

APPENDIX 5.1

WATER MANAGEMENT AND CONSERVATION PLAN

CITY OF WESTFIR
LANE COUNTY, OREGON

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APPENDIX 5.1 WATER MANAGEMENT AND CONSERVATION PLAN

A5.3.1 INTRODUCTION

As a general term, water conservation refers to the recognition of water as a limited resource and the policies and efforts implemented to limit water withdrawals accordingly. Conservation (in Oregon) is defined more formally by OAR 690-400-0010(5) as meaning elimination of waste “or otherwise improving efficiency in the use of water while satisfying beneficial uses by modifying the technology or method for diverting, transporting, applying, or recovering the water, by changing management of water use, or by implementing other measures.”

Increased competition for an ever dwindling resource has prompted the State to approach the matter through regulatory actions. Oregon Administrative Rules Chapter 690, Division 86, includes requirements for preparation and submittal of Water Management and Conservation Plans (WMCP). A WMCP is a document that describes the supplier’s system, usage, management, and conservation. The WMCP is a likely requirement for action by Oregon Water Resources Department (OWRD) on water rights related work such as permit extensions, or approvals. Originally, it provided OWRD with information on the supplier’s system and needs, and guidance on planning and conservation matters for the supplier. Today, it is interpreted more as a contract between the supplier and the State. OWRD is looking for concrete and verifiable plans, and implementation schedules, rather than general recommendations or exhortations “to consider . . .” WMCP updates are required every 10 years; a progress report is required 5 years after submittal of the final WMCP. WMCPs are taking on an importance comparable to Water Master Plans.

OAR 690-086-0120(6) provides that a master plan, prepared under the requirements of the Department of Human Resources Health Division (DHS) and meeting the requirements of OAR 690-086-0125 to 690-086-0170, may be submitted to meet requirements of these rules (for a Water Management and Conservation Plan). Westfir’s Water Management and Conservation Plan is included in the City’s Water System Master Plan Update 2012 as Appendix 5.1. However, while the plan freely utilizes data developed in the Master Plan, it is intended as a standalone document; relevant sections of the Water System Master Plan Update are referenced for background information. In general, the format of this WMCP reflects the order and topics of OAR 690, Division 86. The text in bold that immediately follows the OAR citations reflects the actual wording included in the OAR. Comments, where applicable, follow. This format was selected to facilitate preparation and review of this plan.

A5.3.2 SUMMARY

Development in Westfir has been very limited in recent years, and projected growth is limited to approximately 1.39% per year. The limited level of anticipated growth raises

concerns regarding need for water system expansion and it appears that an adequate water supply is available for the future, assuming that water can be collected with the existing intake system. The recent economic downturn has limited the potential for development of the old Hines' mill site, at least in the short-term, and potential growth will be limited to infill until economic conditions permit resumption of potential development for the mill site. Based on the projected long-term growth, it appears that the City of Westfir has adequate water rights to meet peak day demands within the 20-year planning period.

Current residential consumption averages 87.23 gpcd, following a rate increase in 2010. This figure is substantially reduced from previous years, and further conservation efforts will likely not result in large reductions in water consumption.

Unaccounted water recently averaged 29.34 percent. A major leak developed in the water system during a portion of the time when records were reviewed, and unaccounted water may more realistically be in the 22 percent range. Meters will need to be installed on currently unmetered City uses to reduce the level of unaccounted water. At the present time, the community Portal, City Hall, Hemlock Park, and both the water and wastewater treatment plants are unmetered. The City will begin conducting annual water audits after meters are installed on City facilities. The first audit will be completed in January or February 2015. If losses exceed 10 percent, the City will develop a leak detection/repair program. The program will be implemented by June 2015, if warranted. The water system in general is relatively new and has been constructed with quality materials and workmanship, so it is not anticipated that a leak repair program will be warranted.

Current water rates are set with a minimum for providing service to each residence, and progressively increase with consumption beyond the minimum. If the City elects to further improve the water system, rate structure modifications will be required. The surface water source for Westfir is generally reliable if the water level in the river is sufficient to maintain water levels at the intake. The nature of the source and the level of usage is such that a water curtailment plan does not appear to be warranted unless levels in the river drop to the point that water cannot be obtained with the water intake. The supply issue for water in the river is not a lack of available water, but depth that is decreasing by river flows which have been gradually moving away from the intake area.

A5.3.3 BACKGROUND INFORMATION

This Water Management and Conservation Plan, 2012, is the first for the City of Westfir. Regulations of the Oregon Water Resources Department have been requiring submission of this type of plan for several years, and this plan is intended to comply with current Oregon statutes.

