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Methow Basin (WRIA 48) Watershed Plan

Prepared by:

Methow Basin Planning Unit

Approved by the Okanogan County Board of County Commissioners June 20, 2005

1 **ACKNOWLEDGEMENTS**

2
3 The Draft Methow Watershed Plan was developed through the participation and input
4 of numerous stakeholders from the Methow Watershed over the past four years; many
5 of who spent countless hours providing information, formulating plan actions, and
6 attending meetings to represent their constituencies. These individuals are listed below:

- 7
8 Julie Dagnon - Craig Vejraska – Okanogan County
9 Vern Donnett – Environmental Groups
10 Gary Erickson – Ground Water Advisory Committee
11 Dick Ewing - Planning Unit Coordinator as a non-member
12 Bob Freeman – Upper Methow
13 Mike Gage – Methow Valley Irrigation District/Methow Valley Canal Associates
14 Connie Iten – Washington Department of Fish and Wildlife
15 Rick Karro – Town of Winthrop
16 Greg Knott – Chewuch River and Pilot Project
17 Mark Love – Business
18 Ron Perrow – Wolf Creek/Goat Creek, Chairman
19 John Stormon – Washington Department of Ecology
20 John Umberger –Agriculture
21 Karla Christianson - Small Irrigators
22 Mike Fort – Recreation
23 Fred Cooley – Town of Twisp
24 Marty Williams – Twisp River
25

26 **DECISION MAKING PROCESS**

27
28 Where possible the planning unit sought consensus, however if consensus could
29 not be reached a 75% super majority vote was required to adopt a provision or move
30 forward on an issue. By November of 2002, the planning unit agreed to operate under
31 Robert’s Rules of Order to facilitate decisions and maintain order in discussions.
32

33 RCW 90.82.130 states the procedure for plan adoption: “*Upon completing its proposed*
34 *watershed plan, the planning unit may approve the proposal by consensus of all the*
35 *members of the planning unit or by consensus among the members of the Planning Unit*
36 *appointed to represent units of government and a majority vote of the non-*
37 *governmental members of the planning unit.” In other words, if the planning unit can*
38 *not reach consensus by the voting members, the plan can be accepted by consensus of*
39 *the governing entities (Okanogan County, Methow Valley Irrigation District, and Town*
40 *of Twisp) and a majority vote of the remaining members. Once the Planning unit*
41 *approves the plan they will submit it to the Okanogan County for approval. State*
42 *agencies or counties accepting the obligations within the plan must fulfill their*
43 *obligations by implementing rules or ordinances necessary to fulfill their obligations.*
44 *The planning unit is obligated to present its plan proposal within four years of the date*
45 *of the Phase II funding was first received by the planning unit.*

1 **INTRODUCTION**

2 This watershed plan is the result of nearly five years of work by the Methow
3 Basin Planning Unit. It addresses the entire Methow River Water Resource Inventory
4 Area (WRIA 48), as required by watershed planning law. The Methow Basin drains a
5 1,805 square mile area which extends approximately 80 miles from the crest of the
6 Cascade Mountains, 9000 feet above sea level to its confluence with the Columbia
7 River at Pateros, Washington at 775 feet above sea level. Approximately 14% of the
8 land within the WRIA is privately owned, with the rest being federal or state land.
9 There are seven sub-basins within the Methow Watershed. Figure 1 is a map of the
10 watershed.

11
12 The Water Resource Management Act, HB 2514, was passed in August of 1998
13 authorizing watershed planning. The resulting RCW 90.82 empowered local citizens to
14 have “maximum possible input” regarding water resource management within the
15 WRIA and led to the formation of the Methow Basin Planning Unit in early 1999.
16 Under the law, the plan must conform to the parameters listed in RCW 90.82.120, that
17 is the plan can not be in conflict with state or federal law, tribal treaty rights, existing
18 water rights, existing management programs and others.

19
20 The primary purpose of the plan is to assess current water supply and use and to
21 develop strategies to increase water supplies in the management area to provide for
22 future out of stream uses while satisfying minimum in-stream flows for fish. It
23 addresses the water quantity elements of RCW 90.82, and to the extent that they affect
24 water availability also addresses the habitat and water quality elements. Within the
25 confines of RCW 90.82.120, and because the amount of water available to the
26 watershed via precipitation is beyond human control, this plan focuses on increasing
27 available water supplies for all uses by various means of slowing the exit of water from
28 the basin particularly during times of high run-off. These include but are not limited to
29 conservation through surface and groundwater storage, aquifer recharge, forest
30 management, water reuse and use of reclaimed water.

31
32 Watershed planning addresses water availability in the basin, current water use,
33 estimates potential future use and identifies ways to increase water availability. The
34 fact that usage figures, water availability and ways to increase water supplies show that
35 a larger level of development is possible in the valley without impacting the water
36 resource is merely a truthful statement of our status with regard to water in the basin.
37 What is possible with regard to growth or development is a planning and zoning issue.
38 The recommendations in the plan are designed to provide the management tools that
39 give the greatest flexibility to promote the best planning and zoning decisions to
40 preserve the quality of life people in the valley want.

41
42 Table 2 provides a checklist of the required elements of RCW 90.82 and where
43 they are addressed in the plan.

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1 **DEFINITION OF TERMS**

2 *Water Present*

3 Water is present in the basin in many different forms during different periods of
 4 the year, and from year to year. The most simple and cumulative definition of water
 5 present in the Methow Basin is the hydrograph of stream flow at Pateros. The average
 6 hydrograph over the past 45 years of record provides an adequate representation of the
 7 annual and seasonal amount of water in the basin, as well as the variability in water
 8 present over time. Figure 2 shows the hydrograph, including actual hydrographs from
 9 representative years. The stream flow hydrograph at Pateros includes the net effect of
 10 consumptive uses in the basin. The hydrograph also includes the net effect of
 11 groundwater surface water interactions, but does not include groundwater storage.

12 *Water Available*

13 Water available is defined in this plan based on physical availability and the
 14 ability of local water users to manage the water that is present. Water available is
 15 defined as the water present less non-agricultural evapotranspiration and groundwater
 16 surface water interactions. Water availability is therefore defined by the hydrograph at
 17 Pateros.

18 *Agricultural Water Use*

19 Agricultural water use is defined in this plan as the total of consumptive use of
 20 water by crops, plus on-farm application requirements, minus groundwater recharge
 21 from unlined irrigation canals and agricultural application practices.

22 *Domestic/Municipal
 Consumptive Water Use*

23 Domestic and municipal consumptive use is defined as the total of:

- 24 • The appropriated water intended for indoor use for human habitation which is,
 25 by design, to be treated either by a residential septic system or a municipal
 26 sewerage treatment system, less the groundwater recharge or direct surface
 27 water discharge from treatment systems; PLUS
- 28 • The appropriated water intended for outdoor use which is not captured by a
 29 residential or municipal treatment system (primarily outdoor watering) minus
 30 groundwater recharge from application practices.

31 *Baseflow*

32 Two definitions of baseflow are recognized:

- 33 • Regulatory baseflow is the flow specified in WAC 173-548. It is a regulatory
 34 target and it's relationship to actual stream flow varies from place to place and
 35 over time;
- 36 • Hydrologic (actual) baseflow is the flow provided to streams from the
 37 discharge of groundwater from the aquifer to the river. Late fall/winter stream
 38 flows are generally representative of this definition for baseflow.

39 *Water Available for
 Appropriation*

40 RCW 90.82.070 requires an estimate of water available for further
 41 appropriation, taking into account minimum in-stream flow (regulatory baseflow)
 42 requirements. Under current rules and laws, no uninterruptible water supply is
 43 available for further appropriation except under the following circumstances:

- 44 1. It is for a single domestic or stock watering exempt use
- 45 2. It is from a source that is not in hydraulic continuity with surface water
- 46 3. It is from an aquifer storage and recovery (ASR) project

47 However, the plan recognizes the opportunity to utilize excess water from
 48 spring run-off in artificial ground water storage efforts. This water may be available for
 49 additional appropriations.

50
 51
 52

1 There are opportunities for further appropriations during the spring high flow
2 period. Summer supply is also possible but is highly unreliable and subject to
3 curtailment.

4
5 There are 10,135 acre-feet of water reserved in WAC 173-548 with priority
6 given to exempt uses and stock watering under the “2 cfs reservation”. This water is
7 also available for appropriation, provided actual use does not exceed the amount
8 reserved.

*Paper Water and
Allocated Water*

9
10 Paper water, as used in this report, is multiple filings of a valid claim, permit or
11 certificate or unused portions of valid claims, rights, permits or certificates.

12
13 Allocated water is paper water and actual water used.

1 **HISTORY**

2 Pioneers first entered the Methow Valley in the late 1800s. They came to a
3 semi-arid basin with three major rivers, the Methow, the Twisp and the Chewuch. The
4 basin was large, draining 1,800 square miles. Ponderosa Pine at 13 mature trees per acre
5 was the predominant species of timber, and grasses comprised the majority of ground
6 cover. Beavers built many dams in the lower gradient sections of streams and rivers.
7 Prior to European settlement beaver made a larger contribution to riparian habitat of the
8 Methow watershed. Beavers play a key role in riparian habitat management by
9 increasing water quality and quantity. Beaver ponds store water that subsequently is
10 stored as groundwater in the bank and floodplain. The groundwater storage percolates
11 into the floodplain enhancing in-stream flows throughout the year (Knudsen 1962;
12 Parker 1985).

13
14 Introduction of unlined agricultural irrigation canals to the Methow Basin occurred
15 in the late 1800s as ranchers and farmers discovered that irrigation was required to
16 supply consistent water for crops and livestock. The height of farming and ranching
17 occurred in the Methow Valley between 1940 and 1968 when 20,240 acres of land were
18 irrigated from unlined surface diversions. Today about 17,000 acres are under
19 irrigation.

20
21 The early 1900s saw the economy of the Methow Valley centered on natural
22 resources. While agriculture initially focused on livestock production, within a few
23 years, orchards and fields of grain were augmented by strawberry, potato, garlic and
24 raspberry fields. Mining and logging also added to the valley economy. Ranching grew
25 to a peak in the 50s and 60s, with 12,000 mother cows in the valley. Currently there are
26 1,800 mother cows in the valley.

27
28 Methow Valley orchards produced apples which stored well because of the colder
29 climate in which they were grown. However, the advent of controlled atmosphere
30 storage facilities removed this advantage, and the extraordinarily hard freeze of 1968-69
31 practically eliminated apples from the valley economy.

32
33 Today, many valley farmers raise fresh fruit and vegetables to sell locally at the
34 farmer’s market, grocery stores and restaurants. These small farms and ranches provide
35 sustainable local food supply, stimulate the economy and keep agricultural lands
36 productive.

37
38 Although physical evidence regarding river flows is scant, anecdotal evidence
39 indicates a very wide swing between high flow and low flow prior to settler's
40 development of unlined irrigation canals.

41
42 The development of unlined irrigation canals made farming a viable industry
43 for the Methow Valley. As the valley developed, additional unlined irrigation canals
44 were constructed until almost every tributary to each river, and the rivers themselves
45 supplied surface water for agriculture. These unlined irrigation canals also provided the
46 unintended benefit of ground water recharge.

47
48 During the 1950s, salmon runs flourished in the Wenatchee, Entiat and Methow
49 rivers. Sixty percent of Spring Chinook Salmon were of Methow origin. These runs
50 flourished in spite of the largest number of unlined irrigation canals. Irrigation, at least
51 at current levels in the Methow River Basin may be more beneficial than detrimental to
52 salmonid habitat because of its positive influence on ground water. (Mullan and

1 Williams 1992). It is known that salmonid populations are greatest in streams that
2 receive high ground water input. (Mullan and Williams 1992).
3

4 Winter conditions have always been critical to fisheries in the Methow. Up to 70%
5 or more of the fish that go into winter are lost. The bottleneck for parr production in
6 mid-Columbia tributary streams is set during the winter when natural flows, (unaffected
7 by irrigation diversions) reach annual lows. Moreover, this winter bottleneck seems to
8 be universal with salmonids, even in streams that don't have annual low flows in the
9 winter. (Williams, K.R. 1994)

10
11 Since the late 1980s, the Methow Basin has been involved in a variety of water
12 planning efforts and studies. Tables 2 and 3 summarize recent water-related projects in
13 the Methow Basin. In addition to planning efforts and technical studies, the basin has
14 also been at the center of several controversial projects, court decisions, and
15 enforcement actions related to water. Projects such as Early Winters (four seasons
16 destination resort), water rights decisions related to the Arrowleaf project (the Merrill
17 case) and the ESA caused curtailment of irrigation from the Skyline, Early Winters, and
18 Wolf Creek irrigation canals. These have created an intense awareness of water-related
19 issues in the basin. This awareness has been evident in the watershed planning process.

Overview

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53**WATERSHED CONDITIONS**

The Methow River drainages are in the coldest of the 24 western climate zones. The Methow Basin is characterized as high desert. The Cascade Mountains wring most of the marine influence from the air mass that passes from west to east. The basin has large variations in temperature (minus 52 degrees Fahrenheit to 115 degrees Fahrenheit). Precipitation ranges between eight in valley bottoms and 180 annual inches at highest mountains.

Numerous studies have evaluated the hydrology and ecological conditions in the Methow Basin. It is not the intent of this plan to summarize these studies explicitly, but to describe specific issues that are of most importance to the Methow Basin Planning Unit. The Methow Basin Planning Unit initiated studies by Golder Associates (2002), the US Geological Survey (2002, 2003) and the US Bureau of Reclamation (2003) that are intended to fulfill the technical requirements of RCW 90.82. This plan includes a detailed bibliography that summarizes the depth of technical information available in the Methow. The discussion below highlights key technical findings or issues associated with this watershed plan.

