Thurston PUD

Providing safe, reliable, affordable, and sustainable service.

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Subject: Timberline Village #628 Water System, ID #88388, Lewis County
Water System Plan Part B Update, ODW Project #23-0706

Dear Benjamin and Phyo,

Thank you for your review of the Timberline Village 628 Water System Plan (WSP) Update. Please see the following clarifications and updates below which are provided in response to the comment letter dated December 15, 2023:

CHAPTER 1 – WATER SYSTEM DESCRIPTION

1. Section 1.4, Service Area, Maps, and Land Use

The future service area does not apply to this system because it is not located in a county with a Coordinated Water System plan. Please revise this section.

Response: *Sections 1.4.1 and 1.4.2 revised accordingly.*

2. Section 1.7, Local Government Consistency

Local government consistency form(s) should be signed and attached to the WSP prior to submittal. Please provide a properly signed local government consistency form with the next submittal.

Response: *Thurston County received a comment letter from Lewis County, dated December 21, 2023. Thurston PUD has responded to this comment letter and will forward the signed local government consistency review form as soon as it is received.*

CHAPTER 3 – SYSTEM ANALYSIS AND ASSET MANAGEMENT

3. Section 3.3, Capacity Analysis

Based on the information presented in this section this system will be assigned approval for 162 ERUs. Metered data from 2022 indicates total consumption was 8.82 MG. Based on an ADD/ERU of 197 gpd, the total number of ERUs served (based on ADD, not MDD) is 122 ERUs. This happens to correspond with the number of existing ERUs (120) based on MDD/ERU (Worksheet 4-1). On this basis, we would approve the system to serve 122 + 40 = 162 ERUs. On both an ADD and MDD basis, approval to serve 162 ERUs (40 additional connections) will not exceed any of the limiting factors listed in Table 3-7.

Response: *Information noted*

CHAPTER 4 – WATER USE EFFICIENCY PROGRAM

4. Section 4.4, DSL Exemption for Water Systems under 500 Connections

The DSL standard is a performance measure, and the failure to maintain leakage under 10% requires the system to enact a water loss action plan and publish the plan as a part of the annual water use efficiency report. Your system has already enacted a robust water loss action plan. We would recommend incorporating the International Water Association M.36 approved "Water Audit".

Response: *We appreciate DOH's recognition of the Thurston PUD's efforts regarding leakage issues and of the robust water loss action plan. Thank you also for directing us to and recommending the PUD incorporate International Water Association M.36 (Water Audits and Loss Control Programs) ("AWWA M.36")). We have reviewed the manual and believe the PUD has generally implemented the recommendations from the AWWA M.36 manual at Timberline Village. However, upon review, Thurston PUD is considering further investigation of apparent losses as discussed in chapters 4 and 5 of M.36.*

On review of AWWA M.36, we would also draw your attention to the fact that for water systems with low service connection density M.36 recommends that DSL may be tracked on a per-mile basis rather than per connection or as a percentage of water production. See AWWA M.36 at 108. ("for water utilities with a low density of service connections (such as rural systems), this indicator is measured in gallons per mile of main per day"). This recommendation is consistent with allowance in RCW 70A.125.170(4)(b) authorizing DOH to "consider alternatives to the percentage of total water supplied where alternatives provide a better evaluation of the water system's leakage performance." In this regard, it should be noted that water loss per mile for the Timberline water system of 1.4 gpm/mile, which is below the national average of 1.9 gpm/mile (2021 Infrastructure Report Card of the American Society of Civil Engineers, pp. 35 – 36 (stating the national drinking water infrastructure is composed of 2.2 million miles of pipe, with total DSL over 6 billion gallons per day).

5. Section 4.7, Water Loss Action Plan

A water loss action plan for the individual system is required with a DSL percentage higher than 10%. Please include a water loss action plan for the individual system as a part of the next submittal.

Response: *A water loss control action plan developed following the direction of DOH 331-375 is included with this resubmittal.*

CHAPTER 5 – SOURCE WATER PROTECTION

6. Section 5.1, Wellhead Protection

The aquifer could become contaminated by chemicals and not only bacteria. Please indicate what action you will take if the water source is not usable because of chemical contamination.

Response: *Section 5.1.5 has been amended to confirm and clarify that Thurston PUD's tanker can be used to haul water to the Timberline reservoirs from a nearby water system as necessary due to water source contamination.*

CHAPTER 6- OPERATIONS AND MAINTENANCE

7. Section 6.5, Cross Connection Control

Please provide an update on the system-specific implementation status of the cross-connection control program. For example, whether all high hazards have been protected and whether customer surveys have been completed.

