 50.2 - RM 67.3)
Methow Headwaters:	Methow from confluence with Little Boulder Creek to Headwaters. (RM 67.3 - headwaters)
Early Winters Creek:	Early Winters Creek from confluence with Methow to headwaters.
Chewack River:	Chewack River from confluence with Methow to Headwaters. (RM 0 - headwaters)
Twisp River:	Twisp River from confluence with Methow to headwaters. (RM 0 - headwaters)

Public waters of all management units that are presently unappropriated are allocated to the following beneficial use categories under this management program:

- Single domestic use and livestock watering.
- Base flow for instream uses up to the amount specified.
- Consumptive uses, except for single domestic and indicated livestock use, nonconsumptive uses which require more than the amount provided as base flow.

The unappropriated public surface waters available for future allocation are determined by subtracting the amount necessary to satisfy base flows and the estimated actual diversion impacts of existing rights from the appropriation limit established in this management program. It should be noted that the allocation of ground waters having continuity with surface waters will be subject to the procedures for surface water allocation set forth in this document and the management regulation.

Allocation quantities are presented in Table 2, pages 15 and 16, with further information in Tables 6 through 14, pages 33-41.

Table 1

SELECTED BASE FLOWS FOR APRIL THROUGH OCTOBER ONLY
(Methow River Basin)
(All figures in cubic feet per second)

CONTROL STATION	DESCRIPTION	MONTHS AND DATES														
		APR		MAY		JUN		JUL		AUG		SEP		OCT		
Station Name and No. Location (River Mile)	Stream Management Unit	1	15	1	15	1	15	1	15	1	15	1	15	1	15	
<u>Lower Methow</u> Methow River nr. Pateros 12.4499.5 (RM 6.7)	Wells Pool to confluence with Twisp River	590	860	1,300	1,940	2,220	2,220	2,150	800	480	300	300	300	300	360	425
<u>Middle Methow</u> Methow River nr. Twisp 12.4495.00 (RM 40.0)	Confluence with Twisp River to confluence with Chewack River	430	650	1,000	1,500	1,500	1,500	1,500	500	325	220	220	220	220	260	320
<u>Upper Methow</u> Methow River nr. Winthrop 12.4473.89 (RM 50.2)	Confluence with Chewack River to confluence with Little Boulder Creek	199	300	480	690	790	790	694	240	153	100	100	100	100	122	150
<u>Methow Headwaters</u> Methow River nr. Hazama 12.4473.83 (RM 65.3)	Confluence with Little Boulder Creek to headwaters	64	90	130	430	1,160	1,160	500	180	75	32	32	32	32	45	60
<u>Early Winters Creek</u>	Confluence with Methow River to headwaters	14	23	32	108	290	290	125	45	20	8.0	8.0	8.0	8.0	12.0	15.0
<u>Chewack River</u> Chewack River nr. Boulder Creek 12.4475.00 (RM 8.7)	Confluence with Methow River to headwaters	90	140	215	290	320	320	292	110	70	47	47	47	47	56	68
<u>Twisp River</u> Twisp River nr. Twisp 12.4489.98 (RM 0.3)	Confluence with Methow River to headwaters	60	100	170	300	440	440	390	130	58	27	27	27	27	35	45

Table 2

**FUTURE ALLOCATION OF SURFACE WATERS BY USE PRIORITY
(WITHOUT STORAGE)**

April through September
(Units in cubic feet per second)

Use Priority	Use Description	APR	MAY	JUN	JUL	AUG	SEP
<u>Lower Method</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flow	860	1,940	2,220	800	300	300
IV	Irrigation, Public Water Supply and Other Uses*	563	2,920	3,114	963	212	60
<u>Middle Method</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flow	650	1,500	1,500	500	220	220
IV	Irrigation, Public Water Supply and Other Uses*	588	2,925	2,851	875	190	53
<u>Upper Method</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flow	300	690	790	240	100	100
IV	Irrigation, Public Water Supply and Other Uses*	271	782	1,015	581	201	74
<u>Method Headwaters</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flow	90	430	1,160	180	32	32
IV	Irrigation, Public Water Supply and Other Uses*	334	410	1,247	606	107	31
<u>Early Winters Creek</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flow	23.0	108.0	290.0	45.0	8.0	8.0
IV	Irrigation, Public Water Supply and Other Uses*	33.0	401	292	187	92	44

Table 2 - Continued

FUTURE ALLOCATION OF SURFACE WATERS BY USE PRIORITY
(WITHOUT STORAGE)

April through September
(Units in cubic feet per second)

Use Priority	Use Description	APR	MAY	JUN	JUL	AUG	SEP
<u>Twisp River</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flows	100	300	440	130	27	27
IV	Irrigation, Public Water Supply and Other Uses*	146	701	880	296	68	24
<u>Chewack River</u>							
II	Single Domestic and Stock Uses	2.0	2.0	2.0	2.0	2.0	2.0
III	Instream Use Under Base Flows	140	290	320	110	47	47
IV	Irrigation, Public Water Supply and Other Uses*	116	807	1,290	306	68	21

*Priority IV Irrigation, Public Water Supply, and Other Uses, is the aggregate of water available up to the appropriation limit. The appropriation limit is as defined in number 4 below.

The above table is developed by assessing other information in this document and drawing the following conclusions:

1. Future rights for single domestic and stock water uses are not subject to base flows and 2.0 cfs is a reasonable maximum potential future use from each river reach noted.
2. Instream uses are adequately protected by the base flows which are set forth in representative terms.
3. Future rights for agricultural uses can be represented by either the reasonable maximum limit of available irrigable land or water.
 - a. Available future lands used:
 - i. Lower Methow 6,980 acres
 - ii. Middle Methow 1,600 acres
 - iii. Upper Methow 1,500 acres
 - iv. Methow Headwaters 140 acres
 - v. Twisp River 1,120 acres
 - vi. Chewack River 2,700 acres
 - vii. Early Winter Creek
 - b. Available water is represented by figures in Tables 6-14, pages 38-46.
4. Water available in excess of those protected under existing rights and use priorities II through IV of this table shall be limited by the appropriation limit defined generally as the one in two year reach discharge on a monthly basis.

This table is representative of the more critical part of the year only.

III. ADMINISTRATIVE PROCEDURES

Protection of Existing Rights

Nothing shall be done to infringe upon existing rights which are being used and which are not subject to the provisions of Chapter 90.14 RCW (Relinquishment).

REGULATION OF BASE FLOW

All future consumptive water rights, except single domestic and stock water supply (excluding commercial feedlots), will be subject to base flows at the designated control station. Therefore, each permit and certificate issued by the Department of Ecology will carry a provision that the holder shall cease diverting from the stream when the flow falls below the level necessary to maintain the base flow.

Early prediction of summer flow is required for adequate management. The prediction will be guided by the stream flow forecasts provided by the U.S. Soil Conservation Service, which are published as "Water Supply Outlook, Washington." The forecasts are based principally on measurements of the water-equivalent of snowpack. Snow surveys are made monthly or bimonthly from January 1 to June 1.

When a drought water year is anticipated, based on these forecasts, monitoring will be initiated by no later than May 15 of the year.

Administration of base flow will include the following procedures:

- A. Inform water right holders with base flow provisos of potential regulation. This may be done by letter, personal conversation and/or public meeting and should generally be initiated by early June.
- B. Monitor Methow River system at control stations Nos. 12.4499.5, 12.4495.00, 12.4489.98, 12.4473.89, 12.4473.83, and 12.4475.00 (see Figures II and III, pages 52 and 53).
- C. Prepare letters and notify the water users by certified mail as to required regulation.
- D. Assess compliance as required.
- E. Issue violators an administrative order to cease and desist from diversion, or post the diversion depending on the situation.

If, after the stages outlined above, the violators do not comply with the department's policy, the state may initiate legal action against the violator and seek judgment through Superior Court action.

NOTE: The Water Code - 1917 Act, Sections 90.03.400 and 90.03.410, stipulates that unauthorized use of water and wrongful use of water is a misdemeanor.

If it is determined that development of a well affects surface water, any withdrawal of water therefrom will be subject to those existing surface water rights and base flow.

FUTURE WATER RIGHTS AND ACCOUNTING ACTIONS

A system of accounting and recording to keep track of water appropriation versus availability is an essential part of this management program.

All consumptive water rights will be deducted from the amount specified for each month in order to determine the amount of water remaining available for further appropriation.

As the amount of water appropriated approaches the specified amount available for appropriation, the department will review the operation and implementation of the management program to assess the need for revision of the program or the management policy.

Unappropriated surface waters have been allocated to specific stream management units and to specific use priorities within the unit. The principle of "first-in-time first-in-right," will be applied on a basin-wide basis within the amount allocated to each stream management unit by priorities.

Allocations to use priorities II (single domestic and stock water uses) are defacto "reservations." Water rights from use priority IV (irrigation, public water supply, other uses) allocation will be subject to the flow level necessary to maintain all higher priority uses.

After adoption of this management program and any subsequent management regulation, the approximately 45 applications for water right permits on "hold" will be processed in accordance with the procedures established in this management program.

Changes in purpose of use, point of diversion, and place of use may be executed as provided under chapter 90.03 RCW.

APPROPRIATION OF WATER FOR SINGLE DOMESTIC SUPPLY

Issuance of water rights for single domestic supply purposes will be guided by the following standard operating procedure:

- A. Refinement of the water right application is appropriate when the applicable facts are available. For example, if the applicant intends only to water his lawn and garden, the use should be designated "domestic supply lawn and garden watering only)."
- B. On water sources where the availability of water is marginal, such as a stream that has been administratively closed to further appropriation for other than domestic supply or stock watering purposes, the following criteria will be used:
 1. If water is available from another source, the application for permit may be denied on the basis of highest feasible use of

the remaining waters. This logic would prevail even for household water, since denial would not be endangering health or welfare - rather, it would require the applicant to use as an alternate a more reliable source.

If water is not available from another source, the application may be approved for in-house domestic supply only. The department's policy is that people are entitled not only to household water, but also to sufficient water to maintain a pleasant yard surrounding over and above instream needs except that "on water sources where the cumulative effect of numerous diversions for domestic supply would seriously impair either the aesthetic or fisheries resource values of the water source for riparian owners and the public in general, all applications for domestic supply shall be denied as being detrimental to the public, except to the extent that such waters are needed for household supply."

On water sources where the availability of water is critical (i.e., the taking of additional water will, in fact, adversely affect existing rights to use the waters in question), all applications for "domestic supply" shall be denied.

- C. In any general adjudication, the expressed terms of the decree shall govern.

BIBLIOGRAPHY

- Grant, Dr. Allan Robert, Socio-Economic Impact or Proposed Mining Projects in the Methow Valley Area, Okanogan County, USFS, and Washington State Office of Community Development, May 1976.
- Methow River Basin Citizens Advisory Committee, Policy Statements.
- Okanogan County, Methow Valley Plan - An addendum to Okanogan County's Comprehensive Plan, Study Draft, September 1975.
- Pacific Northwest River Basins Commission, Methow Basin Level B Study, Preliminary Draft, July 1976.
- R. W. Beck and Associates, Sewage Drainage Basin Plan, Okanogan County, Seattle, Washington, March 1975.
- State of Washington, Department of Ecology, A Brief Review of the Water Resources of the Okanogan - Methow Basins, Unpublished office report, Olympia. June 1975.
- State of Washington, Department of Ecology, Inventory and Reconnaissance of Irrigation Districts in the State of Washington, Part II, August 1974.
- State of Washington, Department of Ecology, The Water Resources of the Methow Basin, Unpublished Office Report, July 1976.
- State of Washington, Department of Ecology, Water Quality Management Plan, 303(e) Report, April 1976.
- State of Washington, Department of Game, Letter from Thor C. Tollefson, Director, to Joh Gilstrom, November 18, 1974.
- USDA, Soil Conservation Service, Land Use Data October, 1976.
- USDI, U.S. Forest Service, Methow Valley Economic Growth Impact Study, January 1976.
- USDI, U.S. Forest Service, Methow Valley Growth Impact Study Working Paper No. 1, August 1975.
- USDI, U.S. Forest Service, Methow Valley Growth Impact Study, Working Paper No. 3, August 1975.
- Walters, Kenneth L., and Nassar, E. G., Water in the Methow River Basin, Washington. State of Washington, Department of Ecology and USGS, 1974.

REFERENCES

- 1/ The references to citizen desires are drawn from the responses to the public involvement questionnaires and the citizen's advisory committee policy statements.
- 2/ Technical Supplement to the Hydrographic Atlas, page 66.
- 3/ 303(e) Water Quality Management Plan, page 13. They are: Crown Zellerbach Lumber Company, at Twisp, Winthrop National Fish Hatchery, and Este & Yeaple Pre-Mix, Incorporated.
- 4/ Water in the Methow River Basin, pages 11-13. Unpublished office report, Department of Ecology.
- 5/ Inventory and Reconnaissance of Irrigation Districts in the State of Washington, Part II.
- 6/ Methow Valley Plan - An Addendum to Okanogan County's Comprehensive Plan, September 1975 (Study Draft), p. 21.
- 7/ Methow Valley Growth Impact Study, Working Draft #1, pps. 9 - 11 by Lloyd C. Irland, Economist, Okanogan National Forest.
- 8/ Methow Valley Plan, Study Draft, September 1975, page 28.
- 9/ Socio-Economic Impact of Proposed Mining Projects in the Methow Valley Area, p. 68. Dr. Allan Robert Grant, May 1976.
- 10/ Ibid., p. 44.
- 11/ Ibid., p. 42.
- 12/ Water in the Methow River Basin, Washington, by Kenneth L. Walters and E. G. Nassar, Water Supply Bulletin 38, DOE and USGS, 1974.
- 13/ Ground Water in the Methow Valley - Mazama to Winthrop, by Ernest R. Artim, Division of Geology and Earth Resources, Department of Natural Resources and Okanogan County Planning Department, May 1975.

GLOSSARY

ACRE-FOOT: A unit for measuring the volume of water or sediment. It is equal to the amount of water needed to cover one acre of land with water one foot deep. This is 43,560 cubic feet, or 325,851 gallons.

ALLOCATION: The process of legally encumbering specific amounts of the water resource for application to beneficial uses through instruments called water rights.

APPROPRIATION: The administrative or physical process of obtaining water.

APPROPRIATION LIMIT: The level beyond which appropriation permits will not be granted.