A 2003 USGS study shows that groundwater inflow from unlined irrigation canals and irrigation practices to the Twisp River extends into winter. This contributes to the aquatic habitat in that area. A recurring theme in this plan is the concept that unlined irrigation canals are potentially key management elements for enhancing water supplies and mitigation of human water use. This is particularly important during the naturally low flow periods of the Methow Basin streams.

Groundwater

The USGS Water-Resources Investigations report 03-4244: Hydrology of the Unconsolidated Sediments, Water Quality and Ground-Water/Surface-Water Exchanges in the Methow River Basin, Okanogan County, Washington Provide the most accurate detailed technical information on surface water in the Methow Basin. Aquifer units cover more than 45 square miles of the basin's surface and groundwater recharge occurs through a variety of pathways (Figure 3). The Methow and Twisp Rivers are major sources of recharge to the aquifer particularly during high-flow periods. Combined recharge from the Methow and Twisp Rivers was estimated to be 84,000 acre-feet in 2001 (drought year) and 143,400 acre-feet in 2002 (average water year) (Konrad and others 2003). Unlined irrigation canals also contribute as much as 38,000 acre-feet of recharge (Konrad and others 2003). Figure 4 shows where aquifer recharge occurs in the basin.

Stream-aquifer interaction is evident in stream flow patterns (gains or losses) between gage sites. For example, stream flow infiltrates to groundwater above the Weeman Bridge. This causes the Methow River to appear dry, even during years with average precipitation. However the river surfaces again below the Weeman Bridge. This upwelling of groundwater between the Weeman Bridge and Winthrop provides a year-round high quality habitat for fish. This reach of the Methow River has consistently produced the highest density of Chinook salmon redds in the basin. Below Benson Creek, there is also significant upwelling of ground water to surface water. USGS seepage runs on the Methow and Twisp Rivers in 2001 and 2002 shows where these streams gain or lose water either to or from groundwater. Stream flow increases of 32 cfs were documented by the USGS in September 2001 between Benson Creek and Burma Road (Kimbrough et. al., 2002). Libby Creek and Gold Creek contributed about eight cfs of stream flow during this period, based on Methow Basin Planning Unit

1 stream gauging during this period. Therefore, groundwater discharge to stream flow
2 was on the order of 24 cfs during this period.

3
4 During the winter, groundwater-influenced stream habitats, especially on alluvial
5 flood plains (such as the Methow Basin) often remain free of anchor and surface ice,
6 buffering them from the stresses of winter freezing and thawing processes that can be
7 highly disruptive of biota, including wintering fishes. Groundwater influenced habitats
8 are well known to provide important spawning habitats for salmon and bull trout.
9 Groundwater rich pools, beaver ponds and spring brooks also appear to provide critical
10 winter habitat for juvenile and adult salmonids which may move long distances to
11 congregate in these areas (Independent Scientific Group 1996).

Surface Water

12
13 The Methow River is a dynamic system and water is present in a variety of forms
14 at any one time in the management area, including snow pack, rainfall,
15 evapotranspiration, stream flow, groundwater recharge, groundwater storage, and
16 storage in surface waters. The USGS Water-Resources Investigations report 03-4244:
17 Hydrology of the Unconsolidated Sediments, Water Quality and Ground-
18 Water/Surface-Water Exchanges in the Methow River Basin, Okanogan County,
19 Washington provides a number of analyses of the surface water system. Stream gauges
20 have been established throughout the basin and has provided abundant stream flow
21 records for the Methow basin. Several continuous recording stream flow gages have
22 been in place in various sub-basins for roughly the last decade. Continuous gages are
23 operated by the US Geological Survey (USGS) at a number of locations along the main-
24 stem Methow River and major tributaries. The longest period of record exists at the
25 Methow River gage at Pateros. It has been in operation since 1903. Since 1991, there
26 have been a total of seven gages in continuous operation. These gauges correspond to
27 the seven river reaches in the 1976 Basin Plan which is in Appendix B.

**Artificial
Groundwater
Recharge**

28
29 Groundwater, surface water, artificial ground water recharge, and agricultural
30 water use are very closely bound together in the Methow basin. The removal of
31 artificial ground water recharge reduces the volume of the ground water aquifer, which
32 in turn reduces the amount of ground water returning to instream flow. This results in a
33 reduction of lakes, wetlands, riparian habitat, wildlife habitat, fish, wildlife, and water
34 for human uses. Unlined surface water diversions, irrigation application practices and
35 recharge water from unlined irrigation canals have affected the hydrology in the basin,
36 and the associated habitat. The most significant feature is ground water recharge and
37 increased stream flows. During the height of agricultural production for the Methow
38 Valley, ground water recharge was also at its peak. Unlined irrigation ditches recharge
39 aquifers which then discharge to streams later in the annual water cycle. Although it is
40 not known exactly when, where and how much groundwater from unlined irrigation
41 ditches augments the Methow River, the Chewuch River and the Twisp River, it is
42 certain that natural groundwater recharge is augmented with artificial recharge from
43 unlined irrigation canals.

44 There is historical anecdotal evidence that fall flows were lower before irrigation
45 commenced. The earliest hydrographic data at Pateros, found in the Chief Joseph Dam
46 Project , Methow Division 1961 Report, over the period 1903 to 1920 shows that mean
47 monthly winter flows (the bottleneck for fish production) are lower than the period
48 between 1959 and 1999. The recharge concept was recognized as early as March of
49 1920 in the Beaver Creek Adjudication. The Report to the Court prepared by the State
50 Hydraulic Engineer, recommended that maximum irrigation occur in the spring so that
51 recharge would help sustain stream flows later in the season (this report is in appendix
52 B). The 1976 Methow Basin Plan estimated the amount of recharge contributed from
53 irrigation use to groundwater inflow into designated river reaches. The USGS Water-

1 Resources Investigations report 03-4244: Hydrology of the Unconsolidated Sediments,
2 Water Quality and Ground-Water/Surface-Water Exchanges in the Methow River
3 Basin, Okanogan County, Washington confirmed that groundwater recharge from
4 unlined irrigation canals was present as streamflow in the Methow River. The
5 estimated volume of artificial recharge contributed by irrigation canals (1.8 cfs per
6 mile) may be as much as 38,000 annual acre-feet (Konrad and others 2003). This is
7 equivalent to about 120 cfs over a 160-day irrigation season.
8

9 At present, groundwater recharge from unlined irrigation canals and on-farm
10 application practices are an integral part of agricultural water use because of its positive
11 influence on groundwater and stream flows by shifting groundwater discharge to
12 streams and rivers at a later time. During the years of 2001 and 2002, the USGS
13 studied the consequences of ground water recharge caused by the unlined Twisp Valley
14 Power and Irrigation (TVPI) canal. This study concluded that recharge from the
15 irrigation canal accounted for a portion of the stream flow in the Twisp River through
16 the winter into February of the next year.
17

Water Storage

18 Previous studies of water storage in the Methow Basin have recognized that there is
19 plenty of water available in the basin on an annualized basis, and that the value of
20 storage is to store excess spring runoff for use in low flow periods, and possibly for use
21 in drought years when even the spring runoff is low. Groundwater storage has
22 previously been dismissed as an option due to the assumption of a short lag time for
23 groundwater return to the surface (Klohn Leonoff 1993). This planning effort included
24 two new storage studies by the US Bureau of Reclamation (USBR) and the US
25 Geological Survey (USGS).
26

27 The USBR study used a river and reservoir management model (RiverWare) to
28 compare seven alternative storage and delivery scenarios using daily hydrologic inflows
29 developed by the US Geologic Survey (USGS) Precipitation-Runoff Model for the
30 Methow Basin. The RiverWare model simulates the hydrology of a basin network that
31 includes water storage, using defined operational criteria for the storage reservoirs and
32 delivery points. The seven alternatives included a no-action alternative, which
33 represents present conditions, and two storage alternatives, with three operational
34 strategies for each storage alternative. The two storage alternatives simulated increasing
35 storage capacity in the Twisp and Chewuch sub-basins by 5,253 and 2,298 acre-feet.
36 This increased storage capacity would be developed by raising the level of Patterson
37 and Pearrygin Lakes and creating additional storage in the Chewuch (Uphill Reservoir)
38 and Twisp (Elbow Coulee and Dead Horse Reservoirs). Storage releases were specified
39 in two groupings, one with storage priorities given to meeting streamflow targets, and
40 one with storage priorities given to meeting irrigation delivery targets. The results of the
41 model simulations demonstrated that, regardless of the priority of storage releases,
42 storage increased the frequency of meeting streamflow targets. The frequency of
43 meeting streamflow targets was slightly lower when irrigation delivery was given
44 higher priority. Similarly, the frequency of meeting irrigation delivery targets was
45 slightly lower when streamflow was given higher priority.
46

47 Table 5 summarizes the volume of water in excess of regulatory baseflow
48 requirements. This water is available for appropriation, particularly for water storage.
49

Water Rights

50 The Department of Ecology maintains a database to track and store water rights
51 information called the Water Rights Application Tracking System (WRATS) database.
52 An abbreviated version of the WRATS database was used for the characterization of
53 water allocation. The results of the water rights analysis from the Phase II Technical
54 Assessment (2002) are summarized in Tables 6, 7 and 8. Table 6 summarizes total

1 irrigation and non-irrigation allocations by sub-basin. Tables 7 and 8 summarize
2 certificates, permits and claims by sub-basin. It should be understood that the WRATS
3 database does not correlate with actual use.

4
5 The total allocated withdrawals and diversions in the basin are about 380,729 AF/yr
6 (340 million gallons per day). Surface water accounts for about 95 percent of the
7 allocated water in the basin, with groundwater comprising the remaining five percent.
8 These figures account for "paper water" along with actual water diverted for human use.
9 Certificates and permits comprise 50,926 AF/yr (45 million gallons per day), or about
10 13 percent of the allocated water in the basin. Claims comprise 329,804 AF/yr (294
11 million gallons per day) of the allocated water in the basin, or about 87 percent of the
12 allocated water.

13
14 *Irrigation*

15 Irrigation accounts for the majority of allocated water use in the basin. Water rights
16 documents listing irrigation as one of the purposes of use account for about 97% of the
17 total annual quantity measured in acre feet. For surface water, irrigation accounts for
18 about 99% of the allocated use. Irrigation accounts for about 63% of the groundwater
19 allocation. It should be noted that "allocated" water (including paper water) is not the
20 amount of actual water diverted for agricultural use. The paper water is 369,852 acre
21 feet less the actual use of 55,467 acre feet, resulting in paper water of 314,385 AF. For
22 example there are two duplicate claims for 42,448 AF/yr (38 million gallons per day) in
23 the Middle Methow and two duplicate claims for 90,000 AF in the Twisp sub-basin.
24 The correction of these claims alone would reduce total claimed use by 132,448 AF/yr
(118 million gallons per day).

25
26 *Municipal*

27 There are only six towns in the Methow Basin: Pateros, Methow, Carlton, Twisp,
28 Winthrop and Mazama. Methow, Carlton, and Mazama are unincorporated.

29 The Washington State Supreme Court ruled in the 1997 case, Okanogan Wilderness
30 League, Inc. v. Town of Twisp that the town had abandoned its water rights and
31 Ecology rescinded Twisp's water rights by 610 acre-feet per year. As a result, Twisp
32 no longer has adequate water rights to fulfill its current and future needs. Currently
33 Twisp has a lease with Methow Valley Irrigation District to replace this water.

34
35 According to the Town of Winthrop's Comprehensive Water System Plan (1996),
36 the town has a water right for 640 gpm and 469 acre feet per year. In 1994, the Town
37 applied for a for an additional 350 gpm and 210 acre-feet per year and an increase on
38 their existing right to 1,000 gpm and 610 acre-feet per year. The water rights held
39 presently by the Town of Winthrop satisfy their current needs. Should both the
40 applications for new water rights application be approved, then the water rights held by
41 the Town should be sufficient for future needs as well. If either of these water right
42 applications is unsuccessful, other water sources may be necessary.

43
44 *Exempt Uses under
45 the 2cfs reservation*

46 WAC 173-548 reserves two cubic feet per second (2cfs) for future growth per
47 reach. The term cubic feet per second is a "flow" measurement indicator. "Cubic feet
48 per second" is not a term normally used for measuring domestic use or consumption.
49 Domestic use/consumption is normally measured in gallons per day. The gallons
50 allowed for growth since the adoption of WAC 173-548 in 1976 for each day within
51 each reach of the Methow River is 1,296,000. When considering the return factor for
52 domestic use and the daily occupancy rate it becomes obvious that the writers of the
53 Methow Basin Plan intended to ensure adequate water for any future development.
54 There are several elements which need to be considered when evaluating the 2cfs
reservation:

- The reservation only applies to growth since 1976
- Many residential applications in the Methow Valley are unoccupied for much of each year.
- The return factor for water treated in a septic system may be up to 90 percent (Water Budget for Proposed Action – Arrowleaf PDR, Arrowleaf EIS, Golder Associates).
- A significant number of homes use irrigation water for outdoor use rather than their exempt domestic well

Current and Future Water Use

Okanogan County is in the process of updating its Comprehensive Plan. The new Okanogan County Comprehensive Plan will likely provide clear direction and policy regarding future growth and zoning, both of which affect overall water use in the basin. Water use is summarized below, based on available information. Table 1 summarizes current water use by sub-basin.