Response: *There are currently no high-hazard cross connections on the Timberline Village 628 system. An updated list of system specific cross connections and testing dates has been added to WSP Section 10.10.*

CHAPTER 7- DISTRIBUTION FACILITIES DESIGN AND CONSTRUCTION STANDARDS

8. The distribution submittal exception approved in Part A WSP applies to all systems owned by Thurston PUD.

Response: *Thank you for the clarification; Chapter 7 has been amended to note this.*

Following are responses to advisory comments received from the Washington State Department of Ecology:

DEPARTMENT OF ECOLOGY

On July 25, 2023, a copy of this WSP was sent to the Department of Ecology (Ecology). Ecology submitted written comments dated August 22, 2023. **Please address those comments along with your response to the above.**

The issues identified are listed below and discussed in the Advisory Comments. Please address the following items prior to finalizing the WSP.
• Expected Future Demand to Exceed Current Water Right Allocation(s)
• Excessive Leakage of System and Overuse of Current Water Right Allocation(s)

Advisory Comments

Expected Future Demand to Exceed Current Water Right Allocation(s)
In the water rights documentation presented in the Water Rights Self-Assessment (Appendix 10.6), and in Section 1 and 2 of the WSP, dated July 2023, it appears that estimated future demand is in excess of the existing Timberline Village Water System portfolio of water rights. As authorized under water right G2-00887C, G2-22984C and G2-25619C, Timberline Village Water System current capacity has a maximum annual quantity of 58 acre-feet per year (ac-ft/yr) and a maximum instantaneous rate of 400 gallons per minute (GPM) from two wells (wells S01 and S02) which appears insufficient for full buildout of the water system.

Response: *This is a correct assessment; as noted in the Water Rights Self-Assessment, demand projections indicate full buildout will require additional water rights. However, the currently requested approval of 40 additional connections will not cause the system to exceed its existing water rights as demonstrated in the capacity analysis found in WSP section 3.3.*

It should be noted that in order to accommodate full system buildout, a water right permit application was submitted in 1994 requesting further water rights. Thurston PUD is currently pursuing processing of the permit application with Ecology via the cost reimbursement process in order to meet future demand.

Excessive Leakage of System and Overuse of Current Water Right Allocation(s)
In the water rights documentation presented in the Water Rights Self-Assessment (Appendix 10.6), and in the Water Use Efficiency Report of the WSP, dated July 2023, it appears that Timberline Village reports excessive leakage. The average distribution system leakage (DSL) for the past 3 years is over 54%. DSL under the Water Use Efficiency Rule establishes a standard of 10 percent or less on a rolling 3-year average.

Timberline Village reports water use 2022 was 116% of the water right allocation but for 2020 and 2021 has been reduced to 98% and 69%, respectively. Although the leakage rate for those years is still considered to be exceptionally high at 60.1%, 62.9%, and 40.3% respectively. RCW 90.44.110 states no public groundwaters that have been withdrawn shall be wasted without economical beneficial use. As stated in the previous letter by ecology dated September 2022, leakage is not considered a beneficial use of water and Ecology cannot support additional connections to the system until the leakage rate is reduced.

Response: *Since acquiring Timberline Village in 2017, Thurston PUD has achieved a remarkable degree of leak loss reduction, with the average rate of loss dropping from over 40 gpm when the PUD took over ownership and operation of the system, to an adjusted average of less than 6.8 gpm for the past 36 months. [Please note this does not count the fire and main break that took place in the fall of 2022 which was the cause of exceeding the water right that year. The cause of this exceedance was supply of firefighting water for the 6,000+ acre Goat Rocks Wildfire; the firefighting crew was not concerned with metering their use. During the same time there was a main break, which owing to the firefighting use was not identified. Identification took additional time due to a significant windstorm followed by an early heavy snow. It was subsequently located and fixed. Thurston PUD has now implemented an enhanced water use monitoring system to allow rapid alert and identification of similar main breaks in the future. In late 2023 this system detected a similar main break which was identified and addressed in one day, resulting in minimal leak loss.]*

Thurston PUD has taken, without limitation, the following measures to reduce water use and DSL: Installation of zone metering and data logging source meters, targeted water main replacement, active survey/investigation and repair of leaks, rebates for water efficient toilets and smart landscaping irrigation controls, landscape irrigation audits, leak audits, customer leak repair incentives, soil moisture meters, and a main break detection system. The combination of these measures has both reduced overall water use and consumption and has reduced leak loss to the current 6.8 gpm system wide, which is 1.4 gpm per mile distribution main. Finding and fixing the remaining 6.8 gpm water loss spread over 4.9 miles of mains is not reasonably achievable, as the remaining very small leaks are not detectable. Neither is it economically feasible (or ecologically justifiable given the amount of materials and waste) to prematurely replace the entire distribution system. Therefore, while the above measures are ongoing, the current leak rate likely cannot be reasonably further improved upon. However, it is very important to again note that the above measures have resulted in achieving a calculated 1.4 gpm/mile leak loss at the Timberline Village water system, which is lower than the national average of 1.9 gpm leak loss per mile distribution main based on information in the most recent ASCE Infrastructure Report Card.