A5.3.4 PLANNING AREA

A5.3.4.1 Population and Growth Characteristics

The service area currently includes an estimated 255 persons. A growth rate of one point three nine percent (1.39%) average annual growth rate (AAGR) was utilized for consistency with the Lane County Rural Comprehensive Plan that was developed in 2009. Population and land use growth projections were developed in Section 4 of the Water System Master Plan Update, 2012, and include a population projection of 343 residents by the year 2032.

A5.3.4.2 Water Sources and Quality

The City of Westfir relies entirely on surface water from the North Fork of the Middle Fork of the Willamette River, a very reliable water source. Water quality is excellent and potential for contamination is minimal with USFS regulation of the watershed. An alternative groundwater source was pursued in 1997, but the water quality of this source would require a much higher level of treatment than the current surface source. Water sources were discussed in Section 6 and water quality and treatment in Section 7, of the Water System Master Plan Update, 2012. There are two instream water rights with potential impact on the City's water source. The first is the State scenic waterway designation for the North Fork Middle Fork Willamette River, as described in ORS 390.826(16). The scenic waterway is established from Waldo Lake downstream to River Mile 1.5 upstream from the railroad bridge, and the intake should be slightly below this point on the river. This designation is for 150 cfs from September 1 through May 31 of each calendar year, but should not impact the City's water right. The second is issued to the OWRD for 115 cfs to maintain instream flow for supporting aquatic life, and is designated under ORS 537.346. This water right is provided from the confluence of the North Fork and the Middle Fork of the Willamette River upstream to 1.0 miles above the confluence, and would limit usage from the river to domestic usage when river flows in the protected region falls below the 115 cfs. Existing records show more than a 95% exceedance when river flows exceed the 115 cfs, or limitations in non-domestic consumption could occur in 5 out of every 100 years. Limitations to non-domestic consumption, based on existing historical records, would be required in late September or early October of extreme dry years.

A5.3.5 WATER CONSUMPTION

Water consumption figures (monthly metered water usage) are summarized in Table 5.2 (Section 5) of the Water System Master Plan Update, 2012. For the period January 2011- December 2011 monthly residential per capita consumption ranged from 55.72 gpd to 214.17 gpd, with an average of 92.78 gpd. Almost 100% of consumption in

Westfir is residential, and all meters are identical residential size. Total average consumption was 23,473 gpd for the year.

A5.3.6 OAR 690-086 -0125 COMMENTS

OAR 690-086-0125 includes summary requirements for completion of water management and conservation plans for a municipal water supplier. Specific plan elements are described under OAR 690-086-0140, OAR 690-086-0150, OAR 690-086-0160, and OAR 690-086-0170. These plan elements are included here as separate sections A5.3.7, A5.3.8, A5.3.9, and A5.3.10.

Prior to submittal of this WMCP to OWRD, the document was submitted to Lane County on April 8, 2013. No comments were received from Lane County on the document.

The City of Westfir has agreed that an update of the WMCP will be prepared and submitted to OWRD by August 2023. This is based on potential implementation of a leak detection/repair program by June 2015 with a goal of achieving any needed leak reduction by June 2018.

A5.3.7 OAR 690-086-0140 Municipal Water Supplier Description

The water supplier description element shall include at least the following information:

OAR 690-086-0140(1): A description of the supplier's source(s) of water; including diversion, storage and regulation facilities; exchange agreements; intergovernmental cooperation agreements; and water supply or delivery contracts;

Water sources are discussed in Section 6 of the Water System Master Plan Update, 2012. There are no exchange agreements, intergovernmental cooperation agreements, or water supply or delivery contracts from the Westfir water system.

Intergovernmental cooperation would be required during critical low water periods. Two instream water rights have potential impact on the City's water source. The first is the State scenic waterway designation for the North Fork Middle Fork Willamette River, as described in ORS 390.826(16). The scenic waterway is established from Waldo Lake downstream to River Mile 1.5 upstream from the railroad bridge, and the intake should be slightly below this point on the river. This designation is for 150 cfs from September 1 through May 31 of each calendar year, and should not impact the City's water right. The second is issued to the OWRD for 115 cfs to maintain instream flow for supporting aquatic life, and is designated under ORS 537.346. This water right is provided from the confluence of the North Fork and the Middle Fork of the Willamette River upstream to 1.0 miles above the confluence, and would limit usage from the river to domestic usage when river

flows in the protected region falls below the 115 cfs. Existing records show more than a 95% exceedance when river flows exceed the 115 cfs, or limitations in non-domestic consumption could occur in 5 out of every 100 years. Limitations to non-domestic consumption, based on existing historical records, would be required in late September or early October of extreme dry years. **OAR 690-086-0140(2): A delineation of the current service areas and an estimate of the population served and a description of the methodology(ies) used to make the estimate;**

The current and planned service area for the Westfir water system includes the area encompassed by the existing Urban Growth Boundary (UGB). Current population served is 255 residents, and anticipated growth of 1.39% per year is anticipated through the planning period. Total population in 2032 is projected to reach 343 residents. The methodology used follows the coordinated population forecast for the general Westfir area adopted in the Lane County Rural Comprehensive Plan (RCP) in 2009.