BASE FLOW: As defined in the Water Resources Act of 1971, base flows are the flows administratively established "necessary to provide for the preservation of wildlife, fish, scenic, aesthetic and other environmental values, and navigational values."

CLOSURE: Administrative measure to keep water resources from further appropriation to consumptive uses. Generally, domestic household use and normal stock watering are exempted when there is no practicable alternate source of supply.

CONFLUENCE: A place of meeting of two or more streams; the point where a tributary joins the main stream; a fork.

CONJUNCTIVE USE: The integrated use of ground and surface water in such a way as to increase the benefits of the use of all the waters of the basin.

CONSUMPTIVE USE: The amount of water used in such a way that it is no longer directly available. Includes water discharged into the air during industrial uses, or given off by plants as they grow (transpiration), or water which is retained in the plant tissues, or any use of water which prevents it from being directly available.

CONSUMPTIVE USE REQUIREMENT (crop): The amount of consumptive use for irrigation each year for a particular type of crop. Measured in acre-feet or feet per acre.

CONTROL STATION: Any streamflow measurement site at which a regulatory base flow has been established.

CUBIC FEET PER SECOND (cfs): A unit of measure for the rate of discharge of water. One cubic foot per second is the rate of flow of a stream with a cross section of one square foot which is flowing at one foot per second. It is equal to 448.8 gallons per minute.

DISCHARGE: In simplest form, discharge simply means outflow. The term can describe the flow of water from a faucet or from a drainage basin covering hundreds of square miles.

DIVERSION: The physical act of removing water from a stream or other body of surface water.

SINGLE DOMESTIC USE: Water used by a single household including up to one-half an acre lawn or garden irrigation.

DRAINAGE AREA: The area of land drained by a stream, measured in the horizontal plane. It is the area which is enclosed by a drainage divide.

DRAINAGE BASIN: A part of the surface of the earth that is occupied by a drainage system consisting of a surface stream or a permanent body of water together with all tributary streams and bodies of impounded water (lakes, ponds, reservoirs, etc.).

FLOOD: Any relatively high streamflow or an overflow that comes from a river or body of water and which causes or threatens damage.

GAGING STATION: A particular location on a stream, canal, lake, or reservoir where systematic measurements of the quantity of water flowing are made.

GROUND WATER: Water in the ground lying in the zone of saturation. Natural recharge includes water added by rainfall, flowing through pores or small openings in the soil into the water table.

HYDRAULIC CONTINUITY: A cause and effect relationship between water under the ground with water standing or flowing on the surface.

HYDROGRAPH: A graph showing varying streamflow (or stream discharge) with respect to time during a year as determined at a specific cross-sectional location in the stream.

INSTREAM VALUE: The attitude of society towards the instream use of water for aesthetic, fish and wildlife, recreation, hydroelectric, and general environmental purposes.

NONCONSUMPTIVE USE: Use of water in a manner which does not consume the resource. Fishery, aesthetic, and hydropower uses are examples of nonconsumptive use.

PERENNIAL STREAM: A stream, at any given location, is considered perennial if its natural flow is normally continuous.

PRECIPITATION: The discharge of water, as rain, snow, hail, etc., out of the atmosphere, generally onto land or water surfaces. This is the process which permits atmospheric water to become surface or subsurface water. The term precipitation is often used to describe the amount of water that is precipitated.

PRIORITY OF USES: A use category ranking which specifies an order of water uses to determine the method for regulating water uses. All rights within a lower priority use are subject to regulation before any rights in the next higher priority. Rights within a defined water use category are to be regulated on a first-in-time, first-in-right basis.

PUBLIC INTEREST: The sense of local, county, or state values at a given point in time.

PUBLIC WATERS: All waters not previously appropriated.

PUBLIC WATER SUPPLY: The system for the collection, treatment, storage, and distribution of potable water from the sources of supply to any community, collection or number of individuals, but excluding water supplies serving one single family dwelling.

RESERVATION: An approved priority claim to water for a future beneficial use.

RETURN FLOW (irrigation): Irrigation water which is not consumed in evaporation or plant growth, and which returns to a surface stream or ground water aquifer.

RELINQUISHMENT: Reversion to the state of a right to divert or withdraw water.

RIPARIAN: Pertaining to the banks of streams, lakes, or tidewater.

RIVER BASIN: The total area drained by a river and its tributaries; watershed; drainage basin.

RUNOFF: That part of precipitation that appears in surface streams. This is the streamflow before it is affected by artificial diversions, reservoirs, or other man-made changes in or on stream channels.

STORAGE: Water naturally or artificially impounded in surface or underground reservoirs.

STREAMFLOW: The discharge or water flow that occurs in a natural channel. The word discharge can be applied to a canal, but streamflow describes only the discharge in a surface stream course. Streamflow applies to discharge whether or not it is affected by diversion or reservoirs.

STREAM MANAGEMENT UNIT: Stream segments, reaches, or tributaries, each containing a control station, which are identified as units for defining base flow levels.

WATER RIGHT: A legal right and property interest (subject to certain limitations) to obtain specific maximum quantities of water from specific sources for application to beneficial use.

WATERSHED: The area drained by a given stream; drainage basin.

WITHDRAW: The administrative procedure of closing a water supply source from further appropriation for an indefinite period of time. RCW 90.54.050(2). Also, the removal of ground water from its source.

APPENDIX A

METHOW RIVER BASIN CITIZEN ADVISORY COMMITTEE POLICY STATEMENT

AGRICULTURE FIRST PRIORITY

In recognition of the fact that the amount of arable land in the Methow Valley is limited -

WE RECOMMEND THAT PLANNING EFFORTS BE DIRECTED TOWARD PROTECTION OF AGRICULTURAL LANDS. WE FURTHER RECOMMEND THAT THE AGRICULTURAL INDUSTRY CONTINUE TO BE THE FIRST PRIORITY IN FUTURE MANAGEMENT OF WATER RESOURCES, REALIZING OF COURSE THAT CONSIDERATION MUST BE GIVEN TO EXISTING HUMAN CONSUMPTION FOR MAINTENANCE OF A REASONABLY HEALTHY LIFE STYLE.

FUTURE INDUSTRIAL AND URBAN EXPANSION SHOULD PROTECT AND PRESERVE THE LIMITED LAND AVAILABLE FOR AGRICULTURAL PURPOSES.

We need to look ahead to when the amount of land suited for agriculture will not meet the requirements of production.

WE FURTHER RECOGNIZE THAT THE PRESERVATION OF AGRICULTURAL LANDS WILL CONTINUE TO INSURE THE SCENIC AND RECREATIONAL VALUES THAT HAVE ALWAYS BEEN ASSOCIATED WITH THE METHOW VALLEY.

IRRIGATION USES

Irrigation of agricultural lands is essential to the maintenance of a beautiful scenic valley, and therefore should be preserved.

WE RECOMMEND THAT ALLOCATION OF ADDITIONAL WATER RIGHTS FOR IRRIGATION PURPOSES BE CONTINGENT UPON PROVISION OF ADEQUATE WATER TO MEET CURRENT NEEDS. IT BEING RECOGNIZED THAT PRESENT USES HAVE PRIORITY AND THAT ENCOURAGEMENT OF ADDITIONAL FUTURE USES BE DEPENDENT UPON ADEQUATE WATER BEING MADE AVAILABLE.

DEVELOPMENT OF LANDS

The Methow Valley has experienced, and will continue to experience, rapid subdivision of its rural lands. Looking into the future, if these subdivided lots are occupied and the occupants demand water, will there be an adequate supply? And more importantly, will this demand effect existing users? Water is not an unlimited resource and there must be a limit upon its demands for use.

WE RECOMMEND THAT THE DEPARTMENT OF ECOLOGY, UPON REQUEST FROM A RURAL SUBDIVISION DEVELOPER FOR A WATER RIGHT, INITIATE A THOROUGH AND COMPREHENSIVE INVESTIGATION AS TO THE ADVERSE EFFECTS ISSUANCE OF THAT WATER RIGHT WOULD HAVE ON OTHER USERS. IF IT CAN BE DETERMINED THAT SUCH ISSUANCE WOULD BE DETRIMENTAL, THEN SUCH WATER RIGHTS SHOULD BE DENIED. THE PURPOSE OF THIS RECOMMENDATION IS TO PREVENT "MINING" OF WATER AQUIFERS, AS WELL AS SURFACE RUNOFF.

Our committee fully appreciates the value of the Methow Valley for residential recreational development. We are fully aware of the responsibility to develop the area in a reasonable and comprehensive manner.

WE WOULD DISCOURAGE INDISCRIMINATE LOCATION OF RECREATIONAL SUBDIVISIONS WITHOUT ADEQUATE PROVISIONS FOR WATER AND CONCERN FOR EXISTING WATER RIGHTS. OUR RESPONSIBILITY MUST BE TO BOTH PRESENT WATER USERS AND TO FUTURE GENERATIONS.

WE FURTHER RECOMMEND THAT FUTURE GROWTH BE REGULATED IN A MANNER SO AS TO MINIMIZE THE DEMAND FOR WATER, THUS TO CONSERVE THE WATER RESOURCES OF THE BASIN.

FLOOD CONTROL

WE RECOMMEND THAT FUTURE CONSTRUCTION OF DIKES, RIP RAP, OR CHANNEL MODIFICATION BE CONSIDERED IN TERMS OF THEIR ECONOMIC CONSEQUENCES. WE FEEL IT MUST BE DETERMINED IN ADVANCE IF SUCH STRUCTURES ARE ECONOMICALLY FEASIBLE AND IF THE COST-BENEFIT RATIO WOULD BE OF SUFFICIENT BENEFIT TO WARRANT THEIR CONSIDERATION.

WATER RIGHTS

Because of the anticipated growth of the Methow Valley within the next few years and the demands that will be placed upon its water resources:

WE RECOMMEND THAT THE DEPARTMENT OF ECOLOGY COMPLETE AN EARLY DETERMINATION AS TO THE DEGREE OF APPROPRIATION OF ALL STREAMS IN THE METHOW BASIN. WE ALSO RECOMMEND AN ACTIVE AND IMMEDIATE PROGRAM OF STREAM ADJUDICATION TO DETERMINE EXISTING RIGHTS.

We recognize the availability of water in these small streams, as well as existing storage lakes, is almost nonexistent.

WE THEREFORE RECOMMEND THAT FUTURE APPROPRIATIONS BE WITHHELD BY THE STATE DEPARTMENT OF ECOLOGY IN ALL STREAMS THAT ARE FULLY APPROPRIATED, AND THAT FUTURE USES BE ALLOCATED ONLY AS WATER BECOMES AVAILABLE. OF PARTICULAR CONCERN ARE ALL STREAMS FLOWING INTO THE METHOW RIVER BELOW WINTHROP.

WATER QUALITY

The Methow currently enjoys a high standard of pure and clean water that adds measurably to its attraction to both residents and visitors. It is of vital importance that these high standards be maintained.

WE THEREFORE RECOMMEND THAT ANY EXISTING OR POTENTIAL CONCENTRATIONS OF RESIDUES OR POLLUTANTS THAT WOULD CONTRIBUTE TO FURTHER DEGRADATION OF THE WATER QUALITY BE IDENTIFIED AND APPROPRIATE ACTION TAKEN TO ALLEVIATE SUCH SOURCES.

WE RECOMMEND THAT FUTURE INDUSTRIAL GROWTH BE OF SUCH A NATURE AS TO BE COMPATIBLE WITH THE AGRICULTURAL AND RURAL CHARACTER OF THE VALLEY AND INDUSTRIES THAT CREATE PROBLEMS OF WATER AND AIR POLLUTION BE DISCOURAGED TO LOCATE IN THIS BASIN.

CONSERVATION OF WATER

In recognition of the possibility of critical water shortages occurring, we deem it responsible and necessary to encourage all methods of water conservation of present and future uses.

WE RECOMMEND THAT CONSERVATION MEASURES BE ENCOURAGED TO BETTER UTILIZE WATER NOW BEING DIVERTED FOR IRRIGATION PURPOSES. SUCH CONSERVATION MEASURES COULD INCLUDE: PROPER APPLICATION TO IRRIGATED CROPS, LINING OF IRRIGATION DITCHES WHERE ECONOMICALLY FEASIBLE TO REDUCE PERCOLATION LOSSES, USE OF PIPE LINES WHERE APPROPRIATE, CONVERSION TO SPRINKLER IRRIGATION, AND OTHER ACCEPTED WATER CONSERVATION PRACTICES.

We further recognize the need to enhance the flow of water in the Methow Basin during the chronic low flow period of late summer.

WE THEREFORE RECOMMEND FURTHER STUDY BY THE APPROPRIATE AGENCIES AND INDIVIDUALS BE GIVEN TO VARIOUS METHODS TO IMPROVE WATERSHED MANAGEMENT.

SOIL EROSION

Preservation of our irreplaceable soil is imperative to our agricultural economy and to the enhancement of the natural beauty of the valley..

TO PRESERVE AND ENHANCE THE QUALITY OF THE WATER OF THE METHOW RIVER WE RECOMMEND THAT ACCEPTABLE METHODS OF SOIL EROSION CONTROL BE INITIATED BY GOVERNMENT AND INDIVIDUALS TO ENCOURAGE PRACTICES THAT WOULD PREVENT FURTHER EROSION AS WELL AS PROTECTION TO OUR CUT BANKS AND AREAS OF POTENTIAL SILT ALONG ALL STREAMS. SUCH PROTECTION WILL AID IN FLOOD CONTROL EFFORTS AND ENHANCE FISH AND WILDLIFE HABITAT.

WE RECOMMEND THAT ALL POSSIBLE EFFORTS BE MADE TO ENCOURAGE THE RETENTION AND ENHANCEMENT OF NATURAL GROWTH ALONG RIVER AND STREAM BANKS TO HELP PREVENT EROSION. SUCH BUFFER ZONES NOT ONLY PROVIDE PROTECTION FROM LOSS OF SOIL, BUT PROVIDE NATURAL HABITATS FOR FISH AND WILDLIFE.

FISH AND WILDLIFE

In recognition of the fact that both residents and visitors highly value the fish and wildlife resources of the area, and further realizing both their economic and aesthetic values as part of the natural beauty of the area---

WE THEREFORE RECOMMEND THAT IN ALL PLANNING AND DEVELOPMENT EFFORTS THESE VALUES BE PROTECTED AND ENHANCED.