Agricultural Water Use

Based on the Methow Air Photo Assessment (MAPA) Project (Ecology, 2001) GIS coverage, currently irrigated lands total 16,729 acres. Table 9 summarizes current irrigated lands. Figure 5a shows irrigated lands and other types of land cover in the Methow. Figure 5b shows current land use designations in the Methow. Of the total irrigated acreage, 77% is planted in alfalfa. The remaining acreage is a mix of orchards and pasture/turf. At a sub-basin scale, irrigated lands make up about 8% of the total area of the Middle Methow sub-basin, while in all other sub-basins, irrigated lands make up less than 3% of the sub-basin area.

Consumptive water needs vary depending upon crop type, climate and soil conditions. Actual water delivery needs must account for transportation and application requirements. These requirements vary from user to user. Total irrigation deliveries are estimated to be on the order of 200 – 250 cfs (Golder Associates, 2002), which includes consumptive, transportation and application requirements. Approximately 60% of this use is consumptive and the remaining 40% returns to the aquifer as groundwater (Golder Associates, 2002, Konrad and others, 2003).

Domestic and Municipal Water Usage Rates

RCW 90.44.050 established that a single withdrawal of less than 5000 gallons per day as not requiring a permit. Although attempts are sometimes made to use this value as a water right or an actual daily withdrawal, this number has no relationship to actual water usage and does not establish a water right. A water right for water withdrawals with or without permit is established only for the measured level of water use which "is regularly used beneficially" (RCW 90.44.050).

The metered monthly average water withdrawal at Twisp and other Eastern Washington communities is 600 total gallons per day per residence (Table 13.). The planning unit used 600 total gallons per day per residence as a starting point for water withdrawal estimates.

Residential use outside of towns universally use septic systems which return a significant portion of the water supplied to a residence to the aquifer. The return factor for water treated by septic systems is estimated to be 90% (Water Budget for Proposed Action-Arrowleaf PDR, Arrowleaf EIS, Golder Associates).

Most measured water data for the Methow Valley is for withdrawal only. Return factors have not been individually measured. The amount of water withdrawn for residential use is many times more than the actual consumptive use. Therefore, the planning unit has chosen to use well-documented withdrawal data ensuring that very

1 conservative values are used as a starting point for water use planning. This approach
 2 ensures a large initial reserve. Additionally, many residents outside of towns use an
 3 established canal system for irrigation. Many residences are also only occupied on a
 4 part-time basis. For example, the residential use at Lost River is mostly part-time, and
 5 the residential water use is quite low. The Lost River Airport Association rural group A
 6 system uses 125 gallons per day per residence (January 17, 2003 Water Usage Report to
 7 Ecology).
 8

*Future Domestic
 Water Use*

9 Using the average annual usage factor of 600 gpd per household, and an average
 10 2.54 persons per household, projected future annual water use based on a year 2015
 11 resident and seasonal population of 11,500 people (Highland Associates, 1993) is
 12 estimated at 2.7 million gallons per day (600 gpd/2.54 x 11,500).
 13

*Exempt
 Water Use under the
 2cfs reservation*

14 The 10,135 AF of water reserved in WAC 173-548 can be thought of as a fixed
 15 number of uses at a given usage rate. Only uses since 1976 and outside of closed basins
 16 are subject to management under this reservation. At 600 gpd per household, the
 17 exempt use reservation is equivalent to 15,066 households, or an equivalent population
 18 of 38,267 (assuming 2.54 persons per household). Currently developed parcels subject
 19 to the 2 cfs reservation is estimated to be less than 3,000 parcels, including a correction
 20 for parcels developed prior to 1977. Depending on how development occurs in the
 21 valley, it is highly unlikely that there will be more than 15,000 households developed in
 22 the Methow under current zoning. Therefore, there is currently a large “cushion” that
 23 can accommodate new exempt uses at a 600 gpd usage rate. There is also adequate
 24 water reserved under WAC 173-548 for all future exempt domestic uses as long as the
 25 usage rate falls in the range of 600 gpd per parcel. In fact, the cushion may be large
 26 enough to accommodate a broader range of uses when return factor, the number of
 27 days of occupancy as well as other factors are considered.
 28

Habitat

29 Fish and wildlife need adequate space and habitat for the basic life requirements,
 30 including: safe, undisturbed areas for breeding; shelter; food supply; migratory routes
 31 and overwintering areas. Protection of instream and riparian habitat, may yield the
 32 greatest gains for fish and wildlife while involving the least amount of area. Riparian
 33 habitat covers a relatively small area yet it supports a higher diversity and abundance
 34 of fish and wildlife than any other habitat, it provides important fish and wildlife
 35 breeding habitat, seasonal ranges and movement corridors, has important social values,
 36 including water purification, flood control, recreation and aesthetics and is highly
 37 vulnerable to alteration. Groundwater recharge from Agriculture contributes a positive
 38 impact to riparian zones, and agriculture provides lowland habitat for wildlife.
 39 However, there may be some instances where agriculture may not be entirely
 40 beneficial; these would be looked at on a case by case basis. Table 4 summarizes the
 41 many projects and improvements implemented in the Methow basin.
 42

Water Quality

43 In general, water quality in the Methow watershed is extremely high. The Methow
 44 River from its mouth upstream to the Chewuch River (at river mile 50.1) is classified as
 45 Class A (as defined by Washington State, 1997). Class A waters have the general
 46 characteristic of exceeding the requirements for all or substantially all uses. The
 47 Methow River from the Chewuch River upstream to its headwaters is classified as Class
 48 AA. Class AA waters have the general characteristic of markedly and uniformly
 49 exceeding the requirements for all or substantially all uses (Washington State, 1997).
 50 Both the Chewuch and the Twisp Rivers are classified as Class AA. Discussions on the
 51 exceptions to the high water quality standards are provided in the WRIA 48 Phase II
 52 Technical Assessment (Golder, 2002).
 53

1 **CONCLUSIONS**

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- The Methow Valley is blessed with a huge annual recharge of water, 3,000,000 acre feet per year. The best way to increase water supplies for environmental and human use is to store excess water from high flows. This will be done most effectively by ground water storage. Additional surface water storage is a possibility.
- Federal and state lands represent 86 % of the total land in the basin. These lands are associated with 96 % of the total water consumed in the basin. Best management practices of these lands would substantially enhance water availability in the basin.
- Agriculture should be preserved whenever and wherever possible. Agriculture has been a long-standing element of the Methow Valley and is responsible for the character and rural atmosphere enjoyed by both residents and visitors. The positive balance of economic, social and environmental benefits provided by agriculture should be preserved.
- We found that the existing rights and claims register maintained by the Department of Ecology does not reflect an accurate picture of water use in the Methow.
- Groundwater recharge from unlined irrigation canals is an integral part of the hydrology of the Methow Basin. Groundwater recharge from an unlined irrigation canal in WRIA 48 has been determined to generally be a beneficial use¹, therefore when an agency asserts that a recharge occurrence is a non-beneficial use, the burden of proving that assertion with verifiable and acceptable science shall fall upon that agency.
- Ground water recharge benefits fish and other wildlife; it establishes riparian zones which would not otherwise be present; it slows the movement of water in its travel to the Columbia River; it stabilizes river temperature (cooler in the summer and warmer in the winter); and it increases overall water quality in the rivers by filtering moving ground water through glacial till.
- Canal operators should be encouraged to augment ground water recharge where possible and appropriate. This does not mean to sacrifice any efficiency or increase any expenses to the canal entity. The Methow Watershed Council should assist canal entities in securing funding for ground water enhancement.
- Ground water discharge to the river in the late winter and early spring can be increased by moving surface water further from the river. This will assist in alleviating the bottleneck for fish production.
- Water management for the Methow Basin is best accomplished at a local level.

1. The term "beneficial use" is used in this paragraph in its broadest common usage context. It is not the intent of the planning unit to use the term in its strict legal sense. This footnote also applies to page 18 lines 26-28

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- Interruptible water rights are available during high flows, and can be used for artificial storage and recovery projects (ASRs).
- Water should not be a limiting factor in domestic development. Growth management is best accomplished with implementation of land use ordinances that is outside the scope of this watershed plan. Domestic consumption is an insignificant portion of total water use, and has no measurable impact on instream flows.

1 **RECOMMENDATIONS**

2 **Overview**

3 The Methow Basin Planning Unit recognizes that this watershed plan cannot
 4 “solve” all the water management issues in the Methow Basin. It has become clear that
 5 solutions to water management conflicts in the Methow basin must occur on a case-by-
 6 case basis, taking into account site specific conditions and circumstances. Therefore,
 7 the recommendations in this plan are focused on a few key “structural”
 8 recommendations that are intended to create a means to address specific problems while
 9 recognizing the general findings of the watershed planning process. It is not the intent
 10 of this watershed plan to propose or obligate any entity to implement actions that are
 11 contrary to the requirements of RCW 90.82.

12 **Methow
 13 Watershed
 14 Council (MWC)**

15 The Methow Basin Planning Unit recommends the formation of a publicly
 16 controlled Methow Watershed Council (MWC) to oversee watershed plan
 17 implementation and develop the recommendations contained in the watershed plan.
 18 This recommendation places an obligation on Okanogan County to initiate the
 19 formation of the MWC and to develop a memorandum of understanding with the MWC
 20 to take a “lead entity” role in plan implementation.

21 This recommendation also obligates the MWC to implement the planning
 22 strategies developed in this plan. The MWC will design and implement cooperative
 23 plans and projects within the Methow Basin that are consistent with the guidance
 24 presented in this Watershed plan, particularly those aimed at the protection of
 25 agriculture and irrigation canal systems. The MWC will develop an adaptive
 26 management program to insure this plan is implemented and revised as new information
 27 becomes available. Any modifications to the plan must be made according to HB 1336.
 28 Modifications to the plan should be based on new scientific information and the results
 29 of assessments made during plan implementation. The MWC will also be responsible
 30 for developing a specific funding strategy that will insure that it can be a self-sustaining
 31 entity capable of overseeing local water management programs in the Methow.

32 **Protect and
 33 Enhance Water
 34 Management
 35 Methods that
 36 Benefit The
 37 Methow Basin**

38 *Develop Water
 39 Storage*

40 Implementation of the recommended Methow Watershed Council requires a
 41 statutory provision in state law. To date, implementation of watershed plans may be
 42 done by the existing planning unit as provided by HB 1336 Section 2 (B) (iii) (e). The
 43 initial structure of the Methow Watershed Council (MWC) shall be a continuation of
 44 the present planning unit, acting as advisors, to the county commissioners. The existing
 45 planning unit through the county shall apply for implementation funding as noted in HB
 46 1336. Concurrently, the planning unit and Okanogan County will work with the state
 47 legislature to formalize watershed management districts as statutory entities. This
 48 appears to have been the direction envisioned in the Watershed Planning Bill. The
 49 structure of the statutorily enabled “watershed council” might possibly be similar to the
 50 fishery groups provided for in RCW 77.95 or some form of special purpose district.
 51 This new Methow Watershed Council should be able to accept grants from private, state
 and federal sources, provide legal protection for the board members and provide for
 directly elected members from the watershed. Once the MWC can be recognized under
 state statute, the planning unit will cease to exist and the new MWC will take over the
 implementation function of the watershed plan. The MWC shall operate under Robert's
 Rules of Order.

The Methow Basin Planning Unit recommends that the MWC place its highest
 priority on protecting and enhancing water management methods that promote water
 storage and groundwater recharge. This could include but is not limited to small
 irrigation impoundments, raising existing reservoirs, side channel/bank storage, and
 encourage reintroduction of beavers. This will create water availability at a later time

1 for instream and out of stream uses as well as for existing power generation facilities
2 and to spill water for fish passage.

3
4 To balance the needs of spring flows for both channel forming processes and
5 storage, the MWC should consider the effect the amount of water diverted for future
6 surface and groundwater storage projects have on channel-forming processes in areas
7 where significant storage diversions might occur. If future diversions exceed 10% of
8 high flows then further research may be necessary to establish what portion of
9 remaining flows are needed to maintain properly functioning channels.

10
11 Storage studies conducted during this watershed planning process indicate that both
12 streamflows and irrigation reliability can be increased by increasing storage capacity
13 and more prescriptive operational strategies. The storage analysis could not, however,
14 provide sufficient detail on specific projects that could be used to prioritize projects or
15 initiate a preliminary environmental or permitting analysis. Therefore, the Methow
16 Basin Planning Unit recommends that the MWC develop a process for assessing
17 specific benefits from specific storage projects; work with potential project owners; and
18 conduct preliminary environmental reviews of projects for the purposes of feasibility
19 analysis. Projects that appear favorable based on the initial analysis include Patterson
20 Lake, Pearrygin Lake, Elbow Coulee (Twisp River Tributary), Lost River, Black Lake,
21 Chewuch River, and Twin Lakes.

22
23
24 The Methow Basin Planning Unit recommends that the MWC use the management
25 tools described later in this plan to maintain and, if possible, increase artificial
26 groundwater recharge in cases where there is a benefit to streamflows and other
27 environmental conditions. This recommendation places an obligation on the MWC, but
28 does not obligate any other entity. It also recognizes that protection and enhancement
29 of these water management methods requires a site specific analysis and that benefits or
30 impacts will vary from place to place. However, the Methow Basin Planning Unit has
31 reviewed compelling evidence suggesting that agricultural practices in the basin may
32 have a beneficial effect on the environment.

