MASON COUNTY PUD 1

PUBLIC UTILITY DISTRICT NO.1 OF MASON COUNTY COMPREHENSIVE WATER SYSTEM PLAN PART A

EXECUTIVE SUMMARY

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PROJECT: MA17-013

REVISION: DRAFT

BKI
BROWN & KYSAR, INC.

EXECUTIVE SUMMARY

INTRODUCTION

This *Water System Plan Part A* report is an update to the *2012 Comprehensive Water System Plan Part A* as required by the Washington State Department of Health and per WAC 246-290-100. The report discusses District organization and water operations affecting all water systems owned and/or operated by the District.

This comprehensive document is to provide the District a single document with as much information as possible about its water systems, policies and programs. Information that applies to a water system approved in this report does not have to be included in subsequent planning documents unless there are changes to the system specific information. The major changes from the *2012 Update* are summarized below.

Chapter 1:

There have been several staff changes since the *2012 WSP Part A Update* which are discussed. Projected Water Operations staffing levels for the next ten years are discussed. The analysis differs from the original staffing level analysis developed in the *Water Resource and Business Strategy Plan* since the District has not experienced the growth assumed in the *Business Plan*. Two additional water operators are expected to be needed in the next ten years, unless the number of connections managed by the District drastically increases to more than 3,800 Equivalent Residential Units. The number of ERU owned by the District triggers the District to review staffing levels, but there needs to be adequate water revenue to justify hiring additional staff. The Water Operations four employees currently serve 3,289 active Equivalent Residential Units. Updated information is provided about the systems owned by the District including system connections, basic inventories, Water Facility Inventories, service area maps and adjacent water systems. The District has acquired 35 new systems since the *2012 Update.*

Future service areas are explored for several water systems. The water systems that have approval for expanded service areas are: Alderbrook, Canal Beach Tracts, Hood Canal, Hoodsport and Union. Systems that have potential for expanding include: Arcadia Estates, Canal Mutual, Cushman Inc., Highland Park, Hood Canal, Pirate's Cove and View Ridge Heights. These future service areas are shown on the service area maps.

Based on data from the Washington State Department of Health and Mason County, the District identified many adjacent and nearby Group A and Group B water systems to each of the District's water systems. The adjacent water systems are identified by area of the county and to which District water system they are adjacent.

District policies for condition of service and duty to serve are summarized in Section 1.9. All water policies are provided in full in the *Water Policy Manual* located in Appendix A.

The *Water System Plan Part A* must be consistent with Mason County's land use, zoning and development regulations. A copy of this report will be provided to the county for their review and certification. The Local Government Consistency Review Checklist will be provided in Appendix 11.

Chapter 2:

Connections totals are updated for residential and non-residential for owned systems and managed systems. The connections are converted to Equivalent Residential Units at a rate of 1.15:1. Of the 3,128 physical water connections, approximately 93% are active paying connections. The other 7% have been turned off for various reasons, mostly for non-payment of water bills. Water demand forecast spreadsheets are provided in Appendix 2, just after Chapter 2, there are two sets of spreadsheets. One with efficiency savings where the Distribution System Leakage decreases over time as set by the Water Use Efficiency Goals adopted by the District in 2018. The other set is without the efficiency savings where the Distribution System Leakage remains a constant percentage over time as determined by the 2017 Distribution System Leakage. Projected Equivalent Residential Unit Growth over a ten-year timeframe is 3% and 25% during the 20-year timeframe for most of the water systems. A few systems have different growth factors based on expected development within those systems.

Maximum Day Demand ranges from 200 gallons per day to 800 gallons per day with the average approximately 420 gallons per day. The Maximum Day Demand for metered water systems is based on the Average Day Demand from the Peak Month of the year or the Maximum Month Average Day Demand. The peak month for most of the water systems is in the summer (July, August or September). Occasionally, a water system's peak month usage will be December or January due to high transient populations during the holidays.

Chapter 3:

Descriptions of the various system components are provided: sources including well age and well pump age, reservoir data, formulas used for calculating storage, distribution mains, pressure zones and treatment facilities. Within Section 3.2 there is a discussion about fire suppression storage, fire hydrants and the *Lane v. City of Seattle* State Supreme Court ruling. The District has been directed by legal counsel, for now, that Mason County is financially responsible for the construction and the maintenance of fire suppression storage and fire hydrants since the District is unable to include the maintenance of these items in its water rates. Since the *Lane v. City of Seattle* case, the *Tacoma v. Bonney Lake* was decided in 2012 regarding fire hydrants and franchise agreements, but it is unclear how this case may apply to special use districts. The District understands there are more court cases pending regarding this issue and that the legislature may modify regulations to try to clarify the issue.