OAR 690-086-0140(3): An assessment of the adequacy and reliability of the existing water supply considering potential limitations on continued or expanded use under existing water rights resulting from existing and potential future restrictions on the community's water supply;

Water requirements are discussed in Section 5 of the Water System Master Plan Update, 2012. Currently held water rights are adequate for meeting domestic demand during the planning period. Adequacy of the water source is excellent except during times when river flows are very low at the water intake. The river has moved away from the existing intake, and a semi-permanent low head diversion needs to be constructed in the river to raise the water level sufficient to cover the existing water intake. Peak summer water production is projected to reach 0.19 cfs within the planning period. The current water permit is for 1.0 cfs.

OAR 690-086-0140(4): A quantification of the water delivered by the water supplier that identifies current and available historic average annual water use, peak seasonal use, and average and peak day use;

Section 5.1 of the Water System Master Plan Update, 2012 examined water production from January 2009 through June 2012. Average annual water production was reduced from 65,289 gpd to 35,448 gpd during the review period, and may continue to decline in 2012. Maximum monthly water usage was reduced from 150,510 gpd to 54,185 gpd during the same period. Peak day usage is currently estimated at 70,787 gpd, and this is anticipated to increase to 95,215 gpd by 2032.

OAR 690-086-0140(5): A tabular list of water rights held by the municipal water supplier that includes the following information:

The City of Westfir has only one water permit, S-49765, for 1.0 cfs, with a priority date of July 10, 1986. A copy of the water right permit is included in *Appendix 6.1* of the Water System Master Plan Update, 2012, and is attached to this Water Management and Conservation Plan.

OAR 690-086-0140(5)(a): Application, permit, transfer, and certificate numbers (as applicable);

See comments under OAR 690-086-0140(5) above.

OAR 690-086-0140(5)(b): Priority date(s);

See comments under OAR 690-086-0140(5) above.

OAR 690-086-0140(5)(c): Source(s) of water;

See comments under OAR 690-086-0140(5) above.

OAR 690-086-0140(5)(d): Type(s) of beneficial uses specified in the right;

See comments under OAR 690-086-0140(5) above.

OAR 690-086-0140(5)(e): Maximum instantaneous and annual quantity of water allowed under each right;

See comments under OAR 690-086-0140(5) above.

OAR 690-086-0140(5)(f): Maximum instantaneous and annual quantity of water diverted under each right to date;

Maximum instantaneous usage of water to date has been 0.45 cfs of the permitted 1.0 cfs water right under Permit S-49765. The annual quantity of water diverted amounts to approximately 3,153,600 cubic feet per year, or an average of 0.10 cfs.

OAR 690-086-0140(5)(g): Average monthly and daily diversions under each right for the previous year, and if available for the previous five years;

See comments under OAR 690-086-0140(5) above. Average monthly and daily diversions are shown as follows for the past three years, when

records are available. Detailed water usage data is provided in Section 5 of the Water System Master Plan Update, 2012.

<u>Year</u>	<u>Average monthly diversion</u>	<u>Average Daily Diversion</u>
2009	2.57 cfs	0.101 cfs
2010	2.13 cfs	0.070 cfs
2011	1.67 cfs	0.055 cfs

OAR 690-086-0140(5)(h): Currently authorized date for completion of development under each right; and

See comments under OAR 690-086-0140(5) above. Permit S-49765 was extended to October 1, 2006 in the latest extension. *A new extension request is pending.*

OAR 690-086-0140(5)(i): Identification of any streamflow-dependent species listed by a state or federal agency as sensitive, threatened or endangered that are present in the source, any listing of the source as water quality limited and the water quality parameters for which the source was listed, and any designation of the source as being in a critical ground water area.