WE RECOMMEND THAT THE STATE AND FEDERAL FISH AND GAME AGENCIES ACTIVELY PURSUE A POLICY OF MAINTAINING OPTIMAL SALMON AND LOCAL SPORT FISH POPULATIONS IN THE METHOW BASIN.

To help accomplish this we --

RECOMMEND THAT THE FEDERAL GOVERNMENT MAKE PROVISIONS TO FULLY UTILIZE THE FACILITIES OF THE WINTHROP FISH HATCHERY.

The Methow River is an important migratory river for salmon and local sport fishing. The salmon represents an important economic value to the people of the state. Portions of the river experience extremely low flows and future water demands will accentuate this problem. As a possible solution —

WE RECOMMEND THAT THE STATE INSTALL PUMPING STATIONS TO PUMP IRRIGATION WATER FROM THE METHOW RIVER INTO THE TWISP AND CHEWACK RIVER IRRIGATION SYSTEMS THUS HAVING THE EFFECT OF REVERSING THE FLOW AND PROVIDING AN ADEQUATE WATER SUPPLY DURING LOW FLOW PERIODS FOR THESE TWO RIVERS. WE BELIEVE THIS WOULD BE A MORE SATISFACTORY AND ECONOMICAL SOLUTION THAN THE ALTERNATIVE OF HAVING THE STATE PURCHASE WATER RIGHTS FOR MAINTENANCE OF A FISHERIES VALUE.

Some public access to the Methow River is needed for both local residents and visitors, but a careful balance must be maintained so as not to deplete the fish resource.

WE RECOMMEND DEVELOPMENT OF A LIMITED AMOUNT OF ACCESS TO THE METHOW RIVER IN AREAS THAT WILL NOT UPSET THE AESTHETIC AND ENVIRONMENTAL QUALITY OF THE AREA AND ITS RESOURCE. CONCERN SHOULD BE GIVEN TO OVERUSE AND DEPLETION OF THE FISHERY RESOURCES, YET RECOGNITION MUST BE MADE OF THE BURDEN PLACED ON PRIVATE LANDOWNERS WITH INCREASED PUBLIC USE.

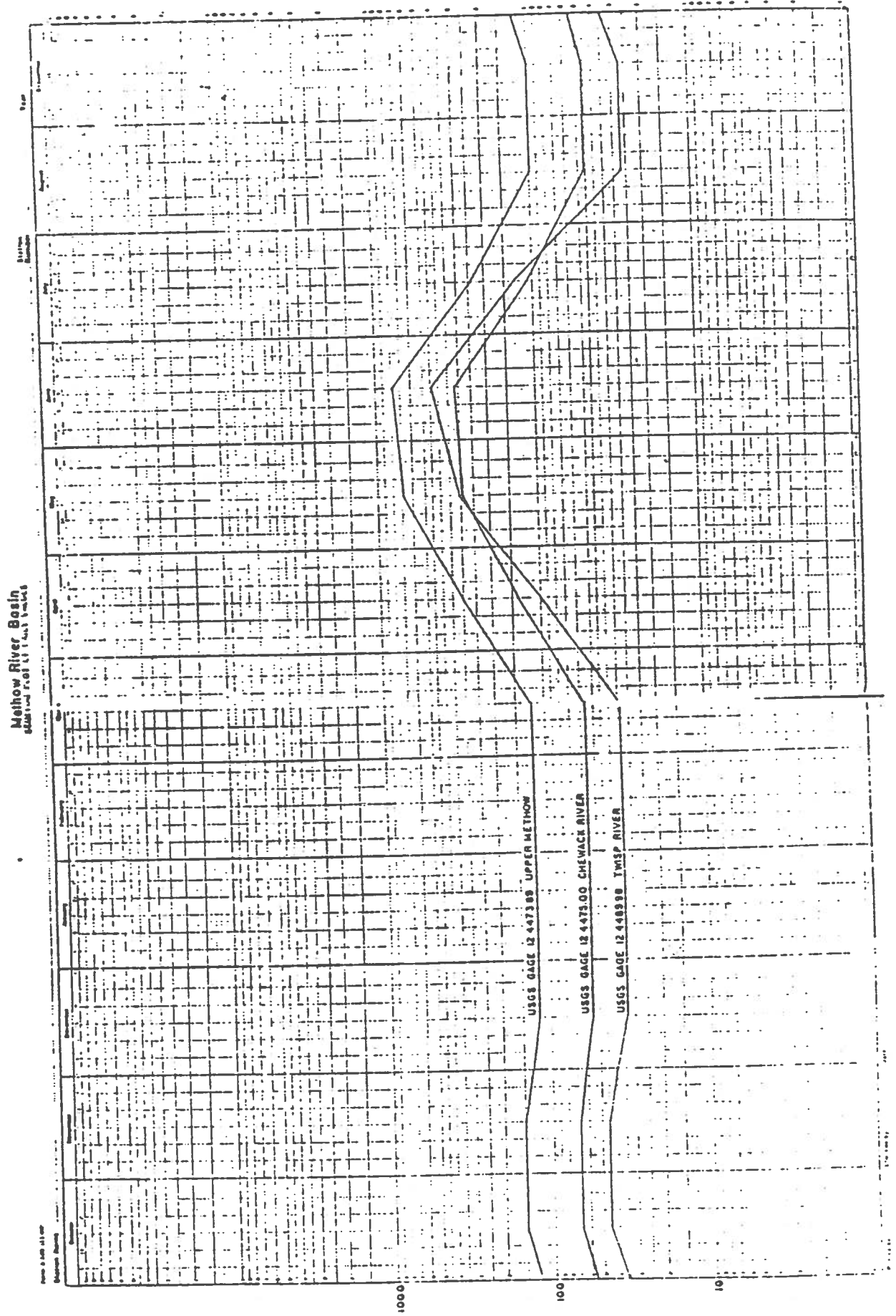
PRIORITIES FOR FUTURE WATER USES

Because demands for water uses in the future may exceed the supply, we deem it important to establish a priority for future uses. This priority listing reflects the opinions and values of Methow valley residents as taken from the results of a questionnaire mailed to them.

THEREFORE, WE RECOMMEND THAT THE FOLLOWING FUTURE WATER USE PRIORITIES BE ESTABLISHED AND RECOGNIZED BY ALL COUNTY, STATE, AND FEDERAL AGENCIES INVOLVED IN WATER RESOURCE PLANNING. PRIORITIES LISTED ARE IN ORDER OF IMPORTANCE AS REFLECTED BY RESIDENTS OF THE METHOW BASIN:

1. Domestic and municipal uses
2. Irrigation
3. Fish and wildlife
4. Water based recreation
5. Industrial development
6. Mining

FIGURE 1
 BASE FLOW HYDROGRAPHS FOR SELECTED STATIONS



DISCHARGE IN CUBIC FEET PER SECOND

FIGURE 1 (CONT.)
BASE FLOW HYDROGRAPHS FOR SELECTED STATIONS

Methow River Basin
 SECTION FIVE OF MANY VOLUMES

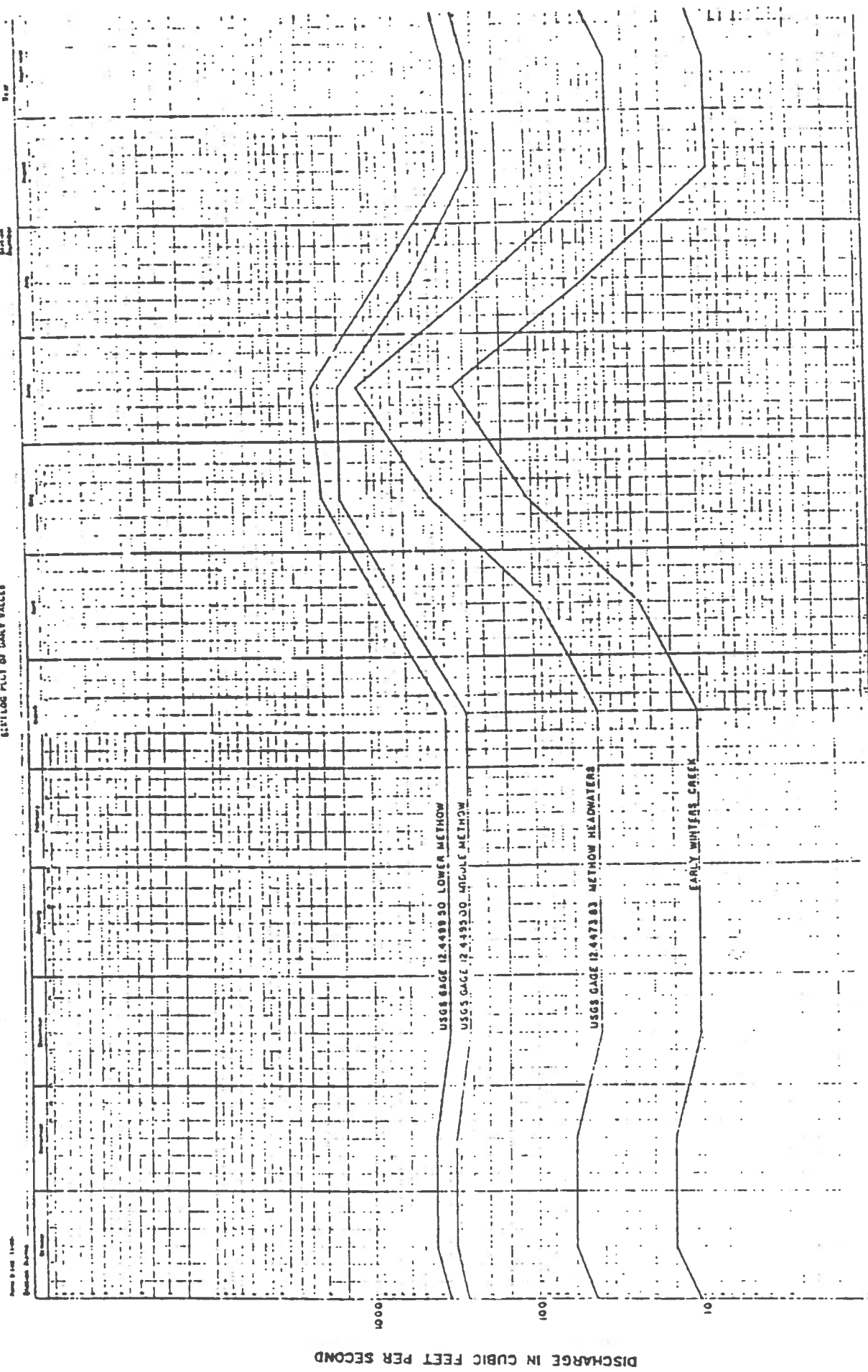


Table 3

LAND CLASSIFICATIONS 1/
(Methow River Basin)
(in acres)

Irrigated Lands		Dry 2/ Crop	Range	Woodlands	Grazing Woodlands	Total
Hay and Pasture	Orchard					
11,550	2,800	9,200	113,800	24,560	21,825	
TOTALS	14,350	9,200	113,800	24,560	21,825	173,735

1/ Based on revised data from the U.S. Soil Conservation Service, October 1976. Towns, parks, and commercial lands are not included in this chart.

Additional information on the irrigated acreage in each of the 15 subbasins is presented in Table 15, page 64-68.

2/ Dry crop lands include total lands in crops and total idle crop lands.

3/ The figures in this table are rounded off to appropriate levels of accuracy.

EXISTING RESERVOIRS
(Methow River Basin)

Reservoir Name	Stream Location	Storage (acre-ft)	Potential Storage	Surface Area (acres)	Data Source
Patterson	Little Wolf Creek	5,000	-	142.9	Lakes of Washington,
Pearrygin	Chewack River (diversions)	1,000	-	192.0	Vol. II
Alta	None	lake level maint.	-	187.4	Eastern Washington
Davis Lake	Bear Creek Drainage	approx. 200	-	-	-

Table 5

POTENTIAL RESERVOIR SITES
(Methow River Basin)

Watershed Number and Name	Reservoir Name	Location (Sec., T., R.)	Dam Height (feet)	Annual Yield (acre-ft)	Storage Increment (acre-ft)	Surface Area (acres)	Drainage Area (acres)
8-1 Upper Chewack Creek	Black Lake	25 mi N. of Winthrop	55	3,050	5,200	144	2,435
8-3 Lower Chewack Creek	Pearrygin Lake	Sec. 36, T.35N., R.21E	17	2,900	3,000	320	7,100
8-4 Middle Methow River	Patterson Lake	Sec. 8, T.34N., R.21E	18	17,300	2,250	175	20,750
8-7 Twisp River	Slate Lake	14 mi W. of Winthrop	40	480	1,100	44	384
8-7 Twisp River	Middle Oval Lake	16 mi W. of Carlton	30	1,330	1,500	78	1,070
8-7 Twisp River	West Oval Lake	16 mi. W. of Carlton	25	375	520	59	300
8-7 Twisp River	Black Pine Lake	9 mi SW of Twisp	10	96	100	25	115
8-7 Twisp River	Louis Lake	20 mi W. of Twisp	14	7,100	880	120	2,840
8-7 Twisp River	North Lake	20 mi W. of Winthrop	35	3,200	1,000	49	1,280
8-8 East Lower Methow	French Creek	Sec. 28, T.31N., R.23E.	50	1,700	1,725	115	14,282
8-9 West Lower Methow	Libby Lake	10 mi W. of Carlton	22	190	460	37	225
8-9 West Lower Methow	Upper Eagle Lake	12 mi W. of Carlton	15	460	570	58	550
8-9 West Lower Methow	Eagle Lake	11 mi SW of Carlton	35	1,140	1,020	44	1,370
8-9 West Lower Methow	Crater Lake	10 mi W. of Carlton	44	1,500	2,800	80	1,800
8-9 West Lower Methow	Sunrise Lake	16 mi W. of Methow	17	230	790	44	280

Table 6

FURTHER APPROPRIATION

DESCRIPTION: Methow River above Boulder Creek
(Methow Headwaters)

USGS GAGE: 12.4473.83
RIVER MILE: 65.3

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge (Q_2) ¹	75	66	59	50	51	80	426	1,842	2,409	788	141	65
Base flow (Q_b) ²	60	60	42	42	42	42	90	430	1,160	180	32	32
$Q_2 - Q_b$ ³	15	06	17	8	9	38	336	412	1,249	608	109	33

¹Equivalent to natural monthly flows for the 1904-1919, 1961-1975 period of record.

²Base flow for the purpose of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to appropriate levels of accuracy.