Artificial Groundwater
Recharge

33
34 Groundwater recharge from unlined irrigation canals is artificially stored by man's
35 actions, and is therefore capable of being managed through physical or operational
36 actions. Two forms of groundwater recharge should be recognized:

- 37
38 1. Existing groundwater recharge that is incidental to an existing irrigation
39 system and associated water rights, and
40 2. The use of unused irrigation canals or other suitable areas for the purpose
41 of artificial groundwater recharge.

42
43 How these two forms of groundwater recharge are handled by the WDOE varies,
44 and in some cases is subject to clarification from the courts. However, there is no
45 dispute over whether this groundwater recharge occurs, and there is general
46 acknowledgement that “natural” groundwater recharge (in the absence of unlined
47 irrigation canals) would be lower. How or whether irrigation recharge creates
48 environmental benefit will vary depending on site specific conditions.

Protect Artificial
Recharge and Existing
Unlined Irrigation Canals

49
50 Critical to maintaining and/or increasing artificial ground water recharge is the
51 protection and continued operation of unlined irrigation canals. Current evidence
52 suggests that the elimination of ground water recharge from irrigation canals could have
53 a negative impact on adjacent groundwater levels, riparian areas, wildlife and fish
54 habitat, stream flows, stream temperatures and the local economy. Future ground water

1 recharge projects shall be planned to have the most positive net effects on adjacent
2 groundwater levels, riparian areas, wildlife and fish habitat, stream flows, stream
3 temperatures and the local economy. The positive or negative impacts of ground water
4 recharge projects would need to be weighed after examining the timing, location,
5 magnitude, stream reach and life history stages of affected species. This planning unit
6 strongly recommends the restoration of beneficial groundwater recharge formerly
7 provided, but now lost by modification and or abandonment of open canals. (See
8 footnote on page 14 referencing lines 26-28)
9

10 Groundwater recharge from all sources increases the groundwater levels in the
11 basin making groundwater storage the most effective way to increase water availability.
12

13 Depending on site conditions, additional ground water recharge could have several
14 important positive consequences including:
15

*Enhance Artificial
Recharge using unused
Unlined Irrigation Canals*

- 16 1. Enhancement of stream flows;
- 17 2. Enhancement of fish and wildlife habitat;
- 18 3. Enhancement of water quality, particularly temperature;
- 19 4. Increased downstream availability of water;
- 20 5. Improve groundwater quality

21
22 Artificial ground water recharge effort will be most appropriate during high river
23 flows. This is a time when established minimum stream flows are far below actual
24 stream flows and would be available for appropriation. Table 5 shows the volume of
25 streamflow above the regulatory baseflow requirements at various gage sites in the
26 Methow. The easiest technique to augment ground water recharge would be to divert as
27 much water as possible through existing head gates during high flows.
28

29 Preserving agricultural lands and uses is important for many reasons. The present
30 turn in the agricultural economy has caused a decline in agricultural lands. Parcels are
31 being subdivided into smaller properties.
32

*Preserve
Agricultural
Lands and Uses*

33 There are a number of ways to preserve agriculture in the Methow, and the MWC
34 should evaluate options on a case-by-case basis and provide leadership on water-related
35 aspects of agricultural land use. Preservation strategies could include:
36

- 37 • Encouraging preservation of the larger remaining intact agricultural lands;
- 38
- 39 • Encourage the use of existing irrigation water rights on former agricultural
40 lands in order to more actively manage these lands for agriculture. This could
41 include the return of state lands to private ownership, or the lease of state or
42 absentee owner lands, with the provision that they be actively managed wildlife
43 habitat
44

45 The Methow Basin Planning Unit examined water needs for current exempt and
46 municipal needs (i.e. water for people) and concluded that, under current and future
47 development scenarios and the best available information on water use, there is
48 sufficient water reserved within the 2 cfs reservation that could be allocated to a broader
49 range of uses if WAC 173-548-030 were modified. The recommended changes to WAC
50 173-548 will be consistent with Okanogan County Zoning, which encourages that
51 greater development densities occur within existing towns. This recommendation is
52 noted in the chart below and the user categories with water allocations are shown in
53 Figure 6 and discussed in Appendix E.

Modify WAC 173-548

*Revise Use Priorities
and Monitor Water*

1

CURRENT RULE	PROPOSED CHANGE
2 CFS reservation per reach is allowed for single domestic and stock water uses	Allow all exempt uses designated under RCW 90.44.050 including: single and group domestic, ½ acre non-commercial garden, stock watering, and industrial provided withdrawal does not exceed 5,000 gallons per day. Allow 1,243 acre feet per year for Group A and B not falling under exempt uses and Municipal uses be taken from the 2 cfs reservation. Permit unused portions of the 2 cfs reservation in any reach to be moved downstream to off set higher use areas, if needed
Baseflows	Baseflows
Public water, supplies, irrigation and other uses subject to baseflows	All other uses not provided for in 2 cfs reservation subject to baseflows

2

3 User Categories and the water Allocation process are defined in Figure 6 and Appendix
 4 E. Industrial includes Commercial use and is limited to 5000 gallons per day.

5 Water reserved for Municipal and Group A and B systems require water in
 6 amounts greater than 5,000 gpd, and are not subject to a permit exemption under RCW
 7 90.44.050. Therefore these uses will require a water right permit application, and are
 8 subject to the cap as defined in the 2 cfs reservation priority. This will not prevent
 9 Ecology from granting the water right under the priorities described above from water
 10 available within the 2cfs Reservation.

11

12 The planning unit requests that the 2 cfs reserved for each of the upper sub-basins
 13 be available for allocation in downstream areas in direct hydraulic connection. The
 14 planning unit requests that the 2 cfs reserved for each of the upper sub-basins be
 15 allocated to reaches in direct hydraulic continuity if available. For example, the Early
 16 Winters reach will not use its 2 cfs reservation and this reservation should be available
 17 for downstream allocation. The planning unit recommends that 1.48 cfs of the Early
 18 Winters sub-basin reservation be allocated downstream to Winthrop and Twisp systems
 19 (See Table A-4), and that the remaining .52 cfs be designated as an unallocated
 20 available reservation." The planning unit recommends that 0.23 cfs from any reach be
 21 available to existing Group A and B systems. The total allocation of 14 cfs for the basin
 22 will not change. Further, the two tributary sub-basins (Chewuch and Twisp) will be
 23 excluded from obtaining additional 2 cfs reservation amounts, since they are not in
 24 hydraulic connection with upstream reservations.

25

26 Lastly the planning unit understands that domestic consumption is an insignificant
 27 portion of the total annual water budget. However, the planning unit recommends that
 28 WDOE request continuation of the funding support for water meter installation
 29 expenses and its extension to include exempt residences in order to encourage existing

1 and new Single Domestic users to assist in developing more accurate actual water usage
2 data. Data measured and reported by parcel owners will not be used to define added
3 restrictions, including fees or loss of rights to which they would otherwise be entitled.
4

5 Monitoring and maintaining a database of how the 2 cfs reservation is being used will
6 be important to implementation of the requested rule change. The RCW 90.44.050
7 exempt use limit is 5000 gpd. A water right can be established for only the amount of
8 water actually put to beneficial use. Based on measured data from Twisp and other
9 Eastern Washington systems, 600 gpd per residence has been determined to be a
10 realistic value for actual residential usage. This value has been selected as a starting
11 point for developing usage rates validated by actual data as build out occurs over future
12 years as outlined in Appendix E. The data tracking process will determine the value
13 developed at any given point in time, and this value will be used to determine actual
14 water allocated at that point in time and in estimates of future growth. The data
15 management process also tracks maximum monthly usage rates, changes in zoning and
16 new building permits for use in future growth estimates.

17 The following responsibilities are an essential part of maintenance of this database.
18 Owner, Ecology, and County Tasks are summarized in Table 10 as they vary within
19 each water system category.

- 20
- 21 • Twisp, Winthrop, and Group A usage rates are capped at the value limits shown
22 and will be managed by the responsible Town Councils and Group A and B,
23 Boards of Directors.
- 24
- 25 • Group B (exempt), Single Commercial/Industrial, and Single Domestic
26 Categories are restricted by the 5000 gallons per day per parcel limit. Because
27 of the large reserve included in the planning process, these categories are
28 unlikely to be restricted by annual usage limits before full valley build out of
29 available parcels is reached. However, MWC and WDOE will notify Methow
30 Valley residents if actual use approaches 90% of the allocated 2 cfs per reach
31 limit for these three user categories.
- 32
- 33 • Ecology and County tasks are defined to use data that is already available from
34 current procedures and databases presently in development, but may require
35 added efforts to share data. A Memorandum of Agreement between WDOE and
36 Okanogan County is required and will be jointly developed to define
37 responsibilities and working relationships for sharing and evaluating data.
- 38
- 39 • The Planning Unit has recommended that 205 AF of the Early Winters 2 cfs be
40 designated as an unallocated reserve available for reallocation when a future
41 need is identified. As a part of their periodic review of actual vs estimated
42 usage rates, the MWC will evaluate sub-basin build-out water use needs to
43 determine if sufficient data is available to accurately define a sub-basin water
44 shortage or excess. If appropriate, the sub-basin allocations can be revised by
45 MWC to better match actual needs. MWC will ensure water is maintained to
46 support all undeveloped parcels in each sub basin using the actual annual
47 residence usage rates as of the evaluation date. Okanogan County will provide
48 building permit and parcel subdivision change data. WDOE will provide
49 water usage data.
50

- 1 • Water users who report will meet Ecology’s data submission standards. It is
2 the responsibility of water users to submit their water use data annually. No
3 agencies will read water meters.
4
- 5 • Water usage may not exceed the reach limit in any month. The USGS study
6 (Konrad, 2003) suggests that generally aquifer/river effects occur over a period
7 of a month or longer; Konrad did not specifically address exempt well
8 withdrawals. It is reasonable to estimate that wells pumping from dispersed
9 location throughout the aquifer may have an affect on river flow not exceeding
10 the monthly average usage of all the wells.
11
- 12 • For the purpose of this section, average single domestic usage will be
13 calculated by a simple average of all reported single domestic users per month.
14 The average single domestic usage will be multiplied times the total post -
15 WAC 173-548 (12/28/76) single users per reach. This will be the total single
16 domestic use per month toward the reservation.
17
- 18 • Total monthly usage toward the reservation shall be the total single domestic
19 use plus all other new exempt uses. This calculation will be done per reach.
20 MWC will review water rights issued after 12/28/76 for possible inclusion in
21 calculations.
22
- 23 • The reservation for any reach will be considered expended if the total usage
24 towards the reservation exceeds the reach limit for any reach in any month.
25
26
- 27 • Ecology and MWC will notify Okanogan County when any of the limits have
28 been reached in any of the user categories. Okanogan County will cease
29 issuance of development permits dependent on the reach limits when
30 notification is received.
31
32
- 33 • The Washington State Department of Health (WDOH) currently collects data
34 on the number of full time, part time, and recreational/ camping connections in
35 Group A and B systems in and outside of towns. The WDOH is in the process
36 of developing a web site which will make this more detailed water usage data
37 available in the future.
38
- 39 • The Methow Watershed Council as part of its water management
40 responsibilities in the basin will maintain its own database utilizing the
41 information obtained from Ecology and Okanogan County. MWC shall use
42 this data to make decisions affecting water management in the basin and advise
43 Ecology and Okanogan County on how to best utilize the ability to move water
44 in the 2 cfs reservation to other reaches.
45
- 46 • The Department of Ecology must include the public review processes required
47 by the Administrative Procedures Act for revision of WAC 173-548.
48

49 It is the intent of the Methow Basin Planning Unit to ensure that water is available
50 to support all developable parcels in each sub basin using the actual usage rates at the
51 time of the water use evaluation report. Current information suggests that there is a
52 large reserve available and that it is unlikely that usage or building restrictions would be
53 necessary before full valley build out is reached. The intent of the proposed revisions to

1 WAC 173-548 is to provide the capability to respond to actual development conditions
2 or trends over time. If reservation limits are being approached, even with the re-
3 distribution of water between sub-basins, there will be time to implement water
4 conservation programs or other incentives to reduce water usage and “free up”
5 additional water for development.

**Legal and Policy
Discussions**

6
7 The following issues are thought by many (but not all) planning unit members to be
8 worthwhile topics for further legislative and technical discussion. These are not actions
9 that can be implemented by rule or ordinance under the watershed planning act, and
10 therefore do not create an obligation for any entity and are not actions under SEPA.
11 They are considered relevant to water management issues in the Methow (and other
12 basins). It is anticipated that the MWC may attempt to prepare more specific legislative
13 proposals and develop supporting technical or monitoring information as necessary.

14
15 Transportation water that provides the ground water recharge associated with the
16 canals and the environmental benefits is not viewed by Ecology or present water law as
17 the water put to beneficial use as stated in the claim or water right. This becomes
18 evident when a point of diversion or use change is made. Only the water put to the
19 beneficial uses stated on the claim or water right can be moved or changed in its use.
20 The transportation water is left as a return to the associated stream. While the
21 transportation water remains with a water right to support that water right it can not be
22 preserved as a water right in and of itself for a specific environmental benefit. Thus
23 there is no present legal mechanism to have the environmental or ground water recharge
24 benefits associated with transportation water recognized.

Closed Basins

25
26 Under current water law, water rights cannot be issued in a closed basin without
27 an assessment of whether water is available for allocation, which, according to the
28 WDOE, would include setting an instream flow and/or assessment of water rights.
29 Ecology should issue an interruptible water right in a closed basin if certain conditions
30 are met. These conditions could include that the water is taken during high flows; the
31 water use includes environmental enhancements or storage; and that the intent of the
32 water right is to increase water availability.