Based on the foregoing, Thurston PUD's ability to significantly reduce the DSL to a level (on a per mile of main basis) to below the national average confirms the system's leak loss rate is not unreasonable, within an acceptable range, and does not constitute waste. While DSL, as a percentage of total water used appears high, it should further be noted and recognized that while the water distribution system at Timberline Village is fully built out, the number of homes is only approximately half built out (and of these, the majority are currently part time/vacation homes and use little water). This results in a low amount of water use per mile of main, skewing the apparent leak loss percentage. In a catch-22 situation, the primary parameter that would reduce the leak loss percent is the addition of more connections via infill, as these do not increase leak loss but do increase consumption and use.

During the past 6-year period there has been a moratorium on further connections to the Timberline Village water system. This has prevented the addition of additional connections which would have increased consumption and reduced apparent leak loss percentage. It has further resulted in a proliferation of permit exempt wells within the Timberline Village service area. Absent approval of new connections, we would expect the number of permit exempt wells to continue to increase. Both the proliferation of more penetrations into the aquifer and lack of effective water use control caused by these exempt wells is not desirable. It is the position of DOH and Ecology that where water supply by a public water system is feasible, that this is preferable to the safety and management of both the aquifer

and public health than a proliferation of permit exempt wells, a position which is reflected extensively in department policies.

In summary, Thurston PUD respectfully maintains that Timberline Village no longer has an excessive leakage rate, rather, Thurston PUD:

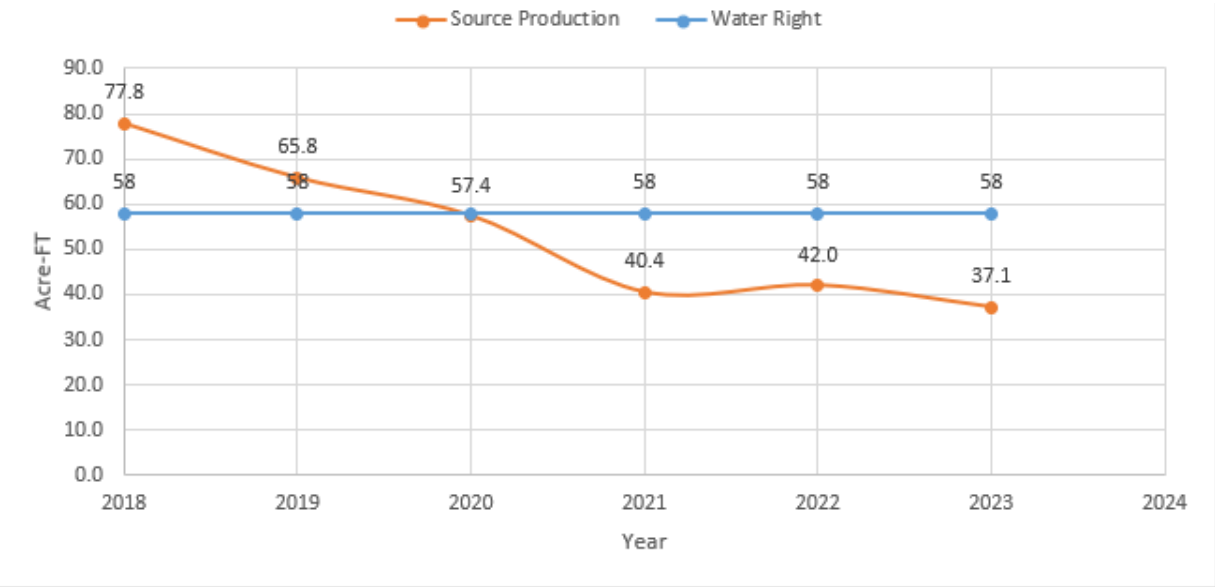
- *Has implemented a water loss control action plan as required, and through implementation of that plan and the measures described above, has now successfully reduced DSL losses to less than 1/6th of loss prior to PUD ownership.*
- *Finds that it is not economically feasible to further reduce DSL below the current average of 6.8 gpm system wide, as this would require premature replacement of the distribution system at a significant detriment to affordability and an overall negative ecological impact.*
- *Finds that for the Timberline Village water system DSL% is an inappropriate measure of water use efficiency for this particular rural system, and that water loss per mile distribution main is the appropriate measure, which is supported by AWWA M.36.*
- *Finds water loss per mile of main in the Timberline Village water system is <u>lower</u> than the national average.*
- *Finds that the Timberline Village water system is currently meeting Thurston PUD's conservation goals of average use of no more than 250 gpd per connection, per Thurston PUD Resolution 20-35.*
- *Finds that Thurston PUD is compliant with RCW 70A.125.170(4)(C)(i) ("In setting water conservation goals the water supplier may consider historic conservation performance and conservation investment, customer base demographics, regional climate variations, forecasted demand and system supply characteristics, system financial viability, system reliability, and affordability of water rates.").*
- *Finds that continuing to delay approval of additional connections is <u>not</u> in the public interest, as it is resulting in a proliferation of private wells and resultant increased risk of contamination and unregulated use of the aquifer.*
- *Finds that the continued delay in approving additional connections to the Timberline Village water system is not the intent of the Legislature as reflected in RCW 90.03.005, which states that "It is the intent of the legislature that the department establish water use efficiency requirements designed to ensure efficient use of water while maintaining water system financial viability, improving affordability of supplies, and enhancing system reliability."*