The ODFW has identified bull trout, spring chinook salmon, and the Oregon chub, all listed as sensitive-critical, and potentially occurring in this area. However, Oregon chub is not present per ODFW. The North Fork Middle Fork Willamette River used to contain populations of chinook salmon, and bull trout, and ODFW believes that spring Chinook salmon is definitely present, and bull trout may possibly be present. The river does not support native populations of these fish due to downstream dam construction in the 1960's, and subsequent USFWS poisoning of the North Fork to eliminate bull trout in favor of rainbow trout. However, since 1999 from 600 to 3,800 chinook salmon have been released per year into the North Fork about 17 miles above Westfir. Since these introduced salmon are spawning without the benefit of a hatchery, they are considered a wild population and the North Fork has been listed as sensitive-critical chinook salmon habitat by the NMFS. Due to the downstream Lookout Point and Dexter dams, the offspring of these fish cannot effectively access the ocean and return to this watershed under their own power, therefore the North Fork has not been included in the designation of Ecologically Sensitive Units for commercial fisheries. The smolts that have resulted from this spawning activity will likely be preyed upon as they move downstream by the non-native warm water fish species residing in Lookout Point reservoir, if they can pass through the area of elevated stream temperature in the lower river.

The lower eight miles of the North Fork have been listed as water quality limited due to elevated temperature by the Oregon Department of Environmental Quality as per the Clean Water Act amendments. The North Fork's water temperature exceeds that determined necessary to provide for optimal salmonid habitat, so it is questionable whether young salmon moving downstream through this water quality limited section would even be able to survive until they reach the impoundments.

No effect on Chinook salmon spawning areas would be created by construction in Westfir since their spawning areas are 16 miles upstream, and regulations would minimize the potential for any project to create water quality problems.

OAR 690-086-0140(6): A description of customers served including other water suppliers and the estimated numbers; general water use characteristics of residences, commercial and industrial facilities, and any other uses; and a comparison of the quantities of water used in each sector with the quantities reported in the water supplier's previously submitted water management and conservation plan and progress reports;

Customers in Westfir are virtually all residential, and characteristics of use are described under OAR 690-086-0140(5)(g) above. Details are also developed in Section 5.2 of the Water System Master Plan Update, 2012. This is the first City of Westfir Water Management and Conservation Plan.

OAR 690-086-0140(7): Identification and description of interconnections with other municipal supply systems;

There are no interconnections with other systems.

OAR 690-086-0140(8): A schematic of the system that shows the sources of water, storage facilities, treatment facilities, major transmission and distribution lines, pump stations, interconnections with other municipal supply systems, and the existing and planned future service area; and

See *Figure 3.5* which have been reproduced from the Water System Master Plan Update, 2012.

OAR 690-086-0140(9): A quantification and description of system leakage that includes any available information regarding the locations of significant losses.

Unaccounted water is discussed in Section 5.2.2 of the accompanying Water System Master Plan Update, 2012. Computations for the period January 2011 through June 2012 showed 29.34 percent unaccounted water. The record is far from consistent, however, and leaks in fittings for portions of the water distribution system were repaired in 2011. Average unaccounted water from June 2011 to June 2012 averaged 17.65 percent.

A5.3.8 OAR 690-086-0150: Municipal Water Conservation Element

The water conservation element shall include at least the following:

OAR 690-086-0150(1): A progress report on the conservation measures scheduled for implementation in a water management and conservation plan previously approved by the Department, if any;

This is the first water management and conservation plan prepared for the City of Westfir water system.

OAR 690-086-0150(2): A description of the water supplier's water use measurement and reporting program and a statement that the program complies with the measurement standards in OAR chapter 690, division 85, that a time extension or waiver has been granted, or that the standards are not applicable;

The City is required to report annually to the Water Resources Department. The water use reporting program does comply with the measurement standards provided in OAR, Chapter 690, Division 85 of the statutes. Westfir utilizes a digital propeller meter in the vault at the intake to continuously meter water diverted from the North Fork of the Middle Fork of the Willamette River. The meter is located just downstream from the intake pump station, and is a Water Specialties 6" Model ML-04-D-LV propeller meter measuring in cubic feet.

OAR 690-086-0150(3): A description of other conservation measures, if any, currently implemented by the water supplier, including any measures required under water supply contracts;

Residential water consumption has averaged 86.75 gpcd in 2011 and 2012, and is not considered excessive. At this time, the City has not adopted any specific conservation measures other than an escalating usage fee that offers financial incentives for customers to conserve water.

