MEMORANDUM

Project No.: 020070-004-01

December 6, 2004

To: Dave McClure, Klickitat County Planning Department

cc: WRIA 30 Planning Unit; Domoni Glass, WPN

From: Dustin Atchison, P.E.; Steve Germiat, LHG; and Tim Flynn, LHG

Re: **Strategies for Meeting Future Municipal Water Demands, WRIA 30**

The purpose of this memorandum is to summarize projected future municipal water supply needs within the WRIA 30 watershed, and to identify prospective strategies and constraints for meeting those needs within the context of the ongoing watershed planning process.

The two principal municipal water purveyors within WRIA 30 are the City of Goldendale and the Klickitat Public Utilities District (PUD). The City of Goldendale Group A public water system currently serves 1,379 connections and a resident population of 3,760 persons within the Little Klickitat subbasin. The PUD currently serves 974 connections and a resident population of 1,992 persons through six Group A public water systems within four WRIA 30 subbasins (Middle Klickitat, Little Klickitat, Lower Klickitat, and Columbia Tributaries). There are no municipal water systems within the Upper Klickitat or Swale Creek subbasins.

Table 1 summarizes the seven municipal water systems, by WRIA 30 subbasin, included in this evaluation. Table 2 summarizes existing water rights for each system. Table 3 includes an evaluation of water rights and existing capacity to meet projected 20-year demand. Table 4 summarizes subbasin-scale water balance components (from the WRIA Level 1 Assessment; WPN and Aspect Consulting 2004), which have relevance in developing strategies to meet projected municipal water demands in each subbasin. However, as is always the case, applications for additional water right appropriations in any subbasin would need to evaluate potential for impairment to senior water rights and instream resources at a smaller local scale than the subbasin scale. The subbasin-scale water balances help provide perspective to such decision making.

The following sections summarize, for each water system, the existing supply capacity and water rights relative to current demand, projected future demands, and potential strategies for meeting those future demands. The water systems are discussed by subbasin. Irrespective of water system, all of the strategies are assumed to include municipal water conservation as a component to help meet future demand. The information pertaining to City of Goldendale and PUD water systems' source capacities, water rights, and water demands were obtained primarily from their respective Water System Plans prepared in 2004 and 2003 (Wilson Engineering 2004; Grim and Associates 2003).

Middle Klickitat Subbasin

Based on estimates developed in the Level 1 Assessment (WPN and Aspect Consulting 2004), the Middle Klickitat subbasin has the highest current water appropriation and estimated actual use of any WRIA 30 subbasin. It is also the largest subbasin in WRIA 30 and has lower 'normalized water use'

(use per acre) than either the Little Klickitat or Swale Creek subbasins. Much of the water used in this subbasin is surface water imported from the Upper Klickitat subbasin and applied for flood irrigation; a large percentage of the flood irrigation water makes its way as return flow to adjacent surface waters. The relative proportion of surface water being used to subbasin streamflows is low (estimated as 2 percent of average [50 percent exceedence] annual flows). There are no defined instream flow minimums for the Middle Klickitat subbasin, or any WRIA 30 subbasin. The proportion of groundwater appropriation and estimated use in this basin is insignificant relative to total water use (0.1 percent and 0.04 percent, respectively). The total groundwater appropriations are approximately 0.1 percent of the estimated annual groundwater recharge for the subbasin. On the subbasin scale, the Level 1 Assessment findings indicate that additional water should be available for appropriation in the Middle Klickitat subbasin.

There is one municipal water system, PUD's Glenwood Water System, within the Middle Klickitat subbasin.

Glenwood Water System

The Glenwood Water System withdraws water from the McCumber Springs using two spring boxes. The PUD holds a water right for 503 gpm and 135 AFY from this source. The system operates by means of gravity with overflow points at the spring site.

The PUD has adequate instantaneous water rights, but inadequate annual volume rights, to meet current demand for the Glenwood Water System (25 AFY deficit). The PUD projects approximately 30 percent increase in water demand over the next 20 years for this system. For this 20-year projection, the PUD would still have sufficient instantaneous water rights but a 72 AFY deficit for annual rights (Table 3). The physical capacity of the springs (800 gpm), based on observed overflow during a drought year (2001), and the capacity of the supply line (650 gpm), are sufficient to meet current and the 20-year projected demands.