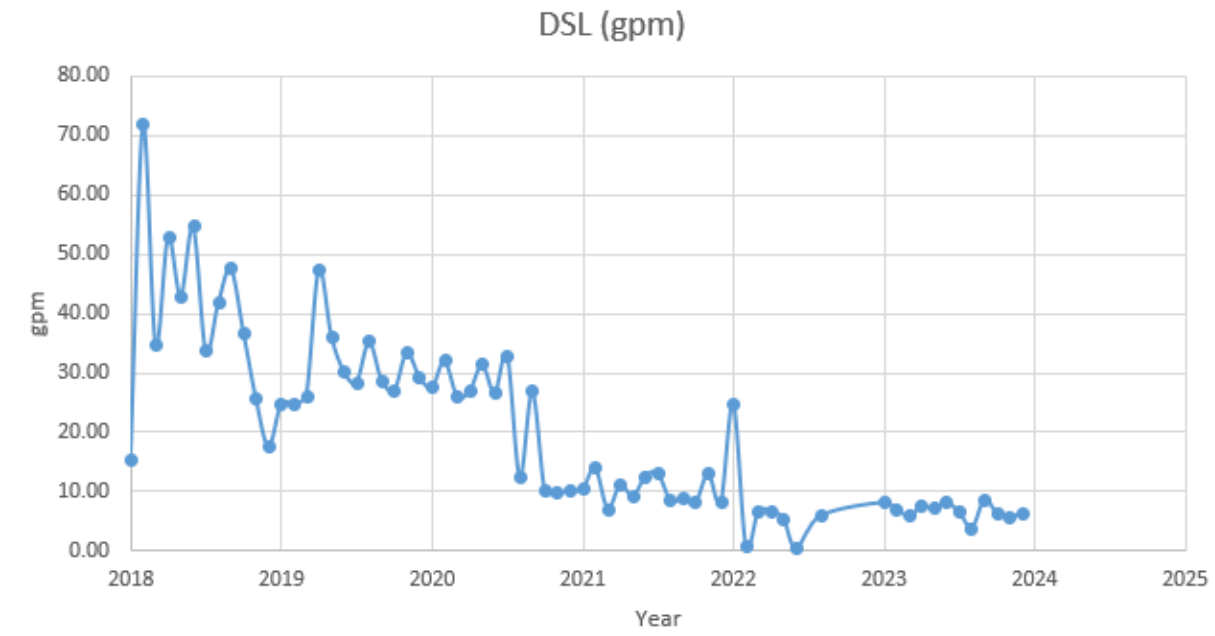
Thurston PUD strongly maintains that the requested 40 service connections should be approved.

WATER USE UPDATE

Before closing this letter, Thurston PUD would like to provide a brief update on the past year's water use and DSL. Total source production for the year 2023 was 37.1 acre-feet, well within the 58.0 acre feet authorized under the water right certificates. Of this total source production, 26.5 acre feet was sold to customers, with an average leak loss rate of 6.67 gpm. We believe that this leak loss rate exemplifies the success of the PUD's ongoing efforts. We also believe that these 2023 statistics further support the planning projections of the WSP and show the Timberline Village water system continuing in its positive historical trend of reduced DSL since acquisition by Thurston PUD. Below are figures from section 2.2.3

of the WSP with the addition of 2023 data; please see WSP section 2.2.3 for further information regarding these figures.





For the sake of clarity we have not updated the WSP with this latest 2023 data, as the WSP has already undergone significant review by multiple entities. However, we believe that the 2023 data further supports the analysis of the WSP (based on water use records of the years 2018 though 2022) and demonstrates significance DSL reduction, operations within the systems water right authorizations, and support of the requested additional connections.

Thank you again for your review of the updated Timberline Village #628 WSP, we appreciate your efforts and look forward to approval of the WSP.

Sincerely,

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