³As a result of a negligible present consumptive use impact, the flow available for consumptive use for this reach is essentially the one in two year discharge minus base flow.

Table 7

FURTHER APPROPRIATION

USGS GAGE: 12.4473.89
RIVER MILE: 50.2

DESCRIPTION: Methow River above Chewack River
(Upper Methow)

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge (Q ₂) ¹	194	196	164	146	149	200	573	1474	1807	823	303	176
Base flow (Q _b) ²	150	150	120	120	120	120	300	690	790	240	100	100
Q ₂ - Q _b ³	44	46	44	26	29	80	273	784	1017	583	203	76

¹Equivalent to natural flow based on 1904-1975 period of record.

²Base flow for the purposes of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to appropriate levels of accuracy.

³As a result of a negligible present consumptive use impact, the flow available for consumptive use for this reach is essentially the one in two year discharge minus base flow.

Table 8

FURTHER APPROPRIATION

DESCRIPTION: Chewack River near Winthrop
 USGS GAGE: 12.4475.00
 RIVER MILE: 8.7

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge (Q_2) ¹	77	78	66	59	60	80	258	1099	1612	418	117	70
Base flow (Q_b) ²	68	68	56	56	56	56	140	290	320	110	47	47
$Q_2 - Q_b$ ³	9	10	10	3	4	24	118	809	1292	308	70	23

¹Equivalent to natural monthly stream flow for 1904-1919, 1961-1975 period of record.

²Base flow for the purposes of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to appropriate levels of accuracy.

³As a result of a negligible present consumptive use impact, the flow available for consumptive use for this reach is essentially the one in two year discharge minus base flow.

Table 9

FURTHER APPROPRIATION

USGS GAGE: 12.4495.00
RIVER MILE: 40.0

DESCRIPTION: Methow River at Twisp (Middle Methow)

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge (Q_2) ¹	355	413	357	296	297	369	1257	4497	4436	1455	483	321
Base flow (Q_b) ²	320	320	260	260	260	260	650	1500	1500	500	220	220
$Q_2 - Q_b$	35	93	97	36	37	139	607	2997	2936	955	263	101
Estimate of present consumptive use impact ³	-15	-8	-2	0	0	0	17	70	83	78	71	46
Flow available for consumptive use ⁴	50	101	99	36	37	139	590	2927	2853	877	192	55

¹Equivalent to natural flow based on 1904-1919, 1961-1975 period of record.

²Base flow for purposes of water availability is taken to be the mid-month (15th) base flow.

³From generated data. A negative consumptive use impact is an indication of return flows.

⁴Subject to base flow and existing rights.

Table 10

FIRM SUPPLY AVAILABLE¹

DESCRIPTION: Methow River at Twisp (Middle Methow) USGS GAGE: 12.4495.00
RIVER MILE: 40.0

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Flow in ten year Discharge ($Q_{1/10}$) ²	194	236	209	200	194	209	522	2549	2423	703	287	208
Base flow (Q_b) ³	320	320	260	260	260	260	650	1500	1500	500	220	220
$Q_{1/10} - Q_b$	-126	-84	-51	-60	-66	-51	-128	1049	923	203	67	-12
Estimate of present consumptive use impact ⁴	-15	-8	-2	0	0	0	17	70	83	78	71	46
Flow available for consumptive use ⁵	0 (-111)	0 (-76)	0 (-49)	0 (-60)	0 (-66)	0 (-51)	0 (-145)	979	840	125	0 (-4)	0 (-58)

¹Firm supply is a supply which will be available 100 percent of the time 9 years out of 10 years.

²The one in ten years low discharge is that flow which is exceeded 9 years out of 10, on the average, for the given month, based on the 1920-1962 period of record.

³Base flow for the purposes of water availability is taken to be the mid-month (15th) base flow.

⁴A negative consumptive use impact is an indication of return flows.

⁵Subject to base flow and existing rights.

Table 11

FURTHER APPROPRIATION

USGS GAGE: 12.4489.98
RIVER MILE: 0.3

DESCRIPTION: Twisp River near Twisp

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year ¹ Discharge (Q ₂)	59	60	49	43	44	62	248	1003	1330	428	97	53
Base flow (Q _b) ²	45	45	34	34	34	34	100	300	440	130	27	27
Q ₂ - Q _b ³	14	15	15	9	10	18	148	703	890	298	70	26

¹Equivalent to natural flow based on 1904-1919, 1961-1975 period of record.

²Base flow for the purposes of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to appropriate levels of accuracy.

³As a result of a negligible present consumptive use impact, the flow available for consumptive use for this reach is essentially the one in two year discharge minus base flow.

Table 12

FURTHER APPROPRIATION

DESCRIPTION: Methow River near Pateros (Lower Methow) USGS GAGE: 12.4499.50
RIVER MILE: 6.7

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year ¹ Discharge (Q ₂)	491	526	458	400	401	497	1448	4954	5443	1862	598	414
Base flow (Q _b) ²	425	425	350	350	350	350	860	1940	2220	800	300	300
Q ₂ - Q _b	66	101	108	50	51	147	588	3014	3223	1062	298	114
Estimate of present consumptive use impact ³	-29	-15	-4	0	0	0	23	92	107	97	84	52
Flow available for consumptive use ⁴	95	116	112	50	51	147	565	2922	3116	965	214	62

¹Equivalent to natural flow based on 1904-1975 period of record.

²Base flow for purposes of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to appropriate levels of accuracy.

³From data based on equivalent "natural" monthly flows. A negative consumptive use impact is an indication of return flows.

⁴Subject to base flow and existing rights.

Table 13

FIRM SUPPLY AVAILABLE¹

DESCRIPTION: Methow River near Pateros (Lower Methow) USGS GAGE: 12.4499.50
RIVER MILE: 6.7

DATE: 5/18/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP.
One in ten year low ² Discharge ($Q_{1/10}$)	316	336	301	292	282	296	648	2944	3038	910	352	278
Base flow (Q_b) ³	425	425	350	350	350	350	860	1940	2220	800	300	300
$Q_{1/10} - Q_b$	-109	-89	-49	-58	-68	-54	-212	1004	821	110	52	-22
Estimate of present consumptive use impact ⁴	-29	-15	-4	0	0	0	23	92	107	97	84	52
Flow available for consumptive use ⁵	0 (-80)	0 (-74)	0 (-45)	0 (-58)	0 (-68)	0 (-54)	0 (-235)	912	711	13	0 (-32)	0 (-74)

¹Firm supply is a supply which will be available 100 percent of the time 9 years out of 10 years.

²The one in ten year low discharge is that flow which is exceeded 9 years out of 10, on the average, for the given month, based on the 1904-1919; 1961-1975 period of record.

³Base flow for the purposes of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to appropriate levels of accuracy.

⁴A negative consumptive use impact is an indication of return flows.

⁵Subject to base flow and existing rights.

Table 14

FURTHER APPROPRIATION

USGS GAGE:
RIVER MILE:

DESCRIPTION: Early Winters Creek

DATE: 9/14/76

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Estimated Natural ¹ Monthly Flow (Q_2)	44	36	36	29	29	29	58	511	584	234	102	58
Base Flow (Q_b) ²	15	15	10	10	10	10	23	108	290	45	8	11
$Q_2 - Q_b$ ³	29	21	26	19	19	19	35	403	294	189	94	47

¹One in two year discharge data are not available.

²Base flow for purpose of water availability is taken to be the mid-month (15th) base flow. The figures are rounded off to an appropriate level of accuracy.

³As a result of a negligible consumptive use impact, the flow available for consumptive use for this reach is essentially the one in two year discharge minus base flow.

Table 15

PRINCIPAL TRIBUTARY STREAMS¹
(Current and Proposed Status)
Methow River Basin

Stream	Current Status	Proposed Status ¹	Remarks
Early Winters	Hold	Open all year	Early Winters Creek provides 28 percent of annual flow of Upper Methow River
Wolf Creek	Incomplete adjudication	Closed all year**	RCW 90.03.110 et. seq. RCW 90.03.290
Bear Creek (Davis Lake)	Adjudicated	Closed all year	RCW 90.03.110 et. seq. RCW 75.20.050 RCW 90.03.290
Thompson Creek	Incomplete Adjudication	Closed all year**	RCW 90.03.110 et. seq. RCW 90.03.290
Beaver Creek	Adjudicated	Closed May 1 to October 1**	RCW 90.03.110 et seq. RCW 90.03.290
Alder Creek		Closed all year	
Benson Creek	Pre-1917 Adjudication between parties (Closure)	Closed all year**	
Texas Creek		Closed all year*	
Libby Creek	Adjudicated	Closed May 1 to October 1**	RCW 90.03.110 et. seq. RCW 90.03.290
Cow Creek		Closed May 1 to October 1	
Gold Creek	Adjudicated	Closed May 1 to October 1**/**	RCW 90.03.110 et. seq. RCW 90.03.290
McFarland Creek	Adjudicated	Closed May 1 to October 1	RCW 90.03.110 et. seq. RCW 90.03.290
Squaw Creek		Closed May 1 to October 1	
Black Canyon Creek	Adjudicated	Closed May 1 to October 1	RCW 90.03.110 et. seq. RCW 90.03.290
French Creek		Closed May 1 to October 1**/**	

¹ All future rights are subject to existing rights.

* Exception for single domestic and stock water.

** Closed all year. *** Closed all year except storage capacity within the basin.

Table 16

ESTIMATED "NATURAL" MEAN MONTHLY FLOW, RIGHTS, AND USE IN CFS FOR 15 STREAMS
(Methow River Basin)

NAME	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Early Winters Creek	44	36	36	29	29	29	58	511	584	234	102	58
Total Rights/Month <u>1/</u>							0.23	0.23	0.23	0.23	0.23	0.23
Use Rights/Month <u>2/</u>							0.05	0.19	0.23	0.22	0.20	0.13
Actual Use/Month <u>3/</u>							0.28	1.11	1.32	1.24	1.14	0.73
Claims Registration							100.27	100.27	100.27	100.27	100.27	100.27
Probable Rights Under Claims							0.62	0.62	0.62	0.62	0.62	0.62
Acres Under Rights <u>5/</u>							7.5	7.5	7.5	7.5	7.5	7.5
Wolf Creek	7.9	7.9	7.9	7.9	7.9	12	28	159	147	56	24	12
Total Rights/Month							60.45	60.45	60.45	60.45	60.45	60.45
Use Rights/Month							12.70	50.78	60.45	56.82	51.99	33.25
Actual Use/Month <u>3/</u>							0.92	3.68	4.38	4.12	3.77	2.41
Claims Registration							23.01	23.01	23.01	23.01	23.01	23.01
Acres Under Rights							677.40	677.40	677.40	677.40	677.40	677.40
Bear Creek	0.8	0.8	0.8	0.8	1.2	2.5	6.2	17	11	4.1	2.0	1.2
Total Rights/Month							3.67	3.67	3.67	3.67	3.67	3.67
Use Rights/Month							0.77	3.08	3.67	3.45	3.16	2.02
Actual Use/Month <u>3/</u>							0.27	1.08	1.28	1.20	1.10	0.70
Claims Registration							0.49	0.49	0.49	0.49	0.49	0.49
Acres Under Rights							182.20	182.20	182.20	182.20	182.20	182.20
Thompson Creek	1.4	1.6	1.9	2.2	2.7	5.9	17	19	7.0	3.2	1.6	1.1
Total Rights/Month							2.13	2.13	2.13	2.13	2.13	2.13
Use Rights/Month							0.45	1.79	2.13	2.00	1.83	1.17
Actual Use/Month <u>3/</u>							2.26	9.02	10.74	10.10	9.24	5.91
Claims Registration							1.52	1.52	1.52	1.52	1.52	1.52
Acres Under Rights							275.0	275.0	275.0	275.0	275.0	275.0

Table 16 (Continued)

ESTIMATED "NATURAL" MEAN MONTHLY FLOW, RIGHTS, AND USE IN CFS FOR 15 STREAMS
(Methow River Basin)

NAME	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Squaw Creek	0.3	0.4	0.4	0.5	0.6	1.3	3.8	4.2	1.6	0.7	0.4	0.2
Total Rights/Month							0.127	0.127	0.127	0.127	0.127	0.127
Use Rights/Month							0.03	0.11	0.127	0.12	0.11	0.07
Actual Use/Month <u>3/</u>							0.13	0.50	0.60	0.56	0.52	0.33
Claims Registration							84.11	84.11	84.11	84.11	84.11	84.11
Acres Under Rights							44.75	44.75	44.75	44.75	44.75	44.75
Black Canyon Creek	0.4	0.5	0.6	0.7	0.9	2.0	5.8	6.3	2.3	1.1	0.5	0.4
Total Rights/Month							2.07	2.07	2.07	2.07	2.07	2.07
Use Rights/Month							0.43	1.74	2.07	1.95	1.78	1.14
Actual Use/Month <u>3/</u>							0	0	0	0	0	0
Claims Registration							0	0	0	0	0	0
Acres Under Rights							103.0	103.0	103.0	103.0	103.0	103.0
French Creek	0.4	0.5	0.6	0.7	0.9	2.0	5.8	6.3	2.3	1.1	0.5	0.4
Total Rights/Month							0.02	0.02	0.02	0.02	0.02	0.02
Use Rights/Month							0.004	0.02	0.02	0.02	0.02	0.01
Actual Use/Month <u>3/</u>							0	0	0	0	0	0
Claims Registration							0.34	0.34	0.34	0.34	0.34	0.34
Acres Under Rights							0	0	0	0	0	0

Footnotes

- 1/ Total rights per month are principally the irrigation season rights.
- 2/ Use Rights/Month are determined by multiplying the total rights/month by the ratio of the estimated present consumptive use impact to the maximum consumptive use impact for each month. The values used were as follows: April, 0.21; May, 0.84; June, 1.0; July, 0.94; August, 0.86; and September, 0.55.