“Use it or lose it “

33 Under current water law, water rights that have not been put to beneficial use within
34 the past 5 years are subject to forfeiture under the “use it or lose it” provisions. Water
35 rights (primarily agricultural water rights) that have been put to beneficial use within the
36 last 20 years should not be forfeited. Agricultural economies depend on irrigation water
37 rights, but respond to economic and land use cycles that are not 5-years in length.

*Tentative
Determination*

38 Each ditch company or district must provide water to fulfill the beneficial use
39 declared on their water right or claim. In all cases this beneficial use is for agriculture
40 uses with a few of the water purveyors having claimed other uses such as electric power
41 generation or domestic water uses. None have environmental beneficial uses listed on
42 their right or claim. To preserve those uses a change in use application with Ecology is
43 required. Many of the ditch companies have a water claim. In applying for this change
44 of use each claim will be subject to a tentative determination of the amount of water put
45 to beneficial use. Many fear this tentative determination will result in a loss of water
46 rights which will limit the amount of water they can provide to their share holders and
47 will negate the purpose for applying for the change of use. Rather than being subject to
48 a tentative determination, ditch companies should be able to declare their customary
49 usage over the last 20 years.

*Reappropriation of
water use*

50
51 While the loss of water due to “the use it or lose it” clause in water law has the
52 intention to insure that the water goes to another user who will put it to beneficial use,

1 this has been abridged by WAC 173-548.020 (4) which states that all water rights
2 issued after 1976 are subject to base flows. Thus it is not possible to re-appropriate the
3 forfeited water as a full season uninterrupted agriculture water right or to obtain a year
4 round water right. Without the ability to recover lost water by re-appropriation water
5 users are not open to make the changes they could make to preserve those benefits
6 associated with the earthen canal system. Forfeited water that has been demonstrably
7 put to beneficial use in the past should be able to be re-appropriated or do away with the
8 tentative determination as noted above.
9

*Environmental
Benefits of unlined
irrigation canals*

10 Based on current case law (*Grimes v. Ecology*) environmental benefits
11 attributed to groundwater recharge from unlined irrigation canals are categorically
12 excluded from consideration by WDOE in the determination of beneficial use in a
13 tentative determination on water rights. This prevents potentially creative and
14 environmentally beneficial water management approaches, and creates an impediment
15 to voluntary participation in agreements that could address outstanding water claims in
16 the Methow Basin. The legislature should enact a law that specifically recognizes the
17 potential for environmental benefits associated with groundwater recharge and
18 agricultural practices, and allows this to be a consideration in a determination of
19 beneficial use.

*Groundwater
recharge from
unlined irrigation
canals for ASR
Projects*

20
21 Under current law, groundwater recharge from unlined irrigation canals, incidental
22 irrigation return flow, operation losses and re-claimed water are categorically excluded
23 from consideration in Aquifer Storage and Recovery (ASR). All forms of recharge
24 should be eligible for ASR projects if supported by adequate technical evidence to
25 demonstrate benefits to water management and no impacts to environmental or public
26 health.
27

*Water Claim
"Amnesty"*

28 Under current water law, any claim to surface water that was put to use after 1917
29 may not be a valid water right, even if the claimant registered their claim during the
30 claim filing periods. The exact expiration date for claims to beneficial use seems to vary
31 depending on circumstances, the dates are usually 1933 or earlier. This currently
32 discourages tentative determinations of water claims under current law. There has been
33 much confusion regarding water claims. The legislature should enact a law that
34 provides for an "amnesty clause" that would recognize the current use of claims that
35 were not perfected by 1933. In the Methow, this would not make all claims to water
36 valid, only claims that are currently being used.
37

*Water allocation and
economic impacts*

38 State agencies should continue to work together and with local stakeholders and
39 recognize the value of the small scale sustainable agriculture that occurs in the Methow
40 Valley. The Methow Basin Planning Unit especially hopes that these agencies will help
41 identify and preserve the benefits of agricultural practices and groundwater recharge
42 from unlined irrigation canals. In particular, it is recommended that the State examine
43 how policies toward water allocation and associated land retirement in the agricultural
44 sector create direct and indirect costs to both the regional and state economies.
45

Management Tools

46
47 The Methow Basin Planning Unit has, during the course of developing the
48 watershed plan, discussed a variety of management approaches and identified a number
49 of management tools and technical resources that could be used by the MWC and others
50 in the basin to improve water management in the Methow. These are discussed below.
51

*Canal
Management
Plans*

52 Canal management plans can provide documentation on recharge areas and
53 environmental enhancements that need to be preserved for ground water recharge, fish
54 and wildlife habitat needs and storage for further appropriation. These plans should

1 identify areas in canal operations that affect the environment and/or would improve
2 operation of the canal system to facilitate implementation of those improvements. They
3 should also document water use and water application practices, and identify ways
4 canal and water application practices can complement water management goals. Such a
5 plan makes it easier to obtain funding and gain cooperation with shareholders on
6 needed tasks or programs. The Methow Basin Planning Unit strongly recommends ditch
7 operators and companies develop individual canal management plans. Guidelines and
8 templates can be obtained from the US Bureau of Reclamation and others in the
9 watershed plan.

10
11 *Habitat*

12 Habitat preservation and enhancement programs need to balance the benefits of
13 unlined irrigation canals with instreams needs for fish. Where possible, actions that
14 promote both are preferred. In some cases some stream sections associated with
15 diversions have been modified by human activity. Where possible, proper stream
16 function should be restored. Projects in relation to diversions that utilize vortex weirs
17 or wing dams to improve instream availability of water for fish should be considered as
18 these will provide more usable habitat for fish than putting more water back into stream
19 channels that have been altered by previous human activities or are naturally low flow
20 sections of the stream.

21
22 *Buyer-Seller Water*
23 *Agreements*

24 Buyer-Seller water agreements are essentially water right transactions, and could
25 include water exchanges, water leases, water trusts, or water right purchases. They
26 provide flexibility in how a water right is used, while legally maintaining the original
27 priority and beneficial use of a water right. These agreements should consider all water
28 trust opportunities currently available under Washington State water law. Changing a
29 water right to a trust water right is a process by which a valid right, in whole or in part,
30 temporarily or permanently, is placed in the state trust water rights program and applied
31 to the beneficial uses specified in the trust agreement.

32 Buyer-seller agreements are not initially subject to scrutiny or oversight by state or
33 federal agencies. The MWC could therefore facilitate an open discussion and
34 confidential documentation of beneficial use and water claim issues. The process will
35 provide a locally based component devoted to local documentation of water use,
36 recharge areas, and environmental conditions associated with existing rights and claims.
37 Buyers and sellers that wish to proceed with a trust agreement could then finalize the
38 trust agreement through WDOE. It will be important for the MWC to work closely
39 with buyers, sellers, and WDOE with regard to the determination of beneficial use, so
40 that any preliminary determinations of beneficial use developed prior to formal
41 consultation with WDOE are representative of what would result from a formal
42 determination. Even if a water right holder elects not to proceed with a formal
43 determination by WDOE, the documentation of beneficial use within the MWC
44 program will be valuable information in the future and will not subject any participant
45 to additional risk with respect to the validity of their water right.

46
47 *Forest*
48 *Management*
49 *Plans*

50 The Methow Basin Planning Unit recommends that the MWC place a high priority
51 on participating in the revision to the Okanogan Forest Management Plan. It further
52 recommends that USFS adapt its planning process for the Forest Management plan to
53 include means for local stakeholder input on water resources management issues.
54 Specifically, the plan should include a policy/goal statement that directs the USFS to
manage forest lands to extend the hydrograph and increase streamflows during low
streamflow periods. This recommendation also places an obligation on the MWC to
participate in forest management planning on all public lands beyond the current forest
plan revision process.

1 The Methow Basin Planning Unit reviewed compelling evidence with regards to
 2 potential forest management influences on water resources (Golder 2002) (see appendix
 3 I). Evapotranspiration from forested lands is by far the single largest consumptive use in
 4 the basin. Even a 1% reduction in consumptive use from forest lands could shift a
 5 significant amount of water into other phases of the water cycle (i.e. run-off, recharge,
 6 or snowpack). Issues related to stand density and forest type have a significant
 7 influence on consumptive use of water from the basin, and, in the Okanogan National
 8 Forest, there is evidence that stand density is higher than optimal and that the forest
 9 type has transitioned from its pre-development condition. Forest practices also have an
 10 influence on habitat and water quality conditions that are relevant to fish and wildlife,
 11 including endangered species.

12
 13 During the past four plus years, planning unit members have expended thousands of
 14 hours in the watershed planning process. In addition, the planning unit has authorized
 15 substantial expenditures of taxpayer's dollars to scientifically investigate/determine
 16 watershed activity in WRIA 48.

17
 18 All of the state agencies, of which 13 were represented on the planning unit by
 19 the Washington State Department of Ecology, the local governments (county, towns
 20 and the irrigation districts), the state legislators, the governor, and the state's citizens
 21 should clearly understand the numbers presented below.

22		
23	Total annual water budget	3,000,000 acre feet
24		
25	Minus water exiting at Pateros	1,536,818 acre feet
26		
27	Total water use (Table 1)	1,463,182 acre feet
28	100.00%	
29		
30	Total water use by humans	
31	in WRIA 48: Municipal-Residential,	
32	Exempt, & Agricultural	
33	(Table 1 sum of first three Columns)	56,633 acre feet
34	3.87%	
35		
36	Consumptive water use on public lands	
37	(Table 1 Forest)	1,405,757 acre feet
38	96.07%	

39
 40 The ultimate responsibility for watershed health lies at the feet of the entity
 41 who has managerial responsibility for the greatest consumptive use of water.

42
 43 It is scientifically impossible for humans using only 3.87% of the resource to
 44 measurably impact stream flows in the basin. Current management practices on publicly
 45 managed lands needs to be revised. A 1% savings in consumptive use from public
 46 lands is 14,057 acre feet. A 1% savings in human uses is 566 acre feet.

47
 48 The planning unit does not have the authority to fix this problem. The planning
 49 unit has accurately identified evapotranspiration (ET) on public land as the greatest
 50 consumptive use in the basin. The health of WRIA 48 requires both the state and federal
 51 government to consider water quantity in future planning. The morass of federal and
 52 state rules and regulations affecting the citizens of WRIA 48 appear to have little or no
 53 positive impact on our most valuable resource, water.

54

*Floodplain
Management Plan*

1 The Methow Basin Planning Unit acknowledges the importance of the floodplain to
2 watershed management and water availability. The Methow Basin Planning Unit
3 recommends that the County do a flood hazard management plan.
4

5 The Methow Basin Planning Unit also recommends integrating floodplain and
6 habitat functions in the selection and prioritization of water storage projects, with a
7 specific emphasis on projects that restore or enhance stream function and habitat, and
8 projects that utilize high flow periods to disperse flood waters into side channels to
9 enhance ground water/bank storage.
10

*Drought
Management Plan*

11 Drought conditions and the potential for climate change require a proactive
12 approach. The Methow is a highly variable “run-of-the-river” hydrologic system that is
13 sensitive to hydrologic change. The Methow Basin Planning Unit recommends that a
14 local drought response plan be developed that outlines the baseline drought
15 management issues, identifies specific drought features, develops specific
16 recommendations and responses, and prioritizes actions. This recommendation places
17 an obligation on the MWC, but does not obligate any other entity.
18

19 The drought management plan should be organized and developed around drought
20 indicators that are relevant to the hydrology and economy of the Methow. The plan
21 should address:
22

- 23 • Early warning systems for each type of drought;
- 24 • Risks and impact from droughts; and
- 25 • Mitigation and response strategies.
26

**Technical
Resources**

27 The Methow Basin Planning Unit, Okanogan County, and other stakeholders in the
28 basin have initiated a number technical studies that will continue to have value as the
29 watershed plan is implemented. These are not actions or requirements for
30 implementation of the plan, but will be relevant and valuable tools for water
31 management issues in the Methow.
32

*US Geological
Survey Model
(MMS)*

33 The USGS developed a precipitation-runoff model to simulate streamflow
34 conditions in the Methow Basin using a software called Modular Modeling System
35 (MMS). The Methow Basin Planning Unit was given several presentations on the
36 development, results, and application of this model, and was also given some tutorials
37 on operating the model. This model could be particularly valuable in evaluating the
38 effect of land cover (especially forested lands) on the timing and magnitude of run-off
39 entering the main tributaries to the Methow River.
40

*USGS Groundwater
Studies*

41 The USGS developed a regional groundwater study that has just recently been
42 released (Konrad et al, 2003). This document contains abundant data on wells and
43 groundwater flow in the basin.

44 The USGS conducted a targeted study of groundwater recharge in the vicinity of
45 irrigation canals which included the installation of wells and monitoring of groundwater
46 levels, streamflow, and irrigation diversion rates. Continued use of these sites will
47 further improve understanding of recharge from unlined irrigation canals.
48

*US Bureau of
Reclamation*

49 The US Bureau of Reclamation provided technical assistance to local irrigation
50 systems to install and measure diversion rates using flumes and weirs.

51 The US Bureau of Reclamation developed a flow routing model capable of
52 simulating storage reservoirs using the RiverWare software. This software is
53 compatible with the USGS MMS software, and the initial runs of the model were based

1 on MMS output. Continued use of this model is recommended to evaluate storage
2 options and to investigate the cost/benefit aspects of storage projects in relation to
3 streamflow gains at various locations throughout the basin.
4

5 Okanogan County monitored streamflows at 14 smaller tributaries and water levels
6 in three wells between 2000 and 2004. Operation and maintenance of these gauges has
7 recently been transferred to the Okanogan Conservation District, and it is anticipated
8 that the gauging network will continue into the future.