Water quality issues are discussed. Lake Arrowhead has rather high iron and manganese levels which are compounded by the DOH requirement to chlorinate the system due to hydraulic continuity with surface water. The chlorine causes the iron and manganese to precipitate then settle out into the distribution system creating discoloration and odor. The District is exploring offering individual treatment systems to customers experiencing water quality issues. Funds were awarded to the Hood Canal A and B Water Systems to intertie them so the wooden reservoir at Hood Canal A could be dismantled, thus removing a known source of bacteriological contamination during the summer. The Hood Canal consolidation and upgrades were completed in 2014. Minerva Terrace and Canal Mutual are both chlorinated due to *E. coli* contamination of the ground water wells in 2010. Bayshore has been chlorinated since 2005 due to hydrogen sulfide in the source water which caused odor and taste complaints. Tiger Lake Terrace is treated with carbon dioxide, aeration and UV light to prevent copper corrosion. The Shadowood system has temporary chlorination system in place because the reservoir developed cracks which allowed E. coli into the water in in September of 2018. After the reservoir is sealed, the system is expected to resume operations without treatment.

General system deficiencies identified are: aging wells and pumps in systems with single sources, aging and undersized distribution mains, and replacing captive air tanks with bladder tanks, hydrants needing replacement, reservoir maintenance.

Chapter 4:

All systems were fully metered by the January 2017 deadline. All new connections require meter installation which is part of the connection cost. Discussion of the Water Use Efficiency Program including goals, implemented measures, distribution system leakage, and water loss control action plan is provided. The most recent goals were adopted in November 2018. The Water Use Efficiency Program is a requirement of the Municipal Water Law and is an element of the plan since the *2005 Update*. If the goals and the 10% distribution system leakage standard are not met, as long as the District is implementing the Water Loss Control Plan, the Water Use Efficiency regulations are satisfied. The District has implemented its Water Loss Control Action Plan for all systems not meeting the 10% Distribution System Leakage (DSL) standard. Approximately 18% of the water systems have distribution system leakage above 30% based on 2017 data. Each of these systems have full Water Loss Control Action Plans implemented to address system leakage. 18% percent of the District's water systems are meeting the Water Use Efficiency standards another 12% are close to meeting the standard. There are seven systems with DSL above 50%.

Potential interties are discussed. Water Right changes were reviewed. Additional water rights do not seem to be needed for most systems. Changes to points of withdrawal for any additional wells allowed by the District's water rights and transferring water rights between water systems are discussed for various systems depending on development within and around the existing water systems. If water rights cannot be transferred, then the District will need to either request additional water rights from Ecology or decrease its future growth service areas. Several systems have Maximum Instantaneous Flow Rates that do not meet the peak hour demands (PHD). PHD for these systems can be met mostly by providing equalizing storage, but some demands are so high, water right transfers or interties will be required in the next 20 years to meet the demands. Specific water right issues are discussed in the individual planning documents. Places of use for each water right are revised by the provided Water Right Place of Use Map for each system. System reliability is summarized for each system. The Water Shortage Response Plan is extracted from the revised *Water Emergency Response Plan* which was adopted by resolution in 2011. Water right documentation and well logs for each system are provided in Appendix 4 at the end of the chapter.

Chapter 5:

Well Head Protection Program is much the same from the 2012 *Update*. The District has on file Susceptibility Assessments for its various wells and tries to update them approximately every two years depending on the development within the Calculated Fixed Radius, the method the District uses to define the well head protection zones. Current property owners within the Calculated Fixed Radii and various agencies are sent notices and maps regarding the well head protection zones. The property owners are notified even if they are not served by the well so they are aware of the well's presence and know how to prevent contamination of the ground water. Agency contacts are updated.