Table 16 (Continued)

ESTIMATED "NATURAL" MEAN MONTHLY FLOW, RIGHTS, AND USE IN CFS FOR 15 STREAMS
(Methow River Basin)

Footnotes (Continued)

3/ Actual Use/Month is determined by dividing the actual irrigated acreage data supplied by the Soil Conservation Service (October 1976) by 50 (assuming a water duty of 1 cfs for 50 acres) and multiplying the result by the ratios defined in 2/ above. The SCS acreage figure upon which the above calculations are based are presented below:

Early Winters Creek	66 acres
Wolf Creek	219 acres*
Bear Creek	64 acres**
Thompson Creek	537 acres***
Beaver Creek (including Frazer Creek)	717 acres
Alder Creek	0 acres (from aerial photography)
Benson Creek	118 acres
Texas Creek	24 acres
Libby Creek	279 acres
Cow Creek	3 acres
Gold Creek	88 acres
McFarland Creek	193 acres
Squaw Creek	30 acres
Black Canyon Creek	0 acres
French Creek	0 acres

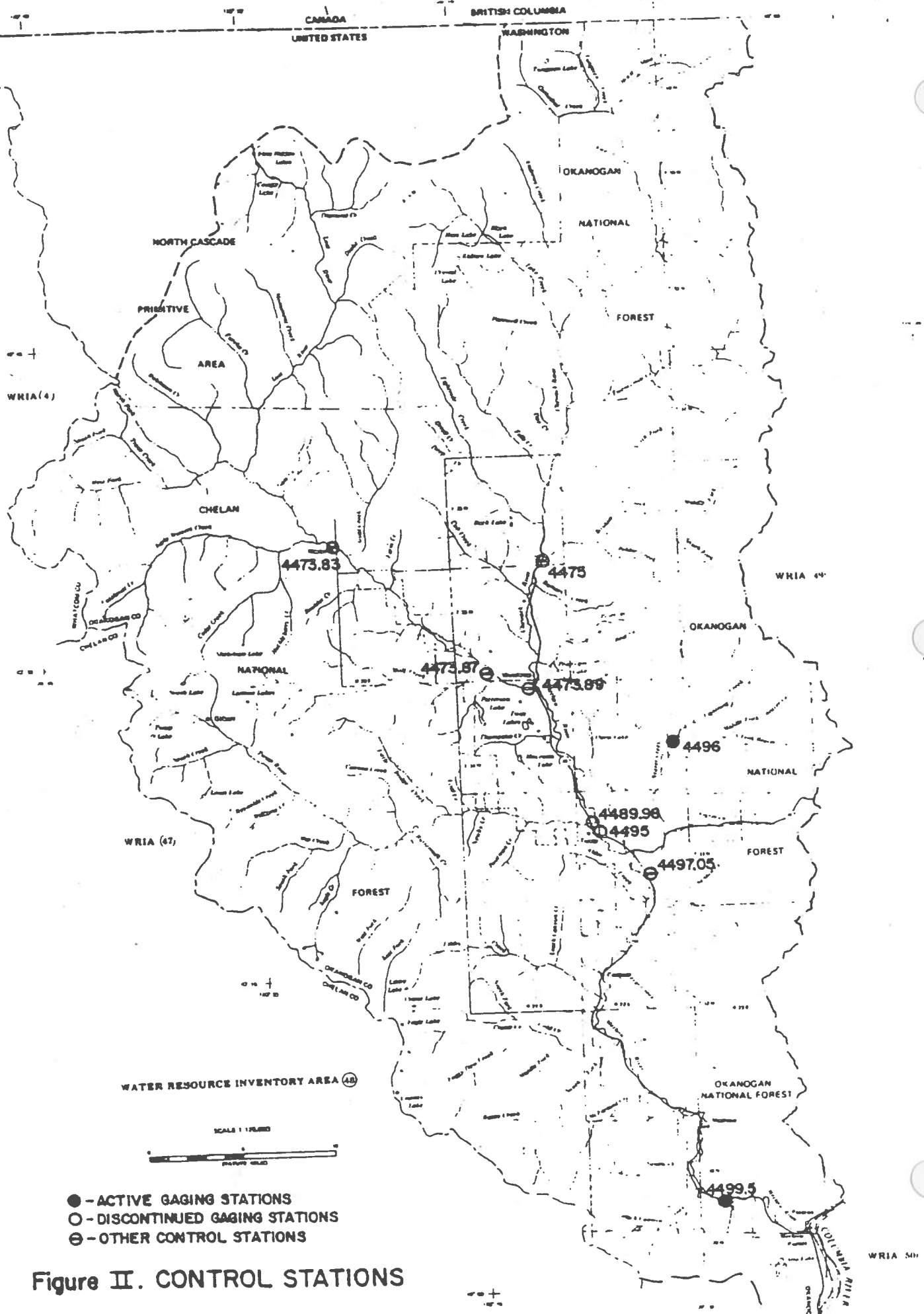
*This includes 175 acres that are irrigated from the Wolf Creek Ditch but which lie in the Thompson Creek drainage basin.

**The 64 acres consist entirely of the Bear Creek Golf Course.

***The 537 acres does not include 175 acres within the basin that are irrigated from the Wolf Creek Ditch.

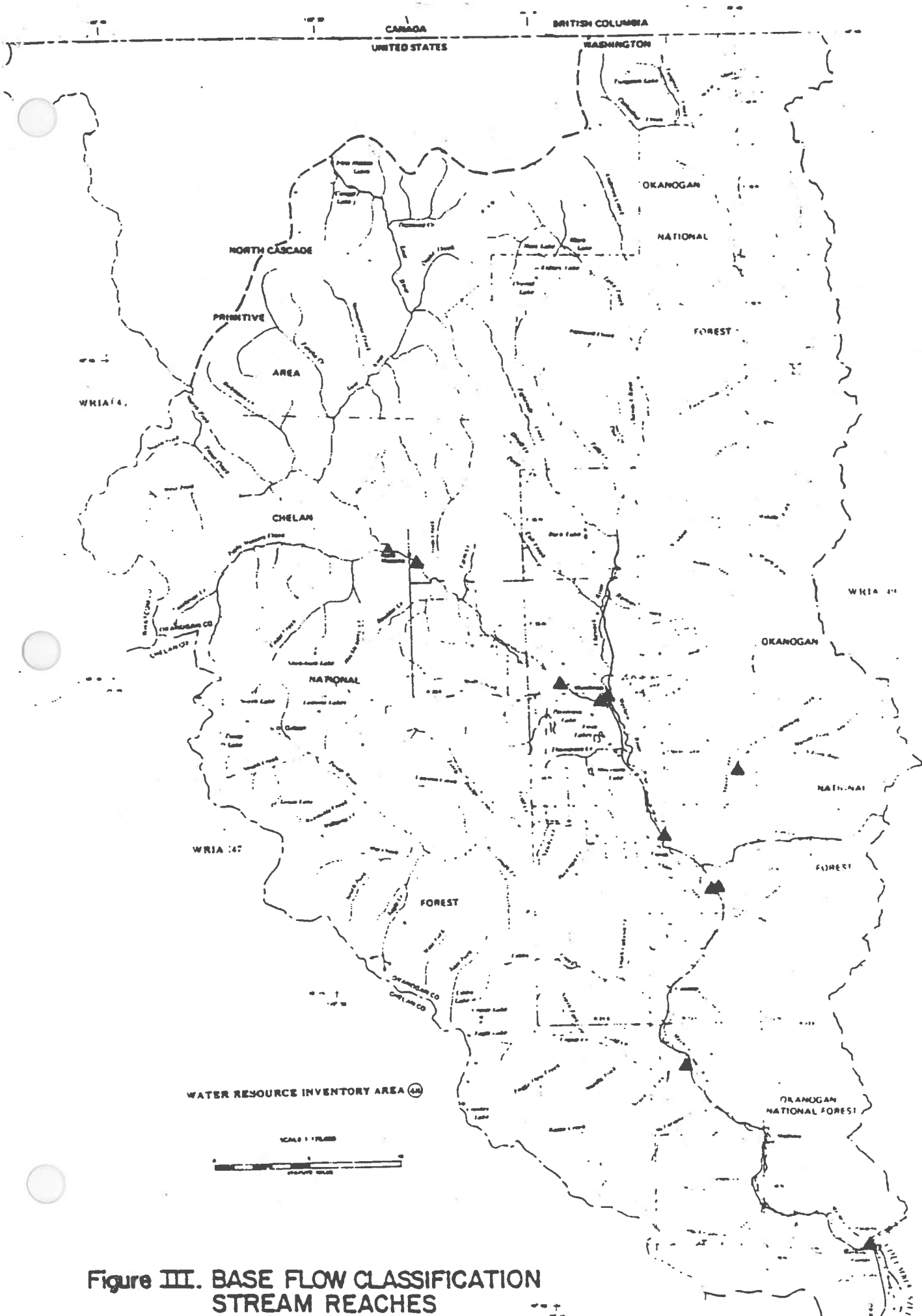
4/ Quantification of existing rights relating to claims registered under RCW 90.14.050 is uncertain because not all claims represent valid water rights nor in many cases do the claims accurately reflect the actual extent of right. (For additional comment, see pages 19 and 20 of this document.)

The figure under Probable Rights Under Claims was developed by George Maddox for the Early Winters Creek Subbasin. Mr. Maddox is a private consultant in the water resource field.



- - ACTIVE GAGING STATIONS
- - DISCONTINUED GAGING STATIONS
- ⊖ - OTHER CONTROL STATIONS

Figure II. CONTROL STATIONS



**Figure III. BASE FLOW CLASSIFICATION
STREAM REACHES**

WRIA 14C

APPROPRIATION OF WATER FOR IRRIGATION PURPOSES

Appropriation of water for irrigation purposes will generally be guided by the criteria set forth in the following:

- A. In the field investigation of an application the quantities of water allocated, as expressed in gallons per minute (gpm) or cubic feet per second (cfs) and acre-feet per year will be determined and specified in the report of findings.
- B. To the extent possible, the intent of the applicant in the development of his irrigation program will be determined and be used as the basis for the water allocated by the permit.
- C. The field examiner shall determine the maximum acreage to be irrigated under the proposed project, as well as the segregation of this acreage into different crops. If an annual rotation program is to be followed by the applicant, the field examiner shall determine the breakdown of crops and associated acreages. Where there is uncertainty as to the rotation program, the field examiner shall allocate for what, in his judgment, might be expected to be the maximum use of water.
- D. Net irrigation water requirements for each crop shall be determined from the two-year frequency of occurrence table set forth in Station Circular 512 entitled "Irrigation Water Requirements Estimates for Washington," published by Washington Agricultural Experiment Station, College of Agriculture, Washington State University, November 1969. This frequency of occurrence is selected in recognition of the facts that the values reported (a) do not take into account those waters available to the crops at the commencement of the irrigation season as soil moisture storage and (b) are based upon maximum crop production where water is not the limiting factor.
- E. Water shall be allocated for the net irrigation water requirement of the crops, as well as for reasonable delivery and application losses. The following irrigation efficiencies shall be used for computing total irrigation water needs:
 1. Sprinkler systems (pump at source of supply): 70 percent.
 2. Rill irrigation (at farm headgate): 65 percent.
- F. The rate of diversion or withdrawal is generally a maximum of 10 gpm per acre. Each variance must be tenable and must be explained on the report of findings preliminary to permitting action.
- G. The total annual allocation, as expressed in acre-feet per year, shall be calculated from the acreage to be irrigated and the type of each crop as adjusted (increased) by appropriate irrigation efficiency, taking into consideration subparagraph C and D of this section.

- H. In all instances, the maximum number of acres to be irrigated in any calendar year will be the controlling consideration in the allocation of water for irrigation purposes. This acreage will be associated with a specific parcel of land described on the permit.
- I. Pre- and post-irrigation will be considered to be beneficial irrigation uses. Water requirements for pre-irrigation purposes will be included in the net irrigation determination.
- J. The use of water for irrigation is limited to the amount of water, within the terms of the right, which can be beneficially applied to the number of acres identified in the water right. Acreage cannot be enlarged without acquiring an additional water right therefore.

TRANSMITTAL OF RULES ADOPTED

FROM: DEPARTMENT OF ECOLOGY
(Name of Agency)

TO: CODE REVISER
LEGISLATIVE BLDG. (Southwest Corner, Ground Floor)
OLYMPIA 98504

The enclosed rules Permanent rules . being Order No. DE 76-37
Emergency rules

relating to (Name of rules or description of subject matter)

a regulation for the management of the water resources of the Methow River Basin. It consists, among others, of elements pertaining to the establishment of base flows to protect instream values, restrictions or closure of certain tributary streams to further appropriation and allocation of water for future appropriation by use category; creating chapter 173-548 WAC.

(ALTERNATIVE A. Use only for adoption of permanent rules)

pursuant to Notice No. 7237 ^① filed with the code reviser on 11/2/76 & ^② & 7323 on 12/21/76 were regularly adopted as permanent rules of St. Martin's College this agency at Lacey, Washington on 12/28/76 and are herewith (place) (date) filed in the office of the code reviser pursuant to chapter 34.04 RCW. The effective date of such rules shall be _____ ^③

(ALTERNATIVE B. Use only for adoption of emergency rules)

pursuant to its finding in the attached administrative order, that the immediate adoption of these rules is necessary for the preservation of the public health, safety, or general welfare and that observance of the requirements of notice and opportunity to present views on the proposed action would be contrary to the public interest, were regularly adopted as emergency rules of this agency at _____ on _____ and (place) (date) are herewith filed in the office of the code reviser pursuant to chapter 34.04 RCW.

The undersigned hereby certifies that the requirements of chapter 34.04 RCW and of the Open Public Meetings Act of 1971, chapter 42.30 RCW have been fulfilled.

Dated this 28th day of December 1976.

STATE OF WASHINGTON
FILED

DEC 28 1976

CODE REVISER'S OFFICE

DIVISION # _____ FILE # _____

DEPARTMENT OF ECOLOGY
(AGENCY)

By John A. Biggs
John A. Biggs
Director
Title _____

- ① Notice number as appears on the copy of notice returned to you by reviser's office (if proceedings were continued, use no. of last notice)
- ② Stamped date as appears on the copy of notice returned to you by reviser's office (if proceedings were continued, use date of last notice)
- ③ Unless a later date is specified in this order or is prescribed in another statute, rules are effective 30 days after filing:
RCW 34.04.040. Leave this space blank except in such special cases.
[Order 9, filed 9/25/74, eff. 10/25/74] [Form CR-2: Rev. 9/21/74]

Water Resources Program in
the Methow River Basin, WRIA-48

Creating Chapter 173-548 WAC

(Adopted 12-28-76)

WAC 173-548-010 GENERAL PROVISION. These rules, including any subsequent additions and amendments, apply to waters within and contributing to the Methow River Basin, WRIA 48 (See WAC 173-500-040). Chapter 173-500 WAC, the general rules of the Department of Ecology for the implementation of the comprehensive water resources program, applies to this chapter 173-548 WAC.