OAR 690-086-0150(4): A description of the specific activities, along with a schedule that establishes five-year benchmarks, for implementation of each of the following conservation measures that are required of all municipal water suppliers:

OAR 690-086-0150(4)(a): An annual water audit that includes a systematic and documented methodology for estimating any un-metered authorized and unauthorized uses;

Annual water audits are recommended and will be implemented immediately to attempt to determine where water losses are occurring. The goal of water auditing is to track all use of water in the system. This allows accurate estimates of lost water which, in turn, may indicate a need for corrective action to locate and eliminate system leaks. Accurate water audits require careful attention to detail. In particular, the City will:

- Install water meters on all municipal uses of water (i.e. Portal, City Hall, Hemlock Park, Water Plant, and Wastewater Plant).
- Check water meter accuracy periodically.
- Meter, or at least estimate, all water system discharges. This includes hydrant flushing and any other water used regardless of purpose.
- Document nature, location, estimated flow, and date of any leak detected and repaired.
- If unauthorized use of City water is discovered, try to determine the extent (gallage) used and the period over which the unauthorized use occurred. Document all efforts in this regard.
- Coordinate with the fire department to ensure the City receives notification of any use of City water via unmetered sources (hydrants). Notification should include an estimate of the quantity of water used and a date of use.
- A water audit file will be created in which all related documentation can be placed. Copies of both monthly water production totals and metered water usage totals will be included. Metered monthly water totals will indicate when meter reading took place.
- Each year, tabulate metered and estimated use, and compare with metered production. Assuming data is collected and filed based on the calendar year, plan to complete the audit in January or February of the following year.
- After the first audit is complete (January or February 2015), have the City's engineer review the file and computations for completeness, accuracy, and comment. Based on the review and recommendations, future audits may not need an engineer's

review; nevertheless, the audit will be completed each year with attention to detail and accuracy.

OAR 690-086-0150(4)(b): If the system is not fully metered, a program to install meters on all un-metered water service connections. The program shall start immediately after the plan is approved and shall identify the number of meters to be installed each year with full metering completed within five years of approval of the water management and conservation plan;

The City has a relatively new system that is fully metered for all residential users. All new connections will be metered. Currently, there are five City uses that are not metered. Plans anticipate installation of these meters at the earliest possible opportunity.

OAR 690-086-0150(4)(c): A meter testing and maintenance program;

A meter testing and maintenance program will be developed during 2014. Meters do operate at reduced efficiency in years after installation, and the City plans to replace meters on a maximum 25 year schedule after the meters are installed. Worn or malfunctioning meters tend to under report water used, which directly impacts billing revenues and may suggest, in a water audit, higher losses than are actually occurring. All meters will be replaced or rehabilitated on a maximum 25 year schedule. Efforts in 2014 should focus on developing a program for spot checking existing meters and developing a meter schedule that lists: customer account I.D., meter data (size, type, etc.), meter installation date, and any noted meter problems and corrections. Based on the 25-year cycle and the data summarized above, the City will develop a replacement/rehabilitation schedule for all water meters in the system. Advanced preparation of the maintenance program will allow timely notification to the City of upcoming budget needs to implement the program.

OAR 690-086-0150(4)(d) : A rate structure under which customers' bills are based, at least in part, on the quantity of water metered at the service connections;

The City's water rate structure is based on metered usage with overage charges for consumption beyond the base allowance. Overage is billed on an escalating basis to encourage conservation.

OAR 690-086-0150(4)(e): If the annual water audit indicates that system leakage exceeds 10 percent, a regularly scheduled and systematic program to detect leaks in the transmission and distribution system using methods

and technology appropriate to the size and capabilities of the municipal water supplier; and

Unaccounted water losses average 29.34 percent of total water produced. Known system leaks in the study period allowed substantial quantities of water to exit the water system, and unmetered City uses regularly utilize water that is not recorded. In a system of this size, the total quantity of unmetered water is not great, but consumption is also small, so the “paper” losses are sufficiently high to warrant careful review. Determination of unaccounted water (system losses) is based on findings of the annual water audit. If unaccounted water losses are not reduced to the 10% level, a leak detection program will be developed after the City’s engineer reviews the City’s water audit completed in 2015.

OAR 690-086-0150(4)(f): A public education program to encourage efficient water use and the use of low water use landscaping that includes regular communication of the supplier's water conservation activities and schedule to customers;

The City will develop, in 2014, a public education program to encourage efficient water use and the use of low water use landscaping. The program will be implemented by July 2014. During the next five years, the City will commit to the following specific actions.

Five-Year Benchmark

- The City will provide detailed conservation messages in monthly billings during the summer months (May-September).
- The City will add water conservation tips to its website, and will print water conservation brochures and plant guides with tips on WaterWise landscaping from OWRD’s Conservation Share-House webpage located at: http://www.oregon.gov/owrd/Pages/Conservation_Sharehouse.aspx. Additionally, the City will provide information on its website about how an even/odd outdoor watering schedule can reduce the City’s peak water demand while still providing consumers with sufficient water to maintain landscapes.

OAR 690-086-0150(5): If the municipal water supplier proposes to expand or initiate diversion of water under an extended permit for which resource issues have been identified under OAR 690-086-0140(5)(i), a description of the specific activities, along with a schedule that establishes five-year benchmarks, for implementation of a system-wide leak repair or line replacement program to reduce system leakage to no more than 15 percent or sufficient information to demonstrate that system leakage currently is no more than 15 percent.