Chapter 6:

Water system operations are updated to reflect District reorganization and personnel changes since the 2012 Update. A current list of which water technician is assigned as Operator in Responsible Charge of each water system is provided. Routine operations and preventative maintenance reflects the activities the District currently performs. Summary of the revised *Emergency Response Plan* including personnel call-up list and agency contact list is provided. Additional *Emergency Response Plan* information is included in Appendix B. The *Cross-Connection Control Plan* is revised as part of this report; it has been reviewed and certified by TJ Goos, a Cross-Connection Control Specialist and Byron Woltersdorf, a licensed engineer. The Cross-Connection Control Program is discussed in Chapter 6 while the revised *Cross-Connection Control Plan* is located in Appendix B at the end of the report. A revised list of how long records are to be kept is provided.

Chapter 7:

The District requests approval from DOH of the design and construction standards in order to qualify for the alternative review process for distribution and distribution-related projects. This approval means the District would not be required to obtain DOH approval for every distribution or distribution-related project. The revised *Minimum Design Standards and Standard Construction Materials* are incorporated into this report in Appendix C with discussion beginning in Section 7.4. A brief discussion on fire flow requirements is provided; the District will only provide fire flow when required by Mason County or requested by the customers as previously discussed in Chapter 3. A copy of the County's fire flow standards is included in Appendix C. The engineering design processes have been developed as required to obtain approval for the alternative review process.

Chapter 8:

Mason County PUD 1 received a grant from the Washington State Department of Health to complete planning and pre-design activities for the consolidation of six water systems in the Union area. These Group A systems include Union, Highland Park, Vuecrest, Union Ridge, Alderbrook Water Co. and Hood Canal. The combined system is to be known as the Union Regional Water System. A Water System Consolidation Study Report has been completed as a separate document.

The *Union Part B Water System Plan* was completed by Gray and Osborne, Inc in December, 2017. This report is essentially a Part B Water System Plan for the six above referenced water systems and outlines the process and projects necessary for the consolidation of the six systems in to one Union Regional Water System. Many of the projects proposed in the plan are included in this Part A WSP. Although the Consolidation Plan currently remains in the approval process. The District is moving forward with the improvements outlined in the plan, as they are necessary as individual system improvement projects

Capital improvements for 2019 through 2028 are provided in tabular form with some detail. Long term projects, 2029 through 2038, are identified with expected timelines. The narrative prioritizes the 10-year planning projects by component (source, storage, treatment, etc.). The capital improvement program priorities are based on:

- Identified deficiencies
- Major facilities
- Critical facilities
- Distribution facilities
- Location of improvements
- Growth demand
- Timing of improvements
- Financial priority
- Fixed dates

Chapter 9:

The financial program is summarized since the District has combined the financial resources for all systems into a single account to fund all aspects of water system management and operations. Current capital surcharges and system development fees are provided in tabular form. Several of the system development fees have decreased due to increased connections within the water system while other system development fees have increased due to increased debt or decreased active paying customers.

The rates from 2012 through 2018 are provided. A graph depicts minimum monthly water bills (basic charge plus capital surcharge) with 70% of the water systems under $40. The three highest paying water systems are Mountain View ($79.23), Canal Mutual ($71.73) and Hood Canal ($66.73).

The *Water Business Plan* provided steps for consolidating the finances of the various water systems into a single account. The water systems will remain individual systems according to the State Department of Health, but internally, the finances will be tracked as a single water system. This will allow revenue and expenses to be pooled and the District will be able to provide $3,000 per customer for capital improvement projects. Projects that exceed $3,000 per customer will require capital surcharges to cover the additional cost. The capital surcharge will only apply to systems acquired after 2006. Based on the current finances and the current number of connections, the District needs an additional 450 connections in order to consolidate.

Capital improvements for 2019 through 2028 from Chapter 8 have cost estimates and funding sources provided. Overall capital improvement funding will be around $800,000 per year until 2022 when funding increases to $1.8 to $2.6 Million per year due to cash flow after consolidation. Funding sources for the other projects include: reserves, rates, user fees, contribution in aid, loans and grants.

Chapter 10:

This chapter is the revised *Satellite Management Agency Plan*. This is no longer a stand-alone document, but incorporated into the *Water System Plan Part A*. Chapter 10 corresponds to the revised Section 6 of the *Water Policy Manual* and complies with the various Washington Administrative Codes for satellite management, Group A water systems, Group B water systems and other regulations pertaining to drinking water. Chapter 10 will be used to guide the District in its decisions when offering satellite management services to water systems in Mason County now that the decision has been made to offer contract and technical management services along with the District's traditional direct service. Direct service offers management for two years, then the water system must decide to transfer ownership to the District or have someone else manage the system. Contract services and technical services may be offered on a case-by-case basis and the contracts must span several years.