WAC 173-548-020 ESTABLISHMENT OF BASE FLOWS. (1) Base flows are established for stream management units with monitoring to take place at certain control points as follows:

Stream Management Unit Information

Stream Management Unit Name, Control Station Name and Number	Control Station Location by River Mile, Section, Township, Range	Affected Stream Reach (includes tributaries)
<u>Lower Methow</u>		
Methow R. nr. Pateros (12.4499.50)	6.7 20-30-23E	Methow River confluence with Wells Pool to confluence with Twisp River.
<u>Middle Methow</u>		
Methow R. nr. Twisp (12.4495.00)	40.0 17-33-22E	Methow River from confluence with Twisp River to confluence with Chewack River.
<u>Upper Methow</u>		
Methow R. nr. Winthrop (12.4473.89)	50.2 2-34-21E	Methow River from confluence with Chewack River to confluence with Little Boulder Creek and including Little Boulder Creek.
<u>Methow Headwaters</u>		
Methow R. at Little Boulder Cr. (12.4473.83)	65.3 25-36-19E	Methow River from confluence with Little Boulder Creek to headwaters.
<u>Early Winters Creek</u>		
Early Winters Cr. near Mazama	27-36-19E	Early Winters Creek from confluence with Methow River to headwaters.

Chewack River

Chewack R. nr.
Boulder Creek
(12.4475.00)

8.7
35-36-21E

Chewack River
confluence with
Methow River to
headwaters.

Twisp River

Twisp R. nr.
Twisp
(12.4489.98)

0.3
7-33-22E

Twisp River from
confluence with
Methow River to
headwaters.

(2) Base flows established for the stream management units in WAC 173-548-020(1) are as follows:

See following page for Table.

Base Flows in the Methow River
(All Figures in Cubic Feet Per Second)

Month	Day	Lower Methow (12.4499.50)	Middle Methow (12.4495.00)	Upper Methow (12.4473.89)	Methow Headwaters (12.4473.83)	Early Winters Creek	Chewack River (12.4475.00)	Twisp River (12.4489.98)
Jan	1	350	260	120	42	10	56	34
	15	350	260	120	42	10	56	34
Feb.	1	350	260	120	42	10	56	34
	15	350	260	120	42	10	56	34
Mar.	1	350	260	120	42	10	56	34
	15	350	260	120	42	10	56	34
Apr.	1	590	430	199	64	14	90	60
	15	860	650	300	90	23	140	100
May	1	1,300	1,000	480	130	32	215	170
	15	1,940	1,500	690	430	108	290	300
Jun.	1	2,220	1,500	790	1,160	290	320	440
	15	2,220	1,500	790	1,160	290	320	390
Jul.	1	2,150	1,500	694	500	125	292	130
	15	800	500	240	180	45	110	58
Aug.	1	480	325	153	75	20	70	27
	15	300	220	100	32	8	47	27
Sep.	1	300	220	100	32	8	47	27
	15	300	220	100	32	8	47	27
Oct.	1	360	260	122	45	11	56	35
	15	425	320	150	60	15	68	45
Nov.	1	425	320	150	60	15	68	45
	15	425	320	150	60	15	68	45
Dec.	1	390	290	135	51	12	62	39
	15	350	260	120	42	10	56	34

(3) Base flow hydrographs, as represented in Figure 1 in the document entitled "Water Resources Management Program, Methow River Basin" dated 1976, shall be used for definition of base flows on those days not specifically identified in WAC 173-548-020(2) and WAC 173-548-030.

(4) All rights hereafter established shall be subject to the base flows established in WAC 173-548-020(1) through (3), except as provided under WAC 173-548-030 herein.

(5) Future appropriations of water which would conflict with base flows shall be authorized, by the director, only in those situations when it is clear that overriding considerations of the public interest will be served.

WAC 173-548-030 FUTURE ALLOCATIONS--RESERVATION OF SURFACE WATER FOR BENEFICIAL USES. (1) The department determines that there are surface waters available for appropriation from the stream management units specified in the amount specified in cubic feet per second (cfs) during the time specified as follows:

(a) Maximum surface water available for future allocation from the indicated reach is as follows:

Month	Lower Methow	Middle Methow	Upper Methow	Methow Head-waters	Early Winters Creek	Chewack River	Twisp River
Oct.	95	50	44	15	29	09	14
Nov.	116	101	46	06	21	10	15
Dec.	112	99	44	17	26	10	15
Jan.	50	36	26	08	19	03	09
Feb.	51	37	29	09	19	04	10
Mar.	147	139	80	38	19	24	18
Apr.	565	590	273	336	35	118	148
May	2,922	2,927	784	412	403	809	703
Jun.	3,116	2,853	1,017	1,249	294	1,292	890
Jul.	965	877	583	608	189	308	298
Aug.	214	192	203	109	94	70	70
Sep.	62	55	76	33	47	23	26

All figures in cubic feet per second.

(b) The control station for each reach is defined in WAC 173-548-020.

(c) The appropriation limit is set forth to be an amount equal to the one in two year natural reach discharge on a monthly basis for all management reaches except Early Winters Creek. The appropriation limit for Early Winters Creek is set forth to be an amount equal to the estimated natural mean monthly streamflow for that stream.

(2) The amounts of water referred to in WAC 173-548-030(1) above are allocated for beneficial uses in the future as follows:

(a) Allocation of surface waters by use category (April through September):

<u>Use Description</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>
<u>Lower Methow</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	860	1,940	2,220	800	300	300
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Middle Methow</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	650	1,500	1,500	500	220	220
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Upper Methow</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	300	690	790	240	100	100
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Methow Headwaters</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	90	430	1,160	180	32	32
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Early Winters Creek</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	23	108	290	45	8.0	11.0
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					

<u>Use Description</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>
<u>Chewack River</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	140	290	320	110	47	47
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1) (c)					
<u>Twisp River</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	100	300	440	130	27	27
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1) (c)					

All figures in cubic feet per second

(b) Allocation of surface waters by use category (October through March):

<u>Use Description</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>
<u>Lower Methow</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	425	425	350	350	350	350
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1) (c)					
<u>Middle Methow</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	320	320	260	260	260	260
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1) (c)					

Use Description	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
<u>Upper Methow</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	150	150	120	120	120	120
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Methow Headwaters</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	63	60	42	42	42	42
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Early Winters Creek</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	15	15	10	10	10	10
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Chevack River</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	68	68	56	56	56	56
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					
<u>Twisp River</u>						
Single Domestic and Stock Use	2.0	2.0	2.0	2.0	2.0	2.0
Base Flow	45	45	34	34	34	34
Public Water Supply, Irrigation, and Other Uses	Remaining waters up to the appropriation limit set forth in WAC 173-548-030(1)(c)					

All figures in cubic feet per second.

(c) Allocations presented in this section do not limit the utilization of waters stored for later release, provided such storage does not infringe upon existing rights or base flow and is duly permitted under RCW 90.03.290 and 90.03.350.

(d) As the amount of water allocated for each category of use approaches the amount available for future allocation set forth in WAC 173-548-030(1), the department shall review the program to determine whether there is a need for program revision.

WAC 173-548-040 PRIORITY OF FUTURE WATER RIGHTS DURING TIMES OF WATER SHORTAGE. (1) As between rights established in the future pertaining to waters allocated in WAC 173-548-030(2)(a) and (b), all rights subject to this program shall be regulated in descending order of use category priority regardless of the date of the priority of right.

(2) As between rights established in the future within a single use category allocation of WAC 173-548-030, the date of priority shall control with an earlier dated right being superior to those rights with later dates.

WAC 173-548-050 STREAMS AND LAKES CLOSED TO FURTHER CONSUMPTIVE APPROPRIATIONS. The department, having determined there are no waters available for further appropriation through the establishment of rights to use water consumptively, closes the following streams and lakes to further consumptive appropriation for the periods indicated, with exceptions as noted:

(a) STREAM CLOSURES

Stream Name (Includes Tributaries)	Affected Reach	Period Closure
Wolf Creek	Mouth to Headwaters	Closed all year**
Bear Creek (Davis Lake)	"	Closed all year
Thompson Creek	"	Closed all year**
Beaver Creek	"	Closed May 1 to Oct. 1**
Alder Creek	"	Closed all year
Benson Creek	"	Closed all year**
Texas Creek	"	Closed all year
Libby Creek	"	Closed May 1 to Oct. 1**
Cow Creek	"	Closed May 1 to Oct. 1
Gold Creek	"	Closed May 1 to Oct. 1**/**
McFarland Creek	"	Closed May 1 to Oct. 1
Squaw Creek	"	Closed May 1 to Oct. 1
Black Canyon Creek	"	Closed May 1 to Oct. 1
French Creek	"	Closed May 1 to Oct. 1**/**

* Exception for single domestic and stock water.

** Exception for water developed solely from added storage capacity within the basin.

(b) LAKE CLOSURES

All lakes not listed below are restricted to rights to divert water for single domestic and stock watering purposes only, as appropriate:

<u>Name</u>	<u>Location</u>
Alta Lake	3 mi. SW of Pateros
Black Lake	25 mi. N of Winthrop
Black Pine Lake	9 mi. SW of Twist
Crater Lake	10 mi. W of Carlton
Davis Lake	Bear Creek Drainage
Eagle Lake	11 mi. SW of Carlton
French Creek	Sec. 28, T. 31 N., R. 23 E.
Libby Lake	10 mi. W of Carlton
Louise Lake	20 mi. W of Winthrop
Middle Oval Lake	16 mi. W of Carlton
North Lake	20 mi. W of Winthrop
Patterson Lake	Sec. 8, T. 34 N., R. 21 E.
Pearygin Lake	Sec. 36, T. 35 N., R. 21 E.
Slate Lake	14 mi. W of Winthrop
Sunrise Lake	16 mi. W of Methow
Upper Eagle Lake	12 mi. W of Carlton
West Oval Lake	16 mi. W of Carlton

The development of future impoundments creating new lakes is provided for under Chapter 173-548-050(a).

WAC 173-548-060 GROUND WATER. If it is determined that a future development of ground water measurably affects surface waters subject to the provisions of chapter 173-548 WAC, then rights to said ground water shall be subject to the same conditions as affected surface waters.

WAC 173-548-070 EFFECT ON PRIOR RIGHTS. Nothing in this chapter shall be construed to lessen, enlarge, or modify existing rights acquired by appropriation or otherwise, and legally vested prior to the effective date of this chapter.







State of Washington
DEPARTMENT OF FISH AND WILDLIFE

1550 Alder St. N.W., Ephrata, WA 98823-9651 Tel. (509) 754-4624

June 21, 1994

TO: Hal Beecher
Bruce Crawford
Chris Drivdahl
Bob Gibbons
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FROM: Ken Williams

SUBJECT: REBUTTAL OF HAL BEECHER'S REVIEW OF MONOGRAPH I
(Production and Habitat of Salmonids in Mid-Columbia
River Tributary Streams)

Negative reviews of Monograph I have been limited to water resource managers, and leading that charge has been Hal Beecher. I take issue, however, with most of his points of contention and believe that a rebuttal would be edifying.

IFIM

Hal refutes our conclusions regarding the status of habitat in favor of the weighted useable area (WUA) attribute of the IFIM model. We rejected this model for our work because it has too many problems and is too controversial.

The strength of our analysis is that we developed our own model, an amended variant of the Habitat Quality Index (HQI) model, using a plethora of 151 standing crop estimates correlated

against several habitat/ population attributes. Not surprisingly, even this model came up wanting in some respects. But our analysis of habitat status was not confined to population enumerations, for it relied, too, on hydrologic measurements and a thorough search of the literature. And we felt that there was no substitute for empirical data, though it required five years of field work.

That WUA (depth, velocity, cover and substrate) is impossibly simplistic, as has been stated repeatedly, even by biologists who use the IFIM model (Armour and Taylor 1992). Predictive models of fish numbers must represent the ecology of the fish (Hollings 1978, Behnke 1986, Bovee 1989), a rather daunting prospect considering the dynamics and complexities of the myriad of variables (physical, chemical and biological) that define a fish's environment.

Given the extent of ecological variation among stocks within a species, how can preference curves of winter steelhead be trusted to represent those of summer steelhead, or resident rainbows? Ecosystems are highly variable temporarily and spatially, and who would expect the same limiting factors in western Washington to apply inland? Let's not forget the subjectivity that is inherent in measuring model attributes, especially cover. Therefore, even if Hal could show a perfect correlation between WUA and standing crop in his study stream, there is no assurance of the same for the Methow River. Shirvell (1987) calculated the predictive capabilities of six habitat models and found that models explained only 19 percent (mean) of the variability in fish numbers when data sets from which the model were not derived were used.

Undaunted over the simplicity problem, Hal simply states, "Washington agency guidelines for conducting and evaluating IFIM studies take into account limitations of modeling". That is quite a statement, particularly in view of DOE's IFIM study of the Methow River, as we shall see.

Hal's choice of the New Zealand study (Jowett 1992) to support WUA is curious since Jowett himself did not feel confident in counting rainbows or any trout under 200mm. Such fish make up the whole anadromous complex in mid-Columbia tributaries, and as well, in Hal's study stream! Why does Hal believe he can count

them?

Even the conclusion that the abundance of large brown trout and WUA are correlated is inapplicable here. We all have seen film of the helicopter gunners in New Zealand mowing down the exotic red deer, whose population exploded in the absence of natural predators, competitors, diseases, parasites and other environmental stressors. Similar results are to be expected from the introduction of exotic brown trout to an alien ecosystem; i.e., only when biological limitations are removed does physical habitat (WUA) then become the preeminent limiting factor.

It is common knowledge that fish populations in streams, even pristine streams vary greatly over time. If flows and WUA were reduced at high abundance, declines in fish numbers may be much more dramatic than when the population was low. Hal was critical of our work because we only had one data point, yet his research and the papers he cites suffer the same flaw. Fortuitously, our work was done in drought conditions over five years, precisely the circumstance which would most rigorously test our conclusions.

The accuracy of population assessments when testing WUA vs. fish abundance carelessly is assumed. Fluvial salmonids routinely occupy space in the substrate where they can not be seen by snorkelers. We exposed this problem by showing that snorkel methods substantially underestimated actual numbers of salmonids (Hillman, et al. (1992) in our work. The stunned look of disbelief on Dr. Jack Griffith's face, a pioneer of the snorkeling technique, when he saw what was actually present vs. what his snorkeling team counted, will forever stand in my memory. Therefore, did parr really decline with decreasing WUA in Hal's Olympic stream? Or was it an illusion from fish slipping into the substrate as depth/surface turbulence cover vanished? Until snorkelers get X-ray vision, they are only seeing some unknown, variable fraction of the population.