N/A.

OAR 690-086-0150(6): If the municipal water supplier serves a population greater than 1,000 and proposes to expand or initiate diversion of water under an extended permit for which resource issues have been identified under OAR 690-086-0140(5)(i), or if the municipal water supplier serves a population greater than 7,500, a description of the specific activities, along with a schedule that establishes five-year benchmarks, for implementation of each of the following measures; or documentation showing that implementation of the measures is neither feasible nor appropriate for ensuring the efficient use of water and the prevention of waste:

N/A. This section does not apply to Westfir.

OAR 690-086-0150(6)(a) A system-wide leak repair program or line replacement to reduce system leakage to 15 percent, and if the reduction of system leakage to 15 percent is found to be feasible and appropriate, to reduce system leakage to 10 percent;

If the City's 2015 water audit (see discussion under *OAR 690-086-0150(4)(e)* above) results in unaccounted losses (leaks) greater than 10 percent of production, the City will develop and implement a leak detection/repair program to meet the objectives of this section OAR 690-086-0150(6)(a). The program will be implemented by June 2015 – if warranted. The goal of the program will be to reduce losses to within the acceptable levels within 5 years of implementation of the program.

OAR 690-086-0150(6)(b): Technical and financial assistance programs to encourage and aid residential, commercial and industrial customers in implementation of conservation measures;

There are no specific recommendations for technical and financial assistance programs available in Westfir at this time.

OAR 690-086-0150(6)(c): Supplier financed retrofitting or replacement of existing inefficient water using fixtures, including distribution of residential conservation kits and rebates for customer investments in water conservation;

There are no specific recommendations at this time, and finances are not available in Westfir for this type of program.

OAR 690-086-0150(6)(d): Adoption of rate structures, billing schedules, and other associated programs that support and encourage water conservation;

All consumers receive metered water. The current rate structure encourages conservation.

OAR 690-086-0150(6)(e): Water reuse, recycling, and non-potable water opportunities; and

Currently, all wastewater effluent from the City of Westfir is returned back into the North Fork of the Middle Fork of the Willamette River downstream from the City. Consumptive water is largely discharged on the ground for irrigation purposes, or discharged to the wastewater system for ultimate return to the river.

OAR 690-086-0150(6)(f): Any other conservation measures identified by the water supplier that would improve water use efficiency.

No specific recommendations at this time.

A5.3.9 OAR 690-086-0160 Municipal Water Curtailment Element

The water curtailment element shall include at least the following:

OAR 690-086-0160(1): A description of the type, frequency and magnitude of supply deficiencies within the past 10 years and current capacity limitation. The description shall include an assessment of the ability of the water supplier to maintain delivery during long-term drought or other source shortages caused by a natural disaster, source contamination, legal restrictions on water use, or other circumstances;

Water requirements are discussed in Section 5 of the Water System Master Plan Update, 2012 and reproduced in appropriate sections of this Water Management and Conservation Plan. There have been no supply deficiencies in the past 10 years. There are no foreseeable capacity limitations other than the lack of water depth in the river during the late summer months. The surface source appears to be ample for the majority of each calendar year, and impacts of prolonged drought are likely to be an increased demand for water for irrigation and fire prevention/control.

The water intake is located centrally in the City, with negligible potential for contamination. Water shortages are most likely to occur under the following scenarios:

- Inability to meet demand when river flows reach a minimum level during late summer months.

- Failure of or damage to, major infrastructure.
- Inability to meet water demands associated with a catastrophic fire.

The latter two items are essentially rare and unforeseeable events; the first item would occur if other water right holders take precedence on the available water supply, or if the City does not construct infrastructure improvements to raise the water level surrounding the water intake, and/or is unable to secure needed permits for construction of a shallow dam in a portion of the river streambed. The existing water source has been historically reliable for Westfir, and storage has allowed the City to provide an adequate water supply during emergency conditions. Curtailment has not been necessary to this point, but the City needs to establish a water curtailment plan for future emergencies. The City water curtailment plan must conform with OAR 690-096-0160.

OAR 690-086-0160(2): A list of three or more stages of alert for potential shortage or water service difficulties. The stages shall range from a potential or mild alert, increasing through a serious situation to a critical emergency;

The City of Westfir Curtailment Plan, presented here, has four stages that increase in the level of severity.

Stage 1- Mild Water Shortage Alert

Stage 2- Moderate Water Shortage Alert

Stage 3- Critical Water Shortage Alert

Stage 4- Emergency Water Shortage Alert

Actions under Stages 2, 3, and 4 of this plan may only be initiated by the Mayor and City Council. Plan provisions will remain in place until the emergency is declared ended.