The District currently has three systems under contract management. Ten-Four Water System which is detailed in this chapter as this is a new contract since the last *Satellite Management Agency Plan* update. This water system serves four houses, a vacant lot and the District's offices on Highway 101 in Potlatch. The well is located on District property and the District employees are the only full-time users of the water system. The four residences are vacation homes. Due to the direct benefit of the District, this is a unique contract arrangement. A copy of the contract with Ten-Four and copies of the water operator certifications are included in Appendix 10.

As part of the Satellite management Plan, a planning document schedule was developed that shows if and when each of the District's water systems had a planning document approved and when the next planning document is scheduled. This schedule was incorporated into the capital improvement plans of Chapters 8 and 9.

Chapter 11:

This chapter summarizes all the documents that support this document, the agreement with Mason County and the agreement with Mason PUD 3. Copies of the agreements are included in Appendix 11 at the end of the chapter. How we publicized the public hearing and any comments received are summarized. A copy of the list to whom we mailed public notices is included in Appendix 11. Public comments will be included in Appendix 11 when they are received. After the public hearing, the Board of Commissioners will approve the report during a general Board meeting prior to submittal to Mason County and the State. The minutes from the public hearing and from the board meeting will be included in Appendix 11.

Glossary:

The glossary is provided at the end of the report between Appendix 11. The District has assured definitions between its various documents (*Water System Plan Part A*, *Water Policy Manual*, *Cross-Connection Control Plan* and *Minimum Design Standards*) agree.

Appendix A:

Appendix A contains the revised *Water Policy Manual* without the *Minimum Design Standards and Standard Construction Materials* since those are located as a separate document in Appendix C of the *Water System Plan Part A*. The *Water Policy Manual* updates all the water policies, water rates, system development fees and adds definitions. This 2-year process of the District's Policy Committee clarified and refined many of the policies utilized by the Water Operations.

Appendix B:

Besides copies of the revised *Cross-Connection Control Plan* and a summary of the Water *Emergency Response Plan*, this appendix contains various operations and water quality documents. Copies of all the operating permits for all systems owned by the District are included. Templates for the Susceptibility Assessments and for the Coliform Monitoring Plan are provided. Water quality testing procedures from DOH are included for quick reference.

Appendix C:

The revised *Minimum Design Standards and Standard Construction Materials* are provided in this chapter. These revised *Standards* include the District's new review process, construction drawing requirements, hydraulic model requirements, water system design requirements, construction requirements, requirements for materials and erosion/sediment control requirements. Standard detail drawings are included as part of the *Standards*.

As reference, Mason County's "Interim Fire Flow Standards for Group A Water Systems" are provided.

Appendix D:

Copies of all the *2017 Consumer Confidence Reports* are included in this appendix. *The Consumer Confidence Report* summarizes the annual water quality results for each Group A community system. The District has also incorporated the Water Use Efficiency information as required by the Municipal Water Law into this annual report. Templates of other public notifications regarding water quality issues are provided in this appendix.

CONCLUSION

Several regulatory and District changes have occurred since the *2012 Water System Plan Part A Update*. All major documents pertaining to Water Operations are included as part of this report as well as a master capital improvement plan that aids in meeting the District's strategic plan goal of "continuing to develop water system plans cost-effectively". The more information that is in the *Water System Plan Part A,* the more system specific and project focused the individual planning documents can be, thus decreasing the time and cost to prepare the individual planning documents.

Having a comprehensive capital improvement plan for our existing water systems and offering satellite management services to more systems within Mason County will allow the District to have the economy of scale to better serve its water customers. By increasing the number of active physical connections to 2,911 from 2,325, the District will be able to financially consolidate and provide $3,000 per water customer for capital improvements.

The District is meeting several of its 2018 strategic plan goals with this document. This *Water System Plan Part A* is a solid document that provides a good overview of how the District's Water Operations are functioning and develops a flexible plan for the future.

FUTURE ACTIONS

In order to achieve plan approval, the following steps are required:

1. Notice of for a public meeting must be advertised in a publication of record 2 weeks prior to a public forum.
2. An Affidavit of Publication will be added to Appendix 11.
3. Neighboring systems and utilities must be notified of the plan's availability for review. Plan must be available for review for 2 weeks prior to