Hal ignores the frailties of IFIM and focuses on what he perceives as supportive evidences. He admits to personal bias; I would add vested interest as well. Lamb (1989) borrowing from a 1968 paper by James Schlesinger, exposed the improbability of system analysis to successfully aid decision-makers due to bias (data, methodologies, and organizations) and politics. Even if

the genesis of IFIM somehow overcame this darkness and the model serves its expressed purpose in divine detail, its value here remains subservient to empirical information because the model's design is **not** to provide **definitive** answers to flow disputes, but rather, a **framework** for negotiating what flows to implement (Armour and Taylor 1991).

Overapplying IFIM is a natural process of circular thinking that goes something like this: WUA can be measured so precisely, the technique must have power! Given some fuzziness, logic demands that WUA have some relationship with fish production. Therefore, as stewards of the resource, how can we justify any loss of WUA? With time in the trenches, a perception that too much damage has already been sustained, and a precise, convenient technique that effectively protects a fuzzy perception of habitat (all flow reductions during late summer can be shown to reduce WUA), the shortcomings fade and application becomes unabashed. At this point IFIM can become make-believe, and WUA, the fairies' magic wand. And ends justify means.

For IFIM to attain the status of abiding truth that Hal proposes, WUA must be validated and translated into something meaningful, like standing crop of fish. Without confidence limits, its application will never attain full legitimacy, except at the grossest level.

Irrigation and WUA

Even if it were to be conceded that IFIM is wonderfully predictive, WUA must decrease if irrigation limits salmonid production. Interestingly, DOE researchers measured WUA over declining **summer** flow in the Methow River. But the bottleneck for parr production in mid-Columbia tributary streams is set in **winter** when natural flows, unaffected by irrigation withdrawal, reach annual lows (page 53, Fig. 8; see also, Hawthorn and Butler 1979). Moreover, this winter bottleneck seems to be universal with salmonids, even in streams that don't have annual low flows in the winter, as an increasing number of biologists have come to realize (Griffith 1987; Hunt 1969; Seelbach 1986). This explains the 72.2 percent (11-year mean) parr-to-smolt loss in Snow Creek steelhead each winter. What value is there in extending the life of a parr from September to January? IFIM fails to show an irrigation-caused reduction in WUA in the Methow River during the

winter.

IFIM hasn't even shown that WUA decreases significantly even during the irrigation season. Flow patterns of regulated and unregulated streams do not differ (Table 23) except in the immediate vicinity of the diversion site, which amounts to 3 percent for the Methow River (Table 1). Substantial recharge of withdrawn water is the reason.

The Methow Valley's sieve of unconsolidated glacial and alluvial sediments is underlain by bedrock, which limits the depth of percolation and helps maximize recharge (Walters and Nassar 1974). Walters and Nassar (1974) state that ground water is the primary contributor to streamflow during low flow periods and estimate the outflow of ground water at 740,000 acre feet per year, or 62 percent of the surface outflow!

Visual evidences of high transmissivity abound. During late summer reaches of Gold Creek, and the Twisp, Lost, West Fork Methow, mainstem Methow rivers disappear into the substrate above any diversions. Gaining and losing reaches are common. Big Twin Lake rises in the summer and falls in the winter without any surface inflow. Hydrologists Walters and Nassar (1974) report that the ditches leak about 45 percent of the water that they convey, and users on the lower end of ditches seldom get their quota.

Visual evidences are supported by the published literature. Peterson and Larson (1991) report that the deposits along the Methow River and its tributaries are so permeable that rapid exchange between surface and ground water is assured under certain conditions. David Branton of Golder Associates (1990), determined that the aquifer from Weeman Bridge to one mile above Robinson Creek is highly transmissive, ranging from 50,000 ft²/day at Lost River to 150,000 ft²/day at the downriver boundary and that rivers swollen from snowmelt may raise the elevation of the aquifer up to 25 feet in two weeks!

In the Winthrop area, groundwater flows away from the Methow River channel into the aquifer in August, but the flow reverses back towards the river in September (Caldwell and Catterton 1992). The 92 percent accounting at the Twisp gaging station for irrigation flows returned to the river at the conclusion of the

1991 irrigation season is precisely the expectation, given the number of ditches located above Twisp and their priming effect months before summer low flow. By stark contrast, the Methow River below Twisp has relatively small amounts of irrigation water adjacent to the river channel, and only 36 percent of the water measured at Twisp reached Pateros because it was soaked up like a sponge in bank storage. The magnitude of this was greatly underestimated because the authors did not consider additional return flows from cessation of diversions in Libby and Gold Creeks, gains from evapo-transpiration, or from the shutdown of many pumps. The substrate is so porous that it transmits invertebrates from the Methow River from up to 0.5 miles away! Rick Klinge, Douglas County PUD biologist, told me recently that an entomologist from Montana, who was hired to assess well sites for the new hatchery, discovered this when test pumping. This was no surprise, for this fellow has documented this elsewhere as well.

Studies on the Yakima and Elwha Rivers revealed that our interpretations are neither unrealistic nor unprecedented (page 142). A new example is found in the collapse of restoration plans for the South Platte River in Colorado when it was discovered that the original pristine river was intermittent and sparsely vegetated. The inadvertent actions of farmers, irrigators, and reservoir companies since 1860 transformed the South Platte into a perennial stream (via groundwater seepage) whose channel stabilized, narrowed, and become more sinuous (Silkensen 1993)!

Water resource managers themselves acknowledge the continuity of surface and groundwater flows when they argue that wells also pose a threat to base-flows. Caldwell and Catterson (1992) make a good case for high transmissivity. One protesting water manager opined that recharge from irrigation seepage was too rapid for such benefits as cooling and delayed discharge. Conversely, Hal offers that the real expert hydrologists don't know what groundwater does. But without names and data, Hal's opinion can't be taken seriously. If evidence for irrigation recharge, as shown here and in Monograph I, does not offer immutable proof, it is overwhelming.

Impacts of the deterred areas at some diversion sites is overstated. As already given, this condition was quantified and

represents only 3 percent of the total anadromous zone--hardly a significant amount. Further, reduced flows in these reaches did not result in reduced fish density (actual measurement rather than estimated from models or snorkel counts) (Table 22). For example, we found more steelhead parr below the largest diversion on the Chewuch River than at any of the other five sites sampled upriver above all diversions. Similarly, the devastation of Beaver Creek is overstated because there is plenty of water for spawning (and many are seen each April) and emigration of fry to the mainstem before dewatering. Just to our north, in an inland watershed of southern British Columbia, Tredger (1980) showed that the role of small tributary streams was spawning and incubation. Rearing occurred downstream in larger tributaries and mainstems (page K-431). Naturally intermittent streams in coastal areas are not considered insignificant.

If September low flow is limiting parr production in the Methow, then production should be less in unregulated streams (e.g., the mean of Gradient Area Flow Model (GAFM) rivers of Western Washington). But production was essentially the same or higher in the Methow (Table 8, Appendix H), although our estimate was derived during a severe drought compared to more normal flows for the GAFM estimate. When our parr estimates are converted to smolts (60% overwinter mortality), and migration loss (smolts and adults) and harvest are accounted for, today's run size approximates those of the pre-hydroelectric era.

IFIM outputs by DOE show that the Methow River mainstem becomes too shallow and slow for optimum steelhead production. Since velocity and depth average less in the tributaries, by this reasoning, production there should be less; yet, our work (Tables 7 and 8) clearly shows much higher standing crops.

Hal does not seem to notice the benefit of dampening flows downstream by irrigation diversion during spring runoff, when high flows limit salmonids production. Some of this surplus water is stored in lakes and provides recharge in the critical times of September. We note that nitrates in the river are highest in irrigated areas and likely are the result of recharge water (Fig. 9, Table 24). We don't even get into the likely benefits of 35 miles of riprap, since its association with irrigation is minor.

Specific Comments by Page Number

(p. 12 of draft) (p. 15, 17 of published report): This concluding remark succinctly relates the environmental setting of our study streams with a preeminent biological phenomenon--anadromy--about which we are keenly interested. Too often descriptions of study areas have no apparent bearing on the body of the report.

(p.13) (p. 17): Williamson, et al. (1979) is listed incorrectly in the bibliography.

(p.16) (p. 19): I simply don't understand the confusion, This whole section deals with dam counts as a means to estimate escapement.

(p.16) (p. 19): Again, this section is dealing with dam counts. Further, the spawner-to-redd ratios given for salmon are from local stocks, which implies that we confined our comments to the local area because of the uniqueness of dam counts as a means to determine escapement. I would not use winter steelhead spawner-to-redd data because those stocks have much greater numbers of male spawners (Appendix K, p. 443).

(p. 16) (p. 19): Why a sensitivity analysis? We have two independent spawner-to-redd estimates for salmon that agree reasonably well. For steelhead, our low estimates are reasonable because at higher values the recruit per spawner ratio becomes exorbitantly high (Appendix H, p. 300). Further, recent night counts at Wells Dam indicate that previous annual counts are somewhat low, probably canceling pre-spawner loss.

(p. 20) (p. 24): Fig. 6c should be 7c.

(p. 21) (p. 24): We observed the convention of the anthropologist.

(p. 23) (p. 26): A more direct way to determine seeding levels is to measure recruits from known egg depositions (page 28).

(p. 24) (p. 27, 28): This is not overstatement. Ocean variability is greater than that in freshwater, not that calamity does not occasionally occur in freshwater. I checked databases

of the Keogh R. (B.C.) and Snow Cr. and found that annual variability in freshwater was 56 and 38 percent (mean smolt count divided into 1 s.d. of smolt counts) vs. 88 and 69 percent in the ocean (mean adult count divided into 1 s.d. of adult counts), respectively.

(p. 25) (p. 28): I'm amazed that Hal gives us so little credit for such elementary concepts.

- (1) Regarding age structure, how does he explain Tables 2 and 6 of Appendix H and Table 7 of Appendix K? In Appendix K we describe age structures that have never been described before.
- (2) The numbers don't agree because the text refers to the Wenatchee River runs, not counts over Rock Island Dam in Fig. 7b.
- (3) That we discuss annual fluctuations in production (2nd paragraph) reveals that we are not ignorant of it. The probability that number of recruits would correlate to seeding rate four years earlier is greater than that of any other year class, because age-4 is such a prominent age class. The only other possibility is age-5, but Fig. 18 shows that correlations of seeding and recruits every 5 years changes nothing.

(p. 27) (p. 30): Hal misses Footnote b, which states that modern abundance refers to total run size--dam loss (adults and smolts) and harvest are accounted for.

(p. 31) (p. 33): Hal's observation about populations in braids of mainstems of large rivers as not being representative is correct. That's why senior author Jim Mullan contracted Dr. Jack Griffith of Idaho State University to snorkel the mainstem reaches as well. Moreover, because snorkel counts are low, we adjusted them upwards based on comparative evaluations of snorkel and chemical methods (Hillman et al. 1992).

(p. 32) (p. 33): Most biologists concede that Binns' model does not work well outside of Wyoming. We customized HQI to fit our streams and anadromous fishes. Substituting HQI attributes is justified because we tested each statistically against real

numbers and biomass of fish. The new attribute, species interaction, was one of the highest correlates. As we discussed, the eroding bank attribute was not applicable to our streams and was highly subjective.

(p. 33) (p. 34): Our biometricians, Dr.'s Hillman and McIntyre; did not think that the assumptions were unreasonable, and neither did other reviewers.

(p. 33-34) (p. 34): If Hal does not believe that $P=0.00$ is proper then he should observe its use in the North America Journal of Fisheries Management paper (Hillman, et al. 1992).

We used the appendix option a number of times, but there was no way that Tables 6-8 would not be featured in the main text. In these tables are five years worth of measured fish numbers estimated from 141 sites ranging from lower mainstems to streamlets in alpine meadows. Heretofore, production estimates have been theoretical fish from computer models. The assumptions and statistics upon which they were built, not to mention their outputs, are something to behold and the very reason for Monograph I.

Now the IFIM model, outputting independently from the reality of local fish abundance, is supposed to predict the status of fish via habitat. White (1986) warns, "trying to consider habitat without data of the fish that use it would be as meaningless as trying to understand fish populations outside the ecological setting". As I have already stated, many assumptions of IFIM have grave problems and there are no statistics that link habitat with fish numbers. Nevertheless, we were remiss in not including our statistical analysis, and I hope to change that.

(p. 45)'(p. 65): The water velocity discussion explodes another one of those intuitive myths that higher gradients produce higher velocity. The inverse is true, and Fig. 10 (elevation) does indeed reflect gradient. Mean velocity is easy for skeptics to checkout and not worth the clutter to include it.

(p. 47) (p. 66): Measuring cover is very complex and highly subjective. We explained how we ranked cover using Binn's method and some of our own. We gained experience on the relationship between cover and fish numbers from holistically sampling 141

stations. We are after correct, rather than precise, judgements, and it served no real purpose to include cover and ranking data that cannot be validated. Our rankings may tend towards the high side because we came to understand the importance of substrate interstices. But we don't know how to measure cracks in the bottom. We didn't include stream width or velocity measurements, assuming our acumen is sufficient to measure up to Binn's standards. Where it counted we presented pertinent flow data, relevant chemical data, benthos data, and we took no prisoners, with the temperature study. We also played "what if" modeling games with questionable attributes, such as cover, to satisfy us that the bottom line did not change with reasonable ranking changes.

(p. 63) (p. 87): Carefully reread these paragraphs. Our streams rear small anadromous juveniles. There is no contradiction in saying that food is not limiting for small fish but is for larger resident species. Bull trout are excepted, of course, because they are piscivores.

(p. 76) (p. 113): The success of hatchery steelhead is a species characteristic because the hatchery shortcuts freshwater rearing for steelhead by one to six years vs. almost none for chinooks.

(p. 79) (p. 113): Profuse growth comparisons are found in Tables 8-11 of Appendix K. We photographed scales and otoliths (Figs. 1-9) because we knew few would accept these ages otherwise.

(p. 79) (p. 113): See Appendix K for bull trout thermal data.

(p. 80) (p. 113-115): Hal seemed to have missed Appendix K, where citations of bull trout evolution are located.

(p. 106) (p. 139): HQI was only one of several evidences that we used to evaluate the status of habitat and fish production.