Actions may be applied to the entire system, or only to those water use sectors that need to be directly impacted by the water supply shortage.

Stage 1: Mild Water Shortage Alert

This stage of alert can be implemented by the City Recorder, who would issue a notice requesting voluntary reductions in water use by affected customers upon consideration, in coordination with other City staff members, that a voluntary curtailment is needed under the circumstances. An alert of this type would be initiated if problems develop within the water supply, treatment, distribution or storage system that limit the ability of the City to supply adequate water for potable and fire protective purposes. The notice will include an assessment of the current water situation, the reasons for the

requested conservation measures, and a warning that more serious mandatory alerts will be implemented if voluntary measures do not sufficiently reduce water usage.

Under Stage 1, public information program elements will include:

1. Posting and contacting local media to publicize the potential for water shortages or temporary interruptions to normal water service.
2. Encourage customers to voluntarily reduce water use by 15 percent.
3. Minimize landscape watering between 8 a.m. and 6 p.m., the period of greatest water loss due to evaporation
4. Posting pre-prepared public service announcements and links to conservation tips on postings, and on the City's website.

Stage 2: Moderate Water Shortage Alert

This stage of alert is similar to Stage 1, except that voluntary measures regarding outdoor landscape watering will be made mandatory by the Mayor and City Council, and additional non-essential water usage will be prohibited.

A Stage 2 alert would be initiated if problems develop within the water supply, treatment, distribution or storage system that limit the ability of the City to supply adequate water for potable and fire protective purposes, and when the response to a Stage 1 alert has been insufficient to maintain an adequate water supply within the system. Under Stage 2, the Mayor and City Council will implement the following curtailment program with a goal of reducing water demand by approximately 25 percent, and will include:

1. Provide the public works superintendent with direction to advise residents of required measures and shortage status.
2. Prohibit washing vehicles and water usage for construction, except as required by law.
3. Prohibit washing or wetting of hard-surfaced areas with water.
4. Limit outdoor watering and irrigation to a mandatory odd/even watering schedule.
5. Encourage restaurants to avoid serving water unless requested. Encourage lodging facilities to reduce water usage by requesting lodgers to utilize towels and bedding for more than one day.
6. Prohibit pressure washing of buildings unless required for painting, repair, remodeling, or reconstruction.
7. Discontinue flushing of water mains, except for emergency purposes.

If necessary, specific water distribution areas will be identified in postings, on the City's website, and through City police dispatch calls.

Stage 3: Critical Water Shortage Alert

This stage of alert will be put into effect if water demand exceeds system capabilities, if more senior water rights reduce the City's ability to secure water, or if a break in the water system reduces the City's ability to deliver water through the transmission or distribution system.

Under Stage 3, the Mayor and City Council will implement the following curtailment program with a goal of reducing water demand by approximately 35 percent, and maintaining needed potable water supply for domestic consumption, and public health and safety:

1. Perform actions indicated for Stage 2.
2. Prohibit filling of pools or hot tubs.
3. Replace the restriction for odd/even watering with a prohibition on all outside water usage, except as designated by the City Council.
4. Allow water use from fire hydrants only for fire prevention purposes.
5. Issue public service announcements to notice residents of the severity of the situation.

If necessary, specific water distribution areas will be identified in postings, on the City's website, and through City police dispatch calls.

Stage 4: Emergency Water Shortage Alert

An emergency alert would be some act of sabotage that would involve the water intake, the treatment plant, the reservoir, loss of the transmission main, or similar loss of primary water supply elements, or a water quality emergency that renders the system unsafe to drink (e.g., bacterial/viral contamination, chemical spill or similar). The Mayor and City Council will direct staff to notify customers immediately, and will implement the following Emergency Response Plan.

1. Notify the Oregon Drinking Water Program, Department of Human Services, and request assistance in responding to the emergency.
2. Notify local news medias to solicity assistance in notifying customers.
3. Contact City, County, State, and Federal law enforcement officials, as appropriate.
4. Contact the County public health officer, local doctors and hospitals, as appropriate.
5. Contact another Oregon Water/Wastewater Agency Response Network agency requesting additional equipment and staff to provide emergency response operations.

The City will continue to investigate and develop back-up plans during a Stage 4 emergency. These plans may include trucking water from other water supply

agencies, directing residents to a pre-designated central water distribution facility, or potentially supplying bottled water.

OAR 690-086-0160(3): A description of pre-determined levels of severity of shortage or water service difficulties that will trigger the curtailment actions under each stage of alert to provide the greatest assurance of maintaining potable supplies for human consumption; and

See the narrative under OAR 690-086-0160(1) and 690-086-0160(2) above. Water curtailment would be triggered during four (4) stages of alert involving loss of source or major facilities, as described.