9 Okanogan County also developed a series of river transects to measure wetted
10 perimeter and channel area at several locations throughout the basin (Golder Associates,
11 2002).
12

1 **IMPLEMENTATION**

Overview, schedule,
and obligations

2 Implementation of the watershed plan for the Methow will involve a cluster of
3 programs, plans and studies that will be occur over time. Funding for these efforts will
4 ebb and flow. At the same time, the voluntary efforts of many individuals and groups
5 will play a significant role. The Methow Basin Planning Unit has already demonstrated
6 a significant volunteer effort in developing the plan. This planning process has also
7 developed and compiled a substantial amount of technical information. It is crucial that
8 these efforts be translated into actions that have a tangible effect on the community.

9 Washington State and participating counties are required, by law, to adopt plan
10 actions by rule or ordinance. After the watershed plan is approved by Okanogan
11 County, implementing participants must work to implement those actions prescribed by
12 the plan, subject to funding constraints. For the Methow, all plan implementation will
13 be through Okanogan County, Washington Department of Ecology, and the Methow
14 Watershed Council (MWC). Other participants in the planning process, including
15 cities, towns, and water districts are not required by law to adopt plan actions.

16 The Methow Basin Planning Unit accepts that any strategies, actions, obligations or
17 potential obligations assigned to agencies as a result of this planning process are
18 contingent on securing necessary funding, resources, and legislative authorizations
19 where required, and are subject to applicable regulations including SEPA and NEPA
20 requirements.

21 Implementation of the Methow Watershed Plan is expected to follow the outline
22 and schedule shown on Table 11. Obligations for each agency of the watershed plan
23 are summarized on Table 12.

State Environmental
Policy Act (SEPA)

24
25 The State Environmental Policy Act (SEPA) was enacted by the state legislature to
26 ensure that state and local agencies consider likely environmental consequences of
27 proposed actions during decision making processes. In August 2002, the Department of
28 Ecology published a Final Environmental Impact Statement for Watershed Planning
29 under Chapter 90.82 RCW (“Watershed Planning EIS”) (Ecology, 2003). The
30 Watershed Planning EIS provides planning units with options for SEPA compliance.
31 Actions in a watershed management plan often involve updates or changes to existing
32 plans, policies, or programs. If environmental review occurs at the broad non-project
33 level, focused project or non-project review for “individual actions” can be carried out
34 at the time the “individual action,” is carried out. “Actions” (also called “alternatives”
35 in the Final Watershed Planning EIS) are defined by the SEPA rules as:

- 36
37
- 38 • “New and continuing activities (including projects and programs) entirely or
39 partly financed, assisted, conducted, regulated, licensed, or approved by
40 agencies;
 - 41 • New or revised agency rules, regulations, plans, policies, or procedures; and
 - 42 • Formal legislative proposals (WAC 197-11-704) (Ecology, 2003).

43 The Final Watershed Planning EIS presented “alternatives” thought to be
44 representative of the types of actions planning units would recommend in their
45 watershed plans. Recommended actions in the Methow Basin Watershed Plan that are
46 covered by alternatives in the programmatic Watershed Planning EIS do not require
47 supplemental information for SEPA compliance, nor do they require enumeration of
48 “alternatives” and potential impacts (ie. action versus no action) in the standard SEPA
49 format (WDOE, 2003). In addition, the following qualifications also apply:
50

- 1 • Recommended actions for convening interest/stakeholder groups (such as the
2 MWC) do not have an “adverse environmental impact.”
3
- 4 • Recommended actions for studies (such as prioritizing storage or artificial
5 recharge projects) do not have an “adverse environmental impact” unless the
6 study requires a project that may involve an impact. If the project may involve
7 an impact, the SEPA review would occur at the project level. For example, if
8 the MWC were to proceed with the development of an artificial recharge
9 project, a project level SEPA review would be required.
10
- 11 • Recommended actions that involve review or revision of existing ordinances
12 /policies/programs will go through a SEPA review process during adoption.
13 Therefore these are not subject to individual SEPA alternative statements at this
14 time. For example, the proposed rule change to WAC 173-548 will require an
15 individual SEPA determination.
16
- 17 • Recommended actions that do not have a foreseeable “adverse environmental
18 impact,” such as seeking funding for artificial recharge projects, do not require
19 a SEPA alternative, or a statement of SEPA compliance.
20

21 The Methow Basin Planning Unit recommends that Okanogan County, as lead
22 SEPA agency, adopt the programmatic watershed planning EIS and a determination of
23 significance (DNS) for the Watershed plan. The county’s responsible SEPA official
24 will need to make a final determination on whether an addendum or additional EIS for
25 its Determination of Significance is necessary, but the Methow Basin Planning Unit
26 believes that the Watershed Planning EIS can be used for all actions in the plan that
27 require SEPA review.
28

29 NEPA, the National Environmental Policy Act, is triggered when an action by or permit
30 from a federal agency is required or if federal funding is involved. One federal agency,
31 US Forest Service, is in the Methow Watershed. However, the plan does not obligate
32 any permit, action, or funding by the USFS or any other federal agency. Thus, the
33 actions specified in the plan do not trigger NEPA.

1 | **REFERENCES CITED**

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	1	FIGURES AND TABLES
	2	
<i>Figures</i>	3	Figure 1 Methow Basin Overview and Sub-Basin Boundaries
	4	Figure 2 Long Term Streamflow at Pateros
	5	Figure 3 Groundwater Flow Path Schematic
	6	Figure 4a Methow Basin Aquifer Recharge Areas
	7	Figure 4b Methow Basin Aquifer Recharge Areas
	8	Figure 5a Methow Basin Land Cover
	9	Figure 5b Methow Basin Land Use
	10	Figure 6 Use Categories and Proposed Allocation for Future Development
	11	
<i>Tables</i>	12	Table 1 Current Water Use
	13	Table 2 Checklist of Watershed Planning Requirements (RCW 90.82)
	14	Table 3 Watershed Planning Chronology
	15	Table 4 Summary of Water and Habitat Projects in the Methow Basin
	16	Table 5 Summary of Streamflow above Regulatory Baseflow Requirements
	17	Table 6 Summary of Allocated Water
	18	Table 7 Summary of Certificates and Permits
	19	Table 8 Summary of Claims
	20	Table 9 MAPA Projected Irrigated Acreage by Crop Type
	21	Table 10 Water System Usage Data Tracking and Evaluation Tasks
	22	Table 11 Implementation of Methow Basin Watershed Plan
	23	Table 12 Agency Obligations for Methow Basin Watershed Plan
	24	Table 13 Comparison of Residential Water Use in Eastern Washington

1 **SUMMARY OF APPENDICES**

2 These appendices have been provided to the reader to give the widest possible spectrum
3 of facts, studies and methodologies many of which (but not all) were used by the
4 Methow Basin Planning Unit in arriving at the final plan. Therefore, the planning unit
5 does not offer as fact or endorse as a conclusion all of the appendices listed in this plan.
6 In areas of conflict between the plan and appendices this plan is superior.
7

8 **APPENDIX A: WATERSHED PLANNING LAWS**

- 9 • RCW 90.82
- 10 • SHB 1336 (Amendment to RCW 90.82)
- 11 • Memorandum of Understanding (MOU) for Watershed Plan Implementation
- 12 • WAC 173-548 (The “Methow Rule”)
- 13

14 **APPENDIX B: HISTORICAL INFORMATION**

- 15
- 16 • Past Participants in the Watershed Planning Process
- 17 • Water – Special Report of Methow Valley News (4/13/2000)
- 18 • Water Chronology (Methow Valley News 6/3/1999)
- 19 • Water Headlines from Methow Valley News (1999-2001)
- 20 • Beaver Creek Adjudication Documents (1919)
- 21 • Methow Watershed Planning Unit Work Plan (Final Draft June 22, 2003)
- 22 • Methow River Basin Water Resources Management Program (1938)
- 23 • Rebuttal of Review of Monograph I (Ken Williams, 1994)
- 24 • Beaver Creek Findings (1919)
- 25

26 **APPENDIX C: BIBLIOGRAPHY**

27

28 **APPENDIX D: US GEOLOGICAL SURVEY STUDIES**

- 29
- 30 • Hydrogeology of the Unconsolidated Sediments, Water Quality, and Ground-
- 31 Water/Surface Water Exchanges in the Methow River Basin (Konrad, Drost,
- 32 Wagner, 2003) (Note: text only, no appendices)
- 33 • USGS Groundwater Storage Study [7/25/03 Draft] (Konrad, 2003)
- 34

35 **APPENDIX E: DOMESTIC AND EXEMPT WATER USE**

- 36
- 37 • Issue Paper: The Groundwater Water Rights Exemption (Kitsap Watershed
- 38 Planning Unit)
- 39 • Nature of Residential Water Use and Effectiveness of Conservation Programs
- 40 • Justification for Proposed WAC 173-548 Modification
- 41 • Population and Growth Data for Methow Basin (Highlands Associates, 1993)
- 42 • An Estimate of the Potential for single-family Development in the Methow
- 43 Valley (Highland Associates 2003)
- 44

45 **APPENDIX F: METHOW BASIN (WRIA 48) STORAGE ASSESSMENT**

46

47 **APPENDIX G: IRRIGATION AND AGRICULTURE**

- 48
- 49 • Alfalfa Irrigation Management (WSU Extension PUB EM4824)
- 50 • Managing Irrigated Pastures and Grass Hay Land (WSU Extension Pub
- 51 EM4915)

- 1 • Water Conservation, Weed Control Go Hand in Hand (WSU Extension Pub
- 2 EM4856)
- 3 • From Abandoned Irrigation Ditch to Wildlife Habitat (Alberta Conservation
- 4 Connection Fall 1999)
- 5 • Allocation of Accumulated Columbia Basin Groundwater (2003)
- 6 • WAC 173-136 Authorizing Withdrawal of Artificially Stored Groundwaters . . .
- 7 . which are Commingled with Public Groundwaters
- 8 • Grimes vs. Ecology (1993)
- 9

10 APPENDIX H: BUYER SELLER WATER AGREEMENTS

- 11
- 12 • Trust Water Rights Programs Guidelines (1992)
- 13 • Trust Water Rights Basics (Washington Water Trust)
- 14 • Example Rules Governing Water Transactions in Other States (Idaho,
- 15 Arkansas, Texas)
- 16 • Washington State Water Right Adjudication Process (A Primer
- 17 • Assessment of Water Leasing Activities in Washington State (Nove 1, 2001
- 18 • Saving Our Streams Through Water Markets – A Practical Guide
- 19

20 APPENDIX I: OTHER PLANNING GUIDANCE

- 21
- 22 • Process to Prepare a Comprehensive Flood Management Plan
- 23 • Wallowa National Forest – Watershed Management Approaches
- 24 • National Forest Planning – The Proper Perspective (8/28/03)
- 25 • Drought Laws and Regulations
- 26 • Assembling a Water Management Plan
- 27 • Characteristics of a Watershed Plan (Raritan Basin, 2001)
- 28

29 APPENDIX J: IMPLEMENTATION

- 30
- 31 • Forming a Non-Profit
- 32 • Final Bill Report – Watershed Phase IV Funding
- 33 • 173-170 WAC – Agricultural Water Supply Facilities Funding
- 34 • Federal Funding Programs for Watershed Planning
- 35

36 APPENDIX K: WATERSHED PLANNING PROCESS DOCUMENTATION

- 37
- 38 • Meeting minutes and workshop notes
- 39

40 APPENDIX L: COMMENT COMPILATION

41

TABLE 1

Current Water Use by Sub-Basin, in Acre-Feet

Sub-Basin	Municipal - Residential ³	Exempt ^{1,3}	Agricultural ²	Forest	Total Water Use
Chewuch	19	170	4,769	410,752	415,697
Lower Methow	102	275	26,125	386,490	413,544
Methow Headwaters	0	77	2,495	222,340	224,874
Middle Methow	19	176	9,571	29,714	39,640
Twisp	51	131	4,204	191,811	196,332
Upper Methow	19	126	8,303	107,681	116,114
Total	210	956	55,467	1,405,757	1,463,182

Notes:

- 1) Includes both resident and seasonal populations, and includes uses not subject to WAC 173-548.
- 2) 70 percent irrigation efficiency was used and is representative of a moderately efficient impact sprinkler system. Does not include recharge from irrigation canals and agricultural application.
- 3) All domestic uses in this table reflect a total use number, without return factor or percent of occupancy factor. See calculations below for actual domestic water use (consumptive use):

An estimate of actual domestic consumption:

Municipal and residential 210 AF plus exempt 956 AF times 43,560 square feet in an acre times 7.48 gallons equals 379,916,381 gallons of water appropriated in one year for domestic applications.

The return factor is estimated at 90% (Table A-1, water budget for proposed action - Arrowleaf PDR, Arrowleaf EIS by Golder Associates), therefore, 379,916,281 times 10% equals 37,991,628 the amount of water consumed if the occupancy rate was 100%.

Apply an absentee ownership rate of 42% (page 9-4, Phase II Golder Associates) with a 40 day per year occupancy and the actual amount of water consumed by domestic applications is 23,783,806 gallons, or 73 AF.