(p. 108) (p. 142): None of our evidences offer immutable proof that irrigation (under the current scenario) is beneficial. The collective weight of these evidences, however, is more than adequate to say irrigation may be beneficial. In fact, after reviewing Hal's critique and re-examining Monograph I, I would now be inclined to replace "may" with "probably".

Epilogue

IFIM is too simplistic (unecological), ambiguous (not correlated to fish abundance), unsupported mathematically (no confidence limits), probably biased, and probably inappropriate except for broad, cursory interpretations. Hal's defense of IFIM is trite and unconvincing. A decline in WUA has not been demonstrated.

The categorical rejection of our habitat section and the apparent need for IFIM to operate in a knowledge vacuum, does not speak well for its application or power. Lamb (1989) concludes his paper by stating that there is no one best way to perform instream flow analysis. To suggest that WUA magically transcends the body of empirical evidence presented in Monograph I is regrettable. The careless application of fish-biased technologies not rigorously tested [e.g., IEC beak (1983), Scholz et al. (1985), AITCBFWA (1990), and now IFIM (1992)] is born from a dogma of enormous pristine run sizes and unsurpassed habitat in mid- and upper-Columbia River tributaries. Such romantic illusions cloud discernment of critical issues from peripheral ones and set up the potential backlash of ESA listings owing to the imaginary shortfall between what is and was, just as Nehlsen et al. (1991) have proposed.

Elsewhere in Monograph I, I'm concerned that Hal's charges generally are overstated, weakly supported, or contradictory, and the demands for proof are extraordinarily high considering his faith in the unproven (e.g., IFIM). Some of our most cogent points were missed or dismissed without comment.

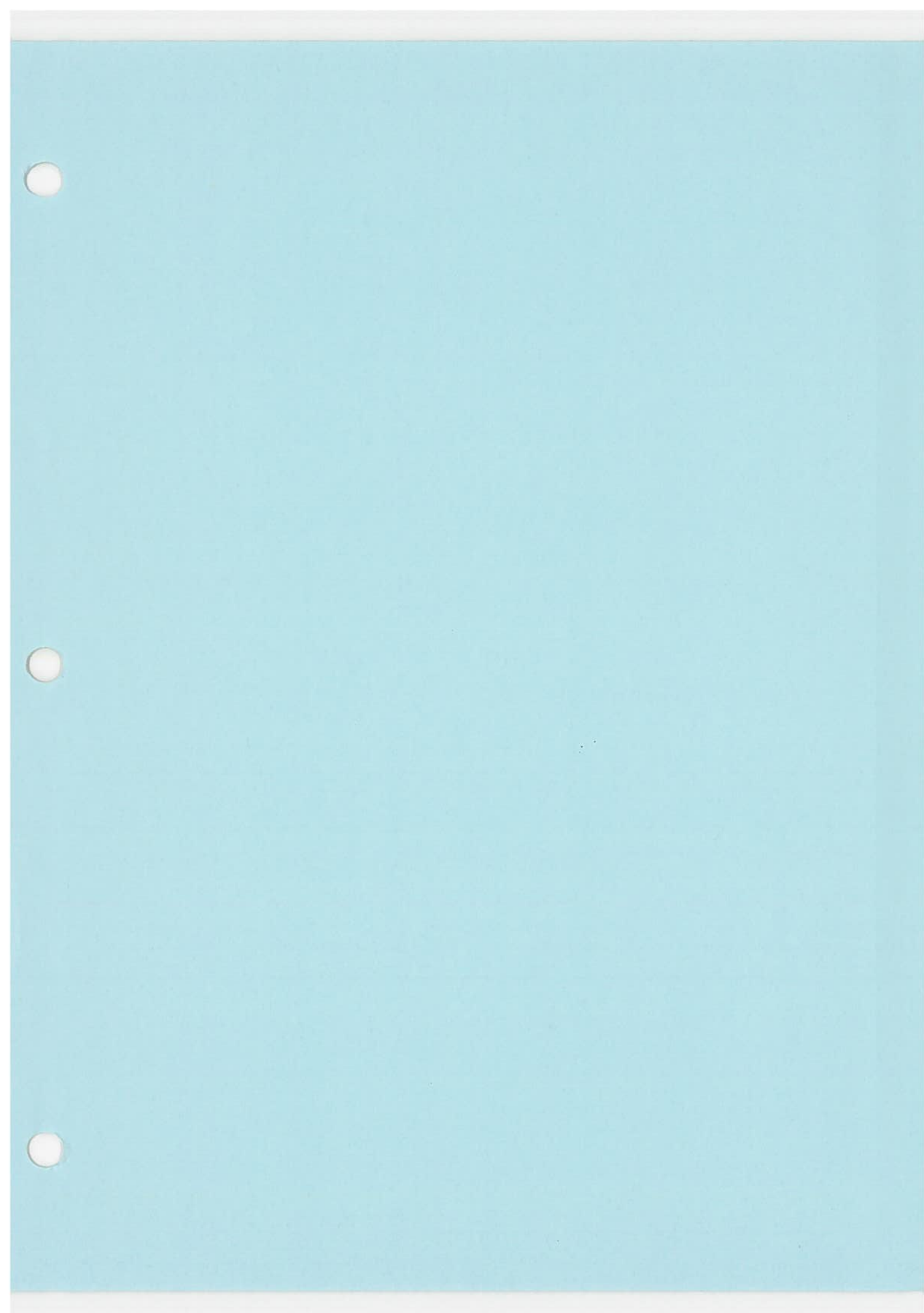
Nevertheless, some comments expose errors that will improve the document. We are flattered by a few remarks, but most importantly we appreciate that he recognized the effort behind this work. Likewise, Hal's critique of a document of this size and complexity should not go uncommended. Though our disagreements run deep, reasonable men can disagree. I respect the restraint he showed about issues that obviously aroused him.

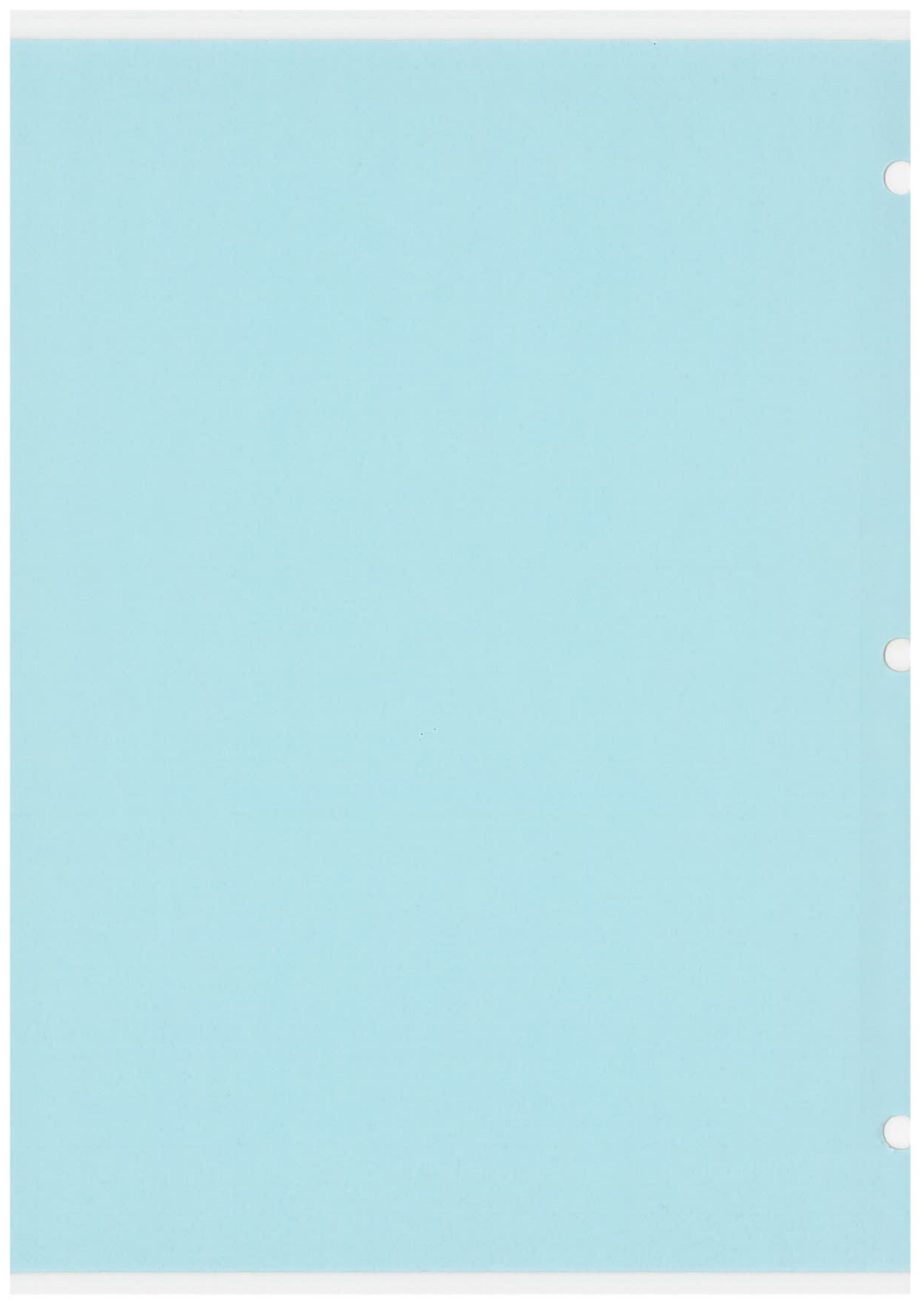
The authors of Monograph don't claim to have all of the answers; we welcome and expect rigorous scientific testing of our work.

- Lamb, B.L. 1989. Comprehensive technologies and decision making: reflections on the instream flow incremental methodology. Fisheries (Bethesda) 14(5):12-16.
- Nehlsen, W., J.E. Williams, and J.L. Lichatowich. 1991. Pacific salmon at the crossroads: stocks at risk from California, Oregon, Idaho, and Washington. Fisheries (Bethesda) 16(2):4-21.
- Peterson, J.J., and A.G. Larson. 1991. Beaver Creek, Methow X River closed tributary Rep. Water Resources, Dept. of Ecology, Olympia, WA.
- Scholz, A., K. O'Laughlin, D. Geist, D. Peone, J. Vehara, L. Fields, T. Kleist, I. Zonzaya, T. Peone, and K. Teesatuski. 1985. Compilation of information on salmon and steelhead total run size, catch and hydropower related losses in the Upper Columbia River Basin, above Grant Coulee Dam. Upper Columbia United Tribes Fisheries Center, Fish Tech. Rep. No. 2., Cheney, WA. 165 pp.
- Seelbach, P.W. 1986. Population biology of steelhead in the Little Manistee River, Michigan. Ph.D. Thesis, Univ. of MI, Ann Arbor.
- Shirvell, C.S. 1987. Habitat models and their predictive capability. Presentation at AFS Western Division meeting, March 10, Harrison Hot Springs, B.C., Canada.
- Silkensen, G.M. 1993. South Platte River observations: historical clues to the evolution of a river's ecology. Colorado Water, Newsletter of the Colorado Water Resources Research Institute, Fort Collins.
- Tredger, C.D. 1980. Carrying capacity and theoretical steelhead smolt yield from Nuaitch Creek. Nicola River System. Prep. for G.D. Taylor, F. & W. Branch, Ministry of Environment, Victoria, B.C.
- Walters, K.L., and E.G. Nassar. 1974. Water in the Methow River x basin, Washington. Water Supply Bull. 38. WA State Dept. of Ecology and USGS, Olympia.

White, R.J. 1986. Physical and biological aspects of stream habitat management for fish: The primacy of hiding/security cover. pp. 241-265. In Proc. Fifth Trout Stream Habitat Improvement Workshop, Lock Haven, Univ., PA.

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F I N D I N G S

A. GENERAL PHYSICAL AND HYDROGRAPHIC FINDINGS

1. DESCRIPTION OF STREAM AND LANDS

Beaver Creek rises on the west slope of the Methow-Okanogan Mountain range in the central part of Okanogan County, being within the Okanogan National Forest Reserve, and flows in a southwesterly direction and discharges into the Methow River four miles southeast of Twisp.

That part of Beaver Creek Valley in which the irrigated agricultural lands are situated extends a distance of eight miles up the stream from its confluence with the Methow River. The valley is narrow at the creek bottom, some parts being only the width of the creek while at other points this width is one-fourth of a mile, but on each side of the stream benches or terraces, typical of the Methow and Columbia River valleys, form a valley averaging a mile in width.

Frazer Creek valley is similar to that of Beaver Creek though much smaller, and all the irrigated lands are within a distance of three miles from the mouth of the stream.

2. NATURAL VEGETATION.

Before development of the bottom lands, vegetation consisted of a heavy growth of brush along the stream, with bunchgrass

and sagebrush on the higher lands.

3. AREA OF IRRIGATED LANDS.

The area of land under irrigation in Beaver Creek Valley is 1390 acres of which 1215 acres are irrigated directly from Beaver Creek and 175 acres from Frazer Creek. In addition to this amount there are one hundred and fifty acres of land susceptible of irrigation which can be developed at little expense. Some of these lands are covered by ditches now in operation; other lands may be covered by short extensions of ditches.

4. CONDITIONS AFFECTING THE WATER SUPPLY.

AS stated the watershed is relatively high, being the cause of a substantial flow of the stream during the entire irrigation period. However, the stream reaches a flood peak during the month of June, usually, caused by warm rains and melting snow in the mountains. Aside from the spring floods the stream often reaches a flood peak during the winter months caused by snow falling on a frozen watershed in the mountains, followed by heavy rains and a Chinook wind, causing the snow to melt in a short period. Floods of this nature are of little value for irrigation purposes, but the same waters may be used for irrigation if reservoirs were provided to hold the water until required during the summer.

Topography and geology of the valley are such that the early irrigation of lands cause water to seep through the soil and return to the stream in form of springs at such time when the water in the stream is naturally at a low stage, adding greatly to the stream's water supply for irrigation. An investigation made under the direction of the State Hydraulic Engineer showed that above all the diversions the discharge of Beaver Creek was seven second

feet, while the total amount diverted in all the ditches was 14.1 second feet, showing the amount of return seepage water to be 7.1 second feet. The springs are numerous, rising along the entire lengthth of the stream in the irrigated section of the valley.