OAR 690-086-0160(4): A list of specific standby water use curtailment actions for each stage of alert ranging from notice to the public of a potential alert, increasing through limiting nonessential water use, to rationing and/or loss of service at the critical alert stage.

See comments under OAR 690-086-0160(1), OAR 690-086-0160(2), and OAR 690-086-0160(3) above. Westfir is a very small community with a reliable water system, and water use curtailment will be handled under four (4) stages of alert, as described.

A5.3.10 OAR 690-086-0170 Municipal Water Supply Element

The water supply element shall include at least the following:

OAR 690-086-0170(1): A delineation of the current and future service areas consistent with state land use law that includes available data on population projections and anticipated development consistent with relevant acknowledged comprehensive land use plans and urban service agreements or other relevant growth projections;

Service areas, population projections, and land use are discussed in Section 3 of the Water System Master Plan Update, 2012, and in pertinent sections of this Water Management and Conservation Plan.

OAR 690-086-0170(2): An estimated schedule that identifies when the water supplier expects to fully exercise each of the water rights and water use permits currently held by the supplier;

Based on projected maximum day water demand, the City has adequate water rights through the Year 2050. An extension to Water Rights Permit S-49765 is being prepared in conjunction with this Water Management and Conservation Plan, and a request will be made to extend the time period for application of water through at least 2050.

OAR 690-086-0170(3): Based on the information provided in section (1) of this rule, an estimate of the water supplier's water demand projections for 10 and 20 years, and at the option of the municipal water supplier, longer periods;

Estimated maximum daily usage in 2022 is 0.15 cfs

Estimated maximum daily usage in 2032 is 0.20 cfs

Estimated maximum daily usage in 2052 is 0.25 cfs

OAR 690-086-0170(4): A comparison of the projected water needs and the sources of water currently available to the municipal water supplier and to any other suppliers to be served considering the reliability of existing sources;

The City of Westfir relies solely on surface water to meet its potable water demand. The City has requested an extension to its Water Right Permit S-49765 that authorizes the use of up to 1.00 cfs to meet resident needs. The projected long term MDD for the City in 2052 is 0.25 cfs. Current anticipated future water demands will not exceed the maximum authorized rate of the current permitted surface water rights.

The existing water source for the City is the North Fork of the Middle Fork of the Willamette River. This source has proven reliable. There are two instream water rights with potential impact on the City's water source. Stream records show more than a 95% exceedance when river flows exceed the 115 cfs, or limitations in non-domestic consumption could occur in 5 out of every 100 years. Limitations to non-domestic consumption, based on existing historical records, would be required in late September or early October of extreme dry years.

OAR 690-086-0170(5): If any expansion or initial diversion of water allocated under existing permits is necessary to meet the needs shown in section (3) of this rule, an analysis of alternative sources of water that considers availability, reliability, feasibility and likely environmental impacts. The analysis shall consider the extent to which the projected water needs can be satisfied through:

NA. The City of Westfir is not anticipating expansion of water allocated under existing permits to meet their projected water demands.

OAR 690-086-0170(5)(a): Implementation of conservation measures identified under OAR 690-086-0150;

NA.

OAR 690-086-0170(5)(b): Interconnection with other municipal supply systems and cooperative regional water management; and

NA.

OAR 690-086-0170(5)(c): Any other conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources.

NA.

OAR 690-086-0170(6): If any expansion or initial diversion of water allocated under existing permits is necessary to meet the needs shown in section (3) of this rule, a quantification of the maximum rate and monthly volume of water to be diverted under each of the permits;

NA.

OAR 690-086-0170(7): For any expansion or initial diversion of water under existing permits, a description of mitigation actions the water supplier is taking to comply with legal requirements including but not limited to the Endangered Species Act, Clean Water Act, Safe Drinking Water Act; and

NA.

OAR 690-086-0170(8): If acquisition of new water rights will be necessary within the next 20 years to meet the needs shown in section (3) of this rule, an analysis of alternative sources of the additional water that considers availability, reliability, feasibility and likely environmental impacts and a schedule for development of the new sources of water. The analysis shall consider the extent to which the need for new water rights can be eliminated through:

No additional water rights are anticipated to be required within the next 20 years. See comment under OAR 690-086-0170(2) above.

OAR 690-086-0170(8)(a): Implementation of conservation measures identified under OAR 690-086-0150;

NA.

OAR 690-086-0170(8)(b): Interconnection with other municipal supply systems and cooperative regional water management; and

NA.

OAR 690-086-0170(8)(c): Any other conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources.

NA.