The PUD's strategy to meet the 20-year projected demand combines improvements, conservation and water right acquisition. The PUD modified the supply system to eliminate overflows and reduce withdrawal at the source to match system demand. In addition, the PUD is attempting to identify and transfer to the local cemetery and irrigation district any existing customers that may be using the water system for large-scale irrigation. If transferring existing customers to the irrigation district and water conservation does not reduce the projected demands to the level of the existing water rights, the PUD may need to pursue additional water rights. No specific water rights transfers or acquisitions have yet been targeted; however, through discussions with the irrigation district, the PUD believes it can acquire an additional water right via the transfer process.

McCumber Springs are tributary to the main stem of the Klickitat River. The findings of the Level 1 assessment indicated no significant trends over time in either the average annual flows or the annual low flows within the Klickitat River at the gage near Pitt (near the confluence with the Columbia River).

Little Klickitat Subbasin

The Level 1 Assessment indicates that the Little Klickitat subbasin has the highest non-irrigation use of any subbasin in WRIA 30, primarily due to the City of Goldendale which is the population center of the WRIA. The proportion of water appropriation and actual use between surface water and groundwater is relatively equal within this subbasin. On an annual basis, the levels of groundwater and surface water appropriation (17 percent of average annual recharge and streamflow, respectively) and estimated use (6 percent of average annual recharge and streamflow, respectively) within the basin are moderate to low; however, use is greatest during the summer months when flows are also lowest. This seasonal timing of water availability versus demand is an important consideration in determining whether additional water is available for appropriation.

Water quality is a potential constraint to further water appropriation in the Little Klickitat subbasin. Ecology has listed six waterbody segments in this subbasin on its 1998 Section 303d list for impaired water quality. The waterbodies are listed based on instream flows and/or water temperature, as summarized below.

Ecology's 1998 303(d) Impaired Water Quality Listings for Little Klickitat Subbasin

Waterbody	Parameter	TRS	ID No.
Blockhouse Creek	Instream flow	T4N R15E Section 17	ID95ML
Bloodgood Creek	Instream flow	T4N R16E Section 17	XU61D0
Bowman Creek	Instream flow	T5N R14E Section 35	TN94DB
Butler Creek	Temperature	T5N R17E Section 17	YU86SG
Little Klickitat River	Instream flow	T4N R14E Section 9	AY21LB
Little Klickitat River	Temperature	T4N R14E Section 9	AY21LB
Little Klickitat River	Instream flow	T4N R15E Section 28	AY21LB
Little Klickitat River, East Prong	Temperature	T5N R17E Section 3	PW77VQ
Little Klickitat River, East Prong	Temperature	T5N R17E Section 9	PW77VQ
Little Klickitat River, East Prong	Temperature	T5N R17E Section 10	PW77VQ
Little Klickitat River, East Prong	Temperature	T5N R17E Section 16	AG85MX
Little Klickitat River, East Prong	Temperature	T5N R17E Section 35	PU81CT
Little Klickitat River, West Prong	Temperature	T5N R17E Section 18	XU61EK
Mill Creek	Instream flow	T4N R15E Section 5	FF43IZ

TRS: Township, Range, Section

Ecology has established a TMDL for temperature in the Little Klickitat River, which includes strategies to be implemented throughout the entire subbasin (Ecology 2003).

On the subbasin scale, the Level 1 Assessment findings indicate that additional water may be available for appropriation in the Little Klickitat subbasin; however, any new appropriations would need to mitigate for any impact to 303d-listed waterbodies within the subbasin.

There are three municipal water systems within the Little Klickitat subbasin: City of Goldendale and PUD's Ponderosa and Rimrock Water Systems.

City of Goldendale Water System

The City of Goldendale public water system has three supply sources and a fourth source historically used for stream augmentation:

- **Simcoe Springs (also known as Mountain Springs).** Simcoe Springs consists of a collection of springs discharging from the Simcoe Volcanics. The City collects discharge from these springs through a variety of collector points capturing multiple springs. The City holds certificated instantaneous water rights of 3.5 cubic feet per second (cfs) (1,575 gallons per minute [gpm]) and annual volume rights of 1,363 acre-feet/year (AFY) for its Simcoe Springs source.
- **Basse Well Field.** The Basse Well Field, located south of the City of Goldendale within the Swale Creek subbasin, was installed in 2001. The two Basse production wells are completed within the Wanapum Basalt Aquifer. The City holds water right permits of 1,425 gpm and 719 AFY for its Basse Well Field source. The combined potential yield of the two Basse production wells and the design capacity of conveyance pipeline from Swale Creek to the City exceeds the water right appropriation.
- **Chlorination Station Well.** This well, located approximately five miles north of the City, was recently completed between depths of 350 and 640 feet below grade within the Simcoe Volcanics, to replace the Bloodgood Springs source. The City holds water rights of 898 gpm and 1,338 AFY (supplemental) for its Chlorination Station well source. However, 0.6 cfs (269 gpm) of this instantaneous right remains supplemental to Goldendale Golf Club's water right to divert from Bloodgood Creek for golf course irrigation April through October. Therefore, between April and October, the combined Golf Club diversion and Chlorination Station well pumpage cannot exceed 2.0 cfs (898 gpm). A variable flow pump with 900 gpm capacity has been installed in the Chlorination Station well.
- **Third Street Well.** This well is completed in the Wanapum Basalt at a location adjacent the Little Klickitat River. The City holds rights of 1,400 gpm and 788 AFY (supplemental) for this source. This well has historically been used for stream flow augmentation of the Little Klickitat River and for emergency fire flow supply. Due to water quality constraints, this source has not been used for potable supply.

With the addition of the Chlorination Station well, the City's current water rights and source capacity are sufficient to meet current demand. The current water rights and source capacity are also sufficient to meet the projected 20-year instantaneous demand. However, the City's current water rights are not sufficient to meet its 20-year annual volume demand projections (296 AFY deficit).

Strategies for meeting the projected 20-year demand could include one or more of the following:

1. **Add additional points of withdrawal or transfer to the City's existing Simcoe Springs water rights.** The City's current spring collection systems cannot fully capture the spring discharge to allow full use of its 1,575 gpm instantaneous right for this source. The City has recently completed redevelopment of several of the spring collectors. Following redevelopment and the results of bacteriological testing, the Department of Health (DOH) concluded that the

redeveloped sources are not groundwater under the influence of surface water and thus are not subject to the surface water treatment rules. In terms of long-term water quality considerations and variability in reliable snowpack storage to support late season flows, it may be advantageous for the City to add an additional point of withdrawal for the Simcoe Springs water rights that is a deeper well source. The City's recently completed Chlorination Station well provides such a source, but it is likely that this well's sustainable yield is limited to the range of 1,000 to 1,200 gpm. We infer that a production well in this aquifer, if designed to maximize efficiency, may be able to yield 1,500 to 2,500 gpm. Therefore, either constructing a higher-capacity replacement Chlorination Station well, or installing a new second well in the Simcoe Volcanics, could serve as viable points of withdrawal for transfer of the existing Simcoe Springs water rights. The City is also considering pursuing the transfer of the Third Street well water rights, which are supplemental in annual volume to the Simcoe Mountain Springs, to the Chlorination Station Well.

Because the Simcoe Springs discharge from the Simcoe Volcanics, a production well in the Simcoe Volcanics represents the same body of public groundwater as those springs. Thus, a transfer of rights from the Simcoe Springs to a Simcoe Volcanics production well should be allowable (as the transfer of the City's Bloodgood Springs water rights to the Chlorination Station well was). A major benefit of such a transfer is the instream flow increases in the Little Klickitat River resulting from eliminating direct capture of a portion of the river's headwaters (Simcoe Springs). Because groundwater pumpage is supplied by groundwater storage across large areas, it creates a more diffuse and time-lagged hydraulic effect on surface waters than direct capture of the headwater springs.

2. **Acquisition and transfer of (non-City) existing water rights.** By transferring existing rights instead of acquiring new rights, the quantity of water used in the subbasin is not enlarged, but is converted to a new use. The City applied this strategy when it transferred irrigation rights in the Swale Creek subbasin to the City's Basse Well Field there. There are prospective large irrigation water rights in the subbasin, as well as in the Swale Creek subbasin, that may be available for future acquisition and transfer to the City. The City's Urban Growth Area (UGA) boundary has significance with respect to transfer of existing irrigation rights conditioned under the Family Farm Act ("family farm permits"). Family farm permits have historically been required to stay in agricultural use. However, under recent legislation, family farm permits that are located within the UGA could be transferred for municipal use within the UGA. Family farm permits located outside of the UGA could only be leased temporarily for non-agricultural uses.