TABLE 2

Checklist of Watershed Planning Requirements
(RCW 90.82)

RCW Section	Stated Subjects the Assessment Shall Include	How Addressed in Watershed Plan
90.82.070 (1a)	An estimate of the surface and ground water present in the management area.	Phase II ¹
		Figure 2 ²
90.82.070 (1b)	An estimate of the surface and ground water available in the management area, taking into account seasonal and other variations.	Phase II ¹
		Figure 2 ²
90.82.070 (1c)	An estimate of the water in the management area represented by claims in the water rights claims registry, water use permits, certificated rights, existing minimum instream flow rules, federally reserved rights, and any other rights to water.	Phase II ¹
		Tables 5, 6, 7 ²
90.82.070 (1d)	An estimate of the surface and ground water actually being used in the management area.	Phase II ¹
		Pages 9-10, Figure 6, Table 3 ²
90.82.070 (1e)	An estimate of the water needed in the future for use in the management area.	Phase II ¹
		Figure 6, 7 ²
90.82.070 (1f)	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.	Phase II ¹
		Figure 4 ²
90.82.070 (1g)	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.	Phase II ¹
		Page 3 ²
90.82.070 (2)	Strategies for increasing water supplies in the management area, which may include, but are not limited to, increasing water supplies through water conservation, water reuse, the use of reclaimed water, voluntary water transfers, aquifer recharge and recovery, additional water allocations, or additional water storage and water storage enhancements.	Phase II ¹
		Pages 11-21 ²
90.82.070 (3)	The assessment may include the identification of potential site locations for water storage projects. The potential site locations may be for either large or small projects and cover the full range of possible alternatives. The possible alternatives include off-channel storage, underground storage, the enlargement or enhancement of existing storage, and on-channel storage.	Phase II ¹
		Page 13-14 ²

¹ Phase II Technical Assessment (Golder Associates, 2002)

² Refers to Table or Figure in current document

TABLE 3

Watershed Planning Chronology

Date	Effort
1993	Upper Methow Groundwater Management Plan Completed (not adopted)
1994	Pilot Planning Project Completed (not adopted)
1998	Watershed Planning Act (adopted)
1999	Phase I: Development of the Methow Basin Planning Unit
1999	NMFS Biological opinions submitted for Section 7 ditches
1999	"Draft Methow Rule" revisions explored (not adopted)
2000	Stream gauging program (initiated)
2001	Irrigation Diversion measurement program (initiated)
2001	USGS Hydrologic Model (completed)
2001	USGS Groundwater Studies (completed 2003)
June 2002	Phase II Technical Assessment (completed)
June 2003	First Draft of the Phase III Watershed Plan (completed)

TABLE 4

Summary of Water and Habitat Projects in the Methow Basin
Page 1 of 4

Project Id	Project Title	Project Sponsor	Start Date	End Date
	MVID Reorganization to wells	BPA, DOE	1999	2000
02-1524R	Chewuch Basin Irrigators Conveyance	CBC	2003	2003
00-1679 N	Chewuch & Fulton Canal Joint Study	Chewuch Canal/Fulton Ditch Co	2000	
97-1310	Methow Conservancy Riparian Habitat Project	Methow Conservancy	1997	2001
00-1677	Methow Watershed Riparian Habitat Acq	Methow Conservancy	2001	ongoing
01-1434	Methow R/H Acquisition Supplement 2001	Methow Conservancy	2003	ongoing
02-1650	Methow Critical Riparian Habitat Acq	Methow Conservancy	2003	ongoing
NA	Belsby Spring Ck Restoration Project	Methow Valley Flyfishers, Methow Conservancy	2001	2001
00-1676	Lower Twisp R Side Channel Acquisition	MSRF	2000	ongoing
01-1419	Sloan Witchert Slough Habitat/Irrigation	MSRF	2001	ongoing
01-1427	Early Winters Ck Dike Removal	MSRF	2001	ongoing
NA	Lower Twisp Habitat Restoration	MSRF	2001	ongoing
NA	Eightmile ditch conversion to wells	MSRF	2002	ongoing
9208200	Eastern WA Landowners Adopt-Stream Training	N/A		
199802500	Early Winters Ck Habitat Restoration	N/A	2000	2001
200103700	Arrowleaf/Methow River Conservation Easement	N/A		
	Beaver Ck fish passage barrier amelioration	OCD	2000	
	French Ck revegetation and water development	NRCS	1998	
	Cow Ck revegetation	NRCS	1998	
	Texas Ck revegetation	NRCS	1998	
	Hancock Ck culvert removal	NRCS	2000	

	Frazer Ck fencing	NRCS, OCD	2000	
	Wolf Ck area fencing	NRCS, OCD, DNR, USFS, MVSTA	1998	1999
	Wolf Ck area fencing	NRCS, OCD, DNR, USFS, MVSTA	1998	1999
	Hancock Ck cattle exclusion and revegetation	NRCS, Okanogan County	2000	
00-1680	Okanogan County Fish Passage Barrier Study	OCD	2000	ongoing
01-1395	BeaverCk Coordinated Resource Mgt Plan	OCD	2002	ongoing
NA	Lower Methow tributary restoration	OCD	1992	1994
99-1339	Tourangeau Ditch	Okanogan County		
99-1340	Eagle Ck Ditch Fish Screen	Okanogan County		
99-1344	Early Winters Ditch Diversion Structure	Okanogan County		
99-1345	Fulton Ditch Lining Project	Okanogan County		
99-1346	Skyline Ditch Pipe Installation	Okanogan County		
99-1347	Apsen Meadows Ditch Piping	Okanogan County		
99-1612	Airey/Risley Ditch Removal	Okanogan County		
99-1613	Buttermilk Ditch Fish Screen	Okanogan County		
99-1691	Skyline Ditch	Okanogan County		
99-1692	Little Bridge Ck Culvert	Okanogan County		
00-1629	Skyline Ditch Pipe Installation	Okanogan County		
MBPU	Methow Stream Gaging	Okanogan County	2000	ongoing
MBPU	Methow Ditch Diversion Measuring Devices	Okanogan County	2002	ongoing
MBPU	Methow Habitat Area Assessment	Okanogan County	2002	2002
MBPU	Watershed Planning Web-Site	Okanogan County	2000	ongoing
00-1643	Wolf Ck Channel Restoration	Okanogan County, WCRD	2000	2000
MBPU	Methow Groundwater Assessment	Okanogan County/USGS	2001	2003
MBPU	Hydrologic Modeling (MMS)	Okanogan County/USGS	2000	ongoing
MBPU	Storage Modeling (RiverWare)	Okanogan County/USUSB	2003	ongoing

		OR		
00-1678	Assessment Twisp R Watershed	PWI	2001	2002
NA	Early Winters Ck Restoration	PWI	1998	2001
NA	Cub, Little Cub, Bearfight creeks Restoration	PWI	1998	2002
NA	Methow Basin Restoration	PWI, OCD, MSRF, JITW, landowners	2000	2004
NA	Chewuch Watershed Strategy	PWI, USFS	1995	1996
NA	Chewuch Watershed Restoration	PWI, USFS, MVRD, JFE, YIN	1996	1999
00-1217	Hancock Creek Restoration Project	UCRFEG	2001	2003
NA	Black Pine Basin riparian fencing	UCRFEG	2002	2002
NA	South Fork Beaver Ck riparian fence	UCRFEG	2002	2002
NA	Methow Habitat Mitigation	USBOR	2001	ongoing
NA	Basinwide Fencing Projects	USFS	1993	ongoing
NA	Basinwide campground improvement	USFS	1999	ongoing
NA	Basinwide Dispersed Campsite Maintenance and Rehabilitation	USFS	1996	ongoing
NA	Chewuch dispersed recreation site restoration	USFS	1993	ongoing
NA	Basinwide Culvert Inventory	USFS	2000	2000
	Chewuch Basin Road and Culvert Inventory	USFS	1995	1996
NA	Basinwide Road Obliteration, Restoration, Closure	USFS	1993	ongoing
NA	Twentymile Ck road rehab	USFS	1998	1998
NA	Basinwide Culvert Replacement	USFS	1995	2002
NA	Basinwide Proper Function Conditon surveys	USFS	1995	1996
9026	Respect the River	USFS	1993	ongoing
NA	Doe Ck road stabilization	USFS	1994	1994
NA	Lake Ck trail rerouting	USFS	1994	1994
NA	Texas Ck water development	USFS	1994	1994
NA	East Chewuch riparian surveys	USFS	1994	
NA	Chewuch trail rerouted	USFS	1995	1995
NA	Poorman Ck revegation	USFS	1996	
NA	Long Ck, Cub Pass water trough relocation	USFS	1996	1996
NA	Chewuch trail rehab	USFS	1996	1996
NA	Pete Ck reveg and weed control	USFS	1996	1998

NA	Goat Ck instream habitat restoration	USFWS	2002	2002
199802900	Goat Ck meander reconstruction	USFWS	1998	2001
NA	Wolf Ck instream rehab	USFWS, WCRD	1999	2000
199803500	Watershed Scale Response of Stream Habitat to Abandoned Mine Waste	UW	1998	2003
00-1682	Wolf Ck Diversion/Patterson Mtn	WCRD	2001	ongoing
	Patterson Lk spillway modified	WCRD	2000	2000
	WCRD distribution system	WCRD	2000	2001
	Wolf Creek Rock Pool Structures	WCRD	2004	
	MVID Remeshing screens	WDFW	2001	2001
	Spring chinook artificial supplemental and captive broodstock program	WDFW		
	Operation and Management of the Methow Fish Hatchery	WDFW		
	Summer chinook artificial supplementation program	WDFW		
	Summer chinook supplementation program evaluation	WDFW		
	Summer steelhead hatchery supplementation program	WDFW		
	Adult steelhead migration and spawning disposition	WDFW		
	Upper Columbia steelhead stock assessment	WDFW		
	Species abundance and distribution	WDFW		
	Creel census survey information	WDFW		
	Methow Watershed Project II	WDFW		
00-1158	Skyline Canal Fish Screen	WDFW		C
00-1165	Fulton Canal Fish Screen	WDFW		
99-1323	Wolf Ck Reclamation Dist Fish Screen	WDFW		
99-1324	Beaver Ck Watershed Fish Passage	WDFW		C
99-1325	Twisp-Power Ditch Fish Screen	WDFW		C
99-1328	Fulton Canal Fish Screen	WDFW		C
00-1156	Early Winters Canal Fish Screen	WDFW		C
200106300	Methow Basin Screening	WDFW	2002	
23012	Arrowleaf/Methow River Conservation Easement	WDFW, TPL		

200106500	Hancock Springs Passage and Habitat Restoration Improvements	YIN	2003	
9604000	Mid-Columbia Coho Feasibility Reintroduction Study, Yakama Nation	YIN	1996	ongoing

List of Acronyms:

BPA	Bonneville Power Administration
CBC	Chewuch Basin Council
DNR	Department of Natural Resources
DOE	Department of Ecology
JFE	Jobs for the Environment
JITW	Jobs in the Woods
MBPU	Methow Basin Planning Unit
MSRF	Methow Salmon Recovery Foundation
MVRD	Methow Valley Reclamation District
MVSTA	Methow Valley Sports Trails Association
NRCS	National Resource Conservation Service
OCD	Okanogan Conservation District
PWI	Pacific Watershed Institute
TPL	Trust for Public Land
UCRFEG	Upper Columbia Regional Fish Enhancement Group
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
WCRD	Wolf Creek Reclamation District
WDFD	Washington Department of Fish and Wildlife
YIN	Yakama Indian Nation

TABLE 5
Water Available for Appropriation

Water Year	Methow River above Goat Creek	Chewuch River at Winthrop	Methow River at Winthrop	Twisp River near Twisp	Methow River at Twisp	Methow River near Pateros
Thousands of acre feet						
1992	174	81	444	55	362	259
1993	122	127	408	53	347	301
1994	105	124	362	41	279	215
1995	308	301	859	169	894	826
1996	370	303	953	218	1001	949
1997	403	339	1000	200	1003	1001
1998	297	288	844	135	821	844
1999	460	374	1065	170	1039	1090
2000	232	160	588	101	558	503
2001	25	9	133	12	55	32

Source: Konrad, C.P., 2003

Note: Annual Volume of Streamflow in Excess of Regulatory Base Flow
for Days When Streamflow Exceeded Regulatory Base Flows

TABLE 6

Summary of Certificated, Permitted, and Claimed Water, (Including Paper Water)