   As described above, there are several surface waterbodies in the subbasin that are listed as having impaired water quality (Ecology's 303d list), including the Little Klickitat River. Any transfer of water rights would need to be conducted so as to not further impair these waterbodies. Transferring an existing surface water right on one of these impaired waterbodies to a groundwater supply source should provide a net environmental benefit and likely mitigate potential instream flow impacts associated with the change.

3. **Aquifer storage and recovery (ASR).** Subsurface storage of excess winter water from the Simcoe Springs and later recovery of the stored water in the summer is an option to provide additional municipal peak supply, as outlined in the WRIA 30 Multipurpose Water Storage

Screening Assessment (Aspect Consulting 2003). Currently, winter excess from the City's Simcoe Springs source overflows into the West Prong Little Klickitat River in the Simcoe Mountains. In addition, overflow from the City's lower reservoir is metered and discharged to a ditch that drains to the Little Klickitat River at Goldendale. Rather than overflowing to the river in the winter, this excess water could be stored in the Wanapum Basalt via a newly constructed well within the City's water service area (e.g., near the Third Street Well), and then recovered to help meet peak summer demand. It could be possible to also use a portion of this recovered water to directly augment summer instream low flows in the Little Klickitat River. A new water right (for use of spring discharge during peak surface water flow periods) and ASR reservoir permit would need to be pursued for seasonal storage and use of the stored water for municipal supply.

The source water quality (Simcoe Springs) would be better than water quality in the Wanapum Basalt storage aquifer. As such, a portion of the stored water may end up with poorer water quality as a result of mixing with the ambient groundwater. This would be a consideration in determining the volume of recoverable water, and thus its overall cost effectiveness.

The cost of implementing an ASR program is a key consideration in assessing its future viability as water supply option. In the City's case, the infrastructure for conveying the source water into the service area is largely complete, but a new ASR well would need to be sited and constructed. Storing this excess water underground until summer, instead of losing it from the watershed during the winter, potentially provides both instream and out-of-stream benefits that may justify the cost of such a project. We expect that state grant funding for water storage projects will remain a legislative emphasis for state water resources in the near future, and such funding could help offset a portion of the initial costs for an ASR program.

4. **Replacement of existing water distribution over time.** Available studies contracted by the City have documented distribution system losses on the order of 130 AFY, and it is possible that the losses are higher. Gradual replacement of the distribution system represents an additional water conservation measure that could reduce future demand and thus considerably reduce the projected 296 AFY annual water supply deficit.

Ponderosa Water System

The Ponderosa Water System is located north of Goldendale along Pipeline Road. The supply source is its Well No. 1, which serves the entire service area for this water system. The PUD holds a water right certificate of 60 gpm and 40 AFY for this system.

The original water right application was submitted for three wells to serve the development of which only Well No. 1 was developed. In 1978, Ecology granted a water right permit with instantaneous withdrawal of 200 gpm and annual right of 40 acre-feet. According to the PUD's water system plan, the developer prematurely applied for proof of appropriation in 1982, prior to full build out, and Ecology granted the water right certificate for the amount of demand at that time. The 40 AFY that was certificated was not reflective of the projected annual water demand for full build out.

The current water rights and source capacity are not sufficient to meet the current demand. The PUD projects a 226 percent increase in demand over the next 20 years as the development is completed to

full build out. The current water rights and physical capacity of Well No. 1 (47 gpm) are not sufficient to meet the 20-year demand projections (51 gpm instantaneous and 46 AFY annual deficit).

The PUD has developed a pre-design report to identify the optimum source improvement for the Ponderosa Water System. This report will evaluate the option of utilizing City of Goldendale supplies or developing a new water right. There has been preliminary discussion of developing an intertie between the Ponderosa and Goldendale systems, or Goldendale acquiring the Ponderosa system. The Ponderosa Park development is in close proximity to the Goldendale supply line from the Simcoe Springs source, increasing the feasibility of an intertie.

The PUD has petitioned Ecology for a correction of the certificated quantities since it was prematurely applied for as a perfected water right, even though the plat wasn't fully developed. The projected 20-year water right deficit (51 gpm; 46 AFY) is small in proportion to water use and availability on the subbasin scale.

Rimrock Water System

The supply sources for the Rimrock Water System are its Well No. 2 and Well No. 3. These two wells are located within and serve the entire service area. The existing water rights (65 gpm and 86 AFY) and source capacity (52 gpm) are sufficient to meet the current demand. In addition, the existing water rights for this water system meet projected 20-year demands. No source improvements or additional water rights are necessary during the current planning period.

Lower Klickitat Subbasin

There is relatively little water use in the Lower Klickitat subbasin, corresponding to the lack of irrigation there. Accordingly, estimated annual surface water and groundwater uses comprise less than 0.5 percent of estimated average annual streamflow and groundwater recharge volumes, respectively. Annual surface water and groundwater appropriations comprise approximately 3 and 0.3 percent of these annual streamflow and recharge volumes, respectively. On the subbasin scale, the Level 1 Assessment findings indicate that additional water may be available for appropriation in the Lower Klickitat subbasin.

There is one municipal water system, PUD's Klickitat Water System, within the Lower Klickitat subbasin.

Klickitat Water System

The supply source for the Klickitat Water System is a well field that consists of two wells withdrawing from the shallow aquifer. An adjacent test well was drilled in 1997 to investigate a deeper basalt aquifer, but it is not intended to be used. The PUD holds a water right for 200 gpm and 112 AFY for these operating well sources; this right was transferred from the municipal portion of the Klickitat Mill surface water right (Klickitat River diversion). This system's water demand is currently declining due to negative population growth, but modest growth is projected over the next 20 years.

The existing supply capacity (275 gpm with water treatment/430 gpm emergency with treatment bypass) is sufficient for current demand (205 gpm; 131 AFY). The existing instantaneous and annual

water rights (200 gpm; 112 AFY) are slightly less than current demand (Table 3). The existing water rights are not sufficient to meet the 20-year projected demands (256 gpm and 164 AFY). The potable supply is currently limited by the water treatment capacity (275 gpm), whereas the physical pumping capacity of the existing wells is approximately 430 gpm. The PUD is planning to drill a new well in an attempt to develop a groundwater source with improved groundwater quality. Alternatively, expansion of the existing water treatment process would be required to increase supply capacity using the existing wells. Additional water rights must be obtained prior to such an improvement and increase in capacity.

The PUD has a pending application in to Ecology to transfer the remaining portion (698 gpm; 829 AFY for industrial use) of the Klickitat Mill surface water right to its well sources. Ecology has not evaluated the validity of the industrial portion of that water right. The PUD intends to pursue that transfer and has included the water rights acquisition process in the proposed Capital Improvement Plan (CIP). If approved, that transfer would meet the projected 20-year demand for this system (Table 3).

If needed, the Klickitat Water System is in an advantageous location with respect to transferring water rights in WRIA 30. To be permitted, change in point of diversion/withdrawal must occur in a "downstream" direction within a watershed, thus leaving the water available to streams for a longer reach. Given its location along the main stem of the Klickitat River, prospective water rights for transfer to the Klickitat Water System may be located in the Upper Klickitat, Middle Klickitat, Little Klickitat, and Swale Creek subbasins, and within the portion of the Lower Klickitat subbasin upstream of Klickitat. This leaves numerous existing water rights over a vast geographic area to be considered for a transfer.

Columbia Tributaries Subbasin

The Columbia Tributaries is the driest WRIA 30 subbasin and has a large amount of groundwater appropriated (67 percent of estimated annual groundwater recharge). Of this appropriated groundwater volume, a small proportion is estimated to actually be used (3.5 percent of annual recharge). Although the largest quantity of water rights is for irrigation, estimated irrigation use within the subbasin is limited. Nearly one quarter of the appropriated groundwater in the subbasin is held by the Army Corps of Engineers for heat exchange at John Day Dam (1,928 AFY). This discrepancy in groundwater appropriation versus use increases uncertainty in determining the availability of water for further appropriation on the subbasin scale. Streamflow numbers for this subbasin are not available, however, the relative proportional surface water use is assumed to be low.

The PUD's Lyle and Wishram Water Systems are the two municipal water systems within the Columbia Tributaries subbasin.

Lyle Water System

The Lyle Water System is supplied by its Upper Well and Lower Well developed in 1988 and 1993, respectively, to replace two now inactive wells, the Homer James Well and the Railroad Well. These wells separately serve the two pressure zones within the system. It is assumed that both wells withdraw from the same aquifer. The inactive wells have water rights of 1,100 gpm and 224 AFY

for domestic multiple uses, and 300 gpm and 111 AFY for mixed railroad and domestic general uses (Table 2). None of the inactive sources have been abandoned.