	Sub-Basin							
	Chewuch	Early Winters ^c	Methow Headwaters	Lower Methow	Middle Methow	Upper Methow	Twisp	Total Basin
Irrigation Surface Water (AF)								
<i>Certificates</i>	329	0	1,412	22,002	6,746	3,594	1,310	35,394
<i>Permits</i>	129	0	35	55	0	298	90	607
<i>Long Form Claims</i>	8,821	0	6,920	18,455	86,473	9,232	92,252	222,152
<i>Short Form Claims</i>	1	0	0	5	4	0	1	10
<i>Claims 1998 Registry^a</i>	214	0	161	7,866	205	75	90,490	99,012
Subtotal (AF)	9,494	0	8,528	48,383	93,428	13,199	184,143	357,175
Percent of Subtotal	3%	0%	2%	14%	26%	4%	52%	100%
Irrigation Groundwater (AF)								
<i>Certificates</i>	72	0	371	5,453	265	776	61	6,998
<i>Permits</i>	404	0	167	601	0	0	0	1,172
<i>Long Form Claims</i>	578	0	107	1,982	1,223	314	183	4,388
<i>Short Form Claims</i>	3	0	7	11	1	4	1	24
<i>Claims 1998 Registry^a</i>	0	0	0	11	13	71	0	95
Subtotal (AF)	1,056	0	652	8,058	1,502	1,165	244	12,677
Percent of Subtotal	8%	0%	5%	64%	12%	9%	2%	100%
Total Irrigation (AF)	10,551	0	9,180	56,441	94,930	14,364	184,387	369,852
Percent of Total Irrigation	3%	0%	2%	16%	26%	4%	50%	100%
Non-Irrigation Surface Water (AF)^b								
<i>Certificates</i>	19	0	3	136	17	23	29	228
<i>Permits</i>	0	0	0	4	0	0	0	4
<i>Long Form Claims</i>	18	0	2	406	101	51	1,088	1,665
<i>Short Form Claims</i>	4	0	2	16	1	1	3	26
<i>Claims 1998 Registry^a</i>	2	0	2	1,446	0	5	0	1,454
Subtotal (AF)	42	0	9	2,007	120	79	1,120	3,377
Percent Subtotal	1%	0%	0%	59%	4%	2%	33%	100%
Non-Irrigation Groundwater (AF)^b								
<i>Certificates</i>	19	0	2	6,278	60	97	47	6,503
<i>Permits</i>	0	0	2	5	0	10	3	20
<i>Long Form Claims</i>	55	0	41	551	100	57	102	905
<i>Short Form Claims</i>	14	0	7	27	12	9	7	73
<i>Claims 1998 Registry^a</i>	0	0	0	0	0	0	0	0
Subtotal (AF/yr)	88	0	51	6,861	171	172	158	7,500
Percent Subtotal	1%	0%	1%	91%	2%	2%	2%	100%
Total Non-Irrigation (AF/yr)	130	0	60	8,868	291	251	1,278	10,877
Percent of Total Non-Irrigation	1%	0%	1%	82%	3%	2%	12%	100%
TOTAL ALLOCATED (AF/yr)	10,680	0	9,240	65,309	95,220	14,615	185,665	380,729
PERCENT TOTAL ALLOCATED	3%	0%	2%	17%	25%	4%	49%	100%

Notes:

a. New claims in the 1998 registry have not been assigned a long or short designation but have Qa designated on the claim form.

b. Includes domestic, municipal, stock watering, commercial-industrial, mining, and other uses. Does not include water uses for fish propagation, fire suppression, or power).

c. Aggregated in Methow Headwaters.

TABLE 7

Summary of Certificates and Permits

	Sub-Basin							Total Basin
	Chewuch	Early Winters ^b	Methow Headwaters	Lower Methow	Middle Methow	Upper Methow	Twisp	
Groundwater Certificates (AF/yr)	91	0	373	11,731	325	873	108	13,501
Groundwater Permits (AF/yr)	404	0	169	606	0	10	3	1,192
Subtotal (AF/yr)	495	0	542	12,337	325	883	111	14,693
<hr/>								
Surface Water Certificates (AF/yr)	348	0	1,415	22,138	6,763	3,618	1,340	35,622
Surface Water Permits (AF/yr)	129	0	35	59	0	298	90	611
Subtotal (AF/yr)	477	0	1,450	22,197	6,763	3,916	1,430	36,233
<hr/>								
Total (AF/yr)	972	0	1,992	34,535	7,088	4,798	1,540	50,926

Notes:

- a. Includes domestic, municipal, stock watering, commercial-industrial, mining, and other uses. Does not include uses for fish propagation, fire suppression, or power.
- b. Aggregated in Methow Headwaters.

TABLE 8

Summary of Claims

Document Type	Sub-Basin							Total Basin
	Chewuch	Early Winters ^c	Methow Headwaters	Lower Methow	Middle Methow	Upper Methow	Twisp	
Groundwater Short Form Claims (AF/yr)	17	0	13	36	13	12	7	97
Groundwater Long Form Claims (AF/yr)	632	0	148	2,535	1,322	371	285	5,293
Groundwater Claims 1998 Registry ^a (AF/yr)	0	0	0	11	13	71	0	95
Subtotal (AF/yr)	649	0	161	2,582	1,348	454	292	5,484
<hr/>								
Surface Water Short Form Claims (AF/yr)	5	0	2	21	5	1	3	36
Surface Water Long Form Claims (AF/yr)	8,839	0	6,922	18,861	86,574	9,282	93,340	223,818
Surface Water Claims 1998 Registry ^a (AF/yr)	216	0	163	9,312	205	80	90,490	100,466
Subtotal (AF/yr)	9,060	0	7,087	28,193	86,784	9,363	183,833	324,319
<hr/>								
Total (AF/yr)	9,709	0	7,248	30,774	88,132	9,816	184,125	329,804

Notes:

- a. New claims in the 1998 registry have not been assigned a long or short designation but have Qa designated on the claim form b.
- b. Includes domestic, municipal, stock watering, commercial-industrial, mining, and other uses. Does not include uses for fish propagation, fire suppression, or power
- c. Aggregated in Methow Headwaters.

TABLE 9

MAPA Project Irrigated Acreage by Crop Type

Sub-Basin	Crop Type			Total (Acres)
	Alfalfa (Acres)	Orchard (Acres)	Pasture/Turf (Acres)	
Chewuch	918	26	514	1,458
Lower Methow	5,680	1,440	612	7,732
Methow Headwaters	557	--	192	749
Middle Methow	2,503	55	391	2,949
Twisp	1,036	52	199	1,287
Upper Methow	2,173	--	382	2,554
Total	12,868	1,572	2,288	16,729

Source: Methow Air Photo Assessment Project (MAPA Project), 1995

Note: Areas designated as “currently irrigated” only

TABLE 10

Water System Usage Data Tracking and Evaluation Tasks

ITEM	TWISP	WINTHROP	GROUP A	GROUP B	SINGLE COM/IND	SINGLE DOMESTIC
2 cfs Qa-Limits Qi-	410AF/0.57 cfs 518 gpm/1.9 cfs	351AF/0.48 cfs 710 gpm/1.6 cf	482AF/0.67 cfs 610 gpm/1.3 cfs		7880 AF/11.0 cfs 3677 gpm/7.8 cfs	
Water Permit Required?	Yes	Yes	Yes	No permit required, but Limited to 5000 gallons per day per parcel		
User Tasks	<ol style="list-style-type: none"> Record Meter measurements monthly-Required for new parcel development only. Report new residential monthly average and annual total water usage for prior calendar year to Ecology by January 31 of each year. Data to include User identification and water system type. Existing developed parcels may elect to measure and report data to Ecology, if they wish. Manage water usage to stay within allocated instantaneous (Qi) and annual maximum (Qa) limits. 					User Choice 1. Don't report OR 2. Measure and report actual usage to establish beneficial use.
Ecology Tasks	<ol style="list-style-type: none"> As a part of permitting process, allocate annual maximum and maximum instantaneous water usages. (As is presently done). Enter water usage data in database as received. Supply water usage data to requesting organizations. Review database for each usage category to compare actual vs. planned usage rates every 3 years. Request data on new Methow Valley Water issues from Okanogan County Health Department. 			<ol style="list-style-type: none"> Develop Memorandum of Understanding concerning data exchange with County Health Department. Provide users with submission standards for Ecology database. Notify Methow Valley residents when Group B, Single Industrial/Commercial, and Single Domestic usage reaches 90% of above 2 cfs limits by publication in local newspapers. <p>Note: Parcel development from 2 cfs Reservation allocations will cease as each of the 2 cfs Limits is reached. Users will be required to find additional water from other sources.</p>		
County Tasks				<ol style="list-style-type: none"> As a part of present planning process to obtain a Building Permit (Step 7, Water Adequacy) require new parcel developers: <ol style="list-style-type: none"> To identify water system type, and If a Single Domestic system, choice to operate without reporting as is presently done OR to measure and report usage to Ecology. Develop Memorandum of Understanding concerning data exchange with Ecology. 		
Washington State Department of Health	When available from Water Facilities Inventory (WFI) data currently being collected, make data on full time and part time residence connections and on RV/camping connections available to Ecology to permit more detail water usage tracking. In process web site currently shows all Group A and B Systems and data to be provided in the future.					

TABLE 11

Implementation Actions and Schedules

Watershed Action	Lead Entity	Implementation Schedule			
		2004	2005	2006	2007
WAC 173-548 Amendment & Oversight	WDOE	Initiate Rule Change Procedure	Complete Rule Change		
Formation of Methow Watershed Council (MWC)	OC	Create board, develop County linkage	Oversee Implementation	Oversee Implementation	Oversee Implementation
Water Use Monitoring	WDOE/OC	Monitoring	Monitoring	Monitoring	Monitoring
Develop Implementation Work Plan including Funding Plan	MWC	Submit Work Plan (by September)	Initiate Implementation Priorities		
Public Outreach	MWC	Quarterly Public Updates on Implementation Progress	Quarterly Public Updates on Implementation Progress	Quarterly Public Updates on Implementation Progress	Quarterly Public Updates on Implementation Progress

Note : Implementation schedule for other recommendations proposed in this plan will be at the discretion of the MWC. This includes implementation of recommendations regarding water management and agriculture, artificial groundwater recharge, water storage, legal/policy discussions, and other management tools identified in this plan.

TABLE 12
Watershed Plan Obligations

Any suggested obligations in the body of the plan not specifically detailed below are not an obligation

ITEM	Obligations for Implementing Entity	Plan Reference	Action
Okanogan County			
1	Contingent of receiving phase IV implementation funding, Okanogan County agrees to implement the MWC by recognizing the present structure and membership of the Planning Unit as an interim implementation body until the MWC adopts its final form.	P. 16 line 29ff	A
2	The County shall be obligated to administer phase IV funding with the cooperation of the MWC.	P. 16 line 34	A
3	As a part of the present planning process for Methow Valley residents to obtain a Building Permit, require new water users. 1) To identify user, sub-basin location, and water system type, 2) If a Single Domestic system, to a) Provide user with a copy of RCW 90.44.050 b) Require user to select a choice, to operate without reporting OR to measure and report monthly average and annual water usage to Ecology in January of each year on Ecology's standard data input form.	P. 20 line 47	A
4	Provide Ecology with new building permit data collected in Item 3-1) and zoning change data periodically in a form and on a schedule to be mutually agreed upon.	P. 20 line 48	A
5	Cease issuance of water adequacy certificate for a sub-basin dependant on the 2 cfs reservation as a source of water if notified that the sub-basin limit has been reached	P. 21 line 27	A
6	Require measurement and reporting for new exempt building permits if agreed statistical analysis method cannot be validated.	unknown	A

ITEM	Obligations for Implementing Entity	Plan Reference	Action
Washington Department of Ecology			
1	Add Exempt monthly average and annual total water usage data to the data collection system already being developed by Ecology to track permitted water usage data using the same data formats and procedures.	P.21 line 1	A
2	Develop Memorandum of Understanding defining data exchange content, format, and schedule with Okanogan County.	P. 20 line 34ff	A
3	Review database for each user category and sub-basin to compare actual vs. planned usage rates.	P. 20 line 40ff	A
4	Notify Methow Valley residents when Group B Domestic, Industrial/Commercial, and Single Domestic usage reaches 90% of any 2 cfs limit by publication in local newspapers.	P. 20 line 26ff	A
5	<p>The Department of Ecology agrees to work with the Methow Basin Planning Unit within the one-year detailed implementation phase to clarify how specific revisions to Chapter 173-548 WAC will be proposed. The following list identifies the areas that require clarification:</p> <ul style="list-style-type: none"> ● Additional clarification related to uses that are eligible for 2 cfs reservation ● How are closures proposed to be addressed? ● Clarification of roles and responsibilities of Methow Watershed Council and Ecology ● Clarification on transferring portions of the reserve to other subbasins. ● Additional detail related to monitoring and measurement of water use under the reservation ● Additional information related to determinations of existing water use under the reservation ● Additional information related to determinations of future water use under the reservation <p>Revise current WAC 173-548 Rule using the public review process to:</p> <p>A. Allow all exempt uses designated under RCW 90.44.050, provided that withdrawal does not exceed 5,000 gallons per day.</p> <p>B. Reserve the unallocated portion of the Early Winters 2 cfs for ground water withdrawals per Table A4.</p> <p>C. Group A and B systems not falling under exempt use to be taken from 2 cfs Reservations.</p> <p>D. Permit unused portions of the 2 cfs reservation in any sub-basin to be moved downstream to off set higher use areas, providing that any losing sub-basin needs have first been met. Maximum sub-basin parcel counts at full build out are based on current zoning densities with monthly average, and peak monthly water usage applied to that number to determine what amount of the 2 cfs reservation is necessary to reserve to assure all potential parcels will have water available at the time of need.</p> <p>DOE will issue a CR 101 within thirty (30) days after the resolution of these issues.</p>	WAC 173-548-100	Statutory requirement

A: Obligation is completed by an agreement between Agencies

TABLE 13
Comparison of Residential Water Use in Eastern Washington

Location	Source	Water use per residence (gallons per day)
<i>Town of Twisp (Maximum Withdrawal)</i>	<i>WRIA 48 Phase II</i>	<i>1,189⁽¹⁾</i>
<i>Town of Twisp (Average Annual Withdrawal)</i>	<i>WRIA 48 Phase II</i>	<i>598⁽²⁾</i>
City of Spokane	WRIAs 55/57 Phase II	490-980
City of Waterville	WRIAs 44/50 Phase II	367
City of Mansfield	WRIAs 44/50 Phase II	670
City of Yakima	WRIAs 37/38/39 Phase III	900

Notes: Water use for WRIAs reported as total use (i.e. including consumptive and non-consumptive use).

(1) – Assumes maximum monthly withdrawal and 2.54 persons per residence

(2) – Assumes average annual use and 2.54 persons