Although the Lyle Water System has existing groundwater rights, they do not include the Upper and Lower wells as permitted point of withdrawal. However, applications for new water rights (300 and 225 gpm, respectively) were filed at the time of well construction. This system has been operating on the presumption that existing groundwater rights held for inactive well sources will eventually be transferred to the new well sources. The PUD plans to apply for a water right change to transfer the rights for the inactive Homer James and Railroad Wells sources to the Upper and Lower wells and then decommission those inactive sources. If approved and conformed for municipal use under RCW 90.03.560, the domestic portion of those transfers would meet the 20-year projected demands for the system (273 gpm and 170 AFY; Table 3). Should an alternative water right transfer be warranted, the location of the Lyle system at the mouth of the Klickitat River is advantageous, as discussed above for the Klickitat Water System.

The existing source capacity (253 gpm) of the system is slightly below the projected 20-year projected demand (273 gpm). The PUD intends to replace the Lower Well pump to increase pump capacity by 22 gpm (100 gpm total capacity). However, prior to doing so, the PUD will evaluate the impact of the improvement on aquifer drawdown and well efficiency. If the larger pump cannot be installed, the PUD would need to develop a new well in the upper zone. The physical capacity of both wells (275 gpm) just meets the 20-year projected demand.

Wishram Water System

The Wishram Water System is supplied by its Upper Well and Lower Well. Both of these wells are necessary to meet peak day demands; however, the lower well cannot supply the upper pressure zone of the system. Generally, these wells have replaced all previous water sources, but the PUD still has one emergency well (Coffield Well) and several inactive sources (Coffield Springs, Indian Springs a.k.a. West Springs, and the Railroad Well). Combined water rights from these inactive sources are 134 gpm and 192 AFY for domestic or municipal uses and 113 gpm and 64 AFY for irrigation (Table 2). None of the inactive sources have been formally abandoned, therefore, their associated municipal and domestic water rights should remain valid. The validity of the irrigation use portion of those water rights has been evaluated further to assess conformance for municipal use.

The Wishram Water System is operating without water rights for its current sources, although applications for new water rights for the upper well (250 gpm) were filed at the time of construction. No water rights or applications can be found for the Lower Well at this time (Table 2). This system has been operating on the presumption that existing water rights held for inactive sources will eventually be transferred to the new sources.

The PUD plans to apply for a water right change to transfer the rights for the inactive Coffield Well and Wishram Springs sources and formally abandon those sources. The PUD anticipates potential growth in excess of the 20-year projections included in its water system plan and will consider using more conservative projections in the water rights acquisition process. If approved, the municipal portions of the previous supply sources alone would not be adequate to meet 20-year projected demands (195 gpm and 119 AFY; Table 3). Therefore, the PUD is pursuing converting the irrigation portion of the rights to a municipal use.

Unlike Lyle, Wishram is not located along the main stem Klickitat River. Water right transfers from upstream of Wishram would be limited due to the small size of the upstream subbasin. Because the largest proportion of groundwater rights within the Columbia Tributaries subbasins are for irrigation, those would be the most likely candidates for transfers. The Columbia River may also be a potential source for transfer or additional rights.

The existing source capacity (238 gpm) of the system is sufficient to meet current and 20-year projected demands (195 gpm). However, as the Lower Well cannot supply the upper pressure zone, supply capacity of the Upper Well should be evaluated if non-uniform growth occurs with greater growth in the upper zone than the lower. The system is not limited by the physical capacity of the wells (400 gpm).

References

Aspect Consulting 2003. *Multipurpose Water Storage Screening Assessment Report, WRIA 30*. June 20, 2003.

Ecology 2003. *Little Klickitat River Watershed Temperature total Maximum Daily Load, Submittal Report*. Ecology Publication Number 03-10-046. May 2003.

Grim and Associates 2003. *Klickitat PUD 1 Comprehensive Water System Plan.* June 2003.

Watershed Professionals Network (WPN) and Aspect Consulting 2004. *WRIA 30 Level 1 Watershed Assessment.* March 15, 2004.

Wilson Engineering 2004. *City of Goldendale Water System Plan.* May 2004.

Attachments:

Table 1 Summary of Municipal PWS Use by Subbasin within WRIA 30

Table 2 Summary of Existing Water Rights

Table 3 WRIA 30 PWS Water Rights Analysis

Table 4 Water Availability within WRIA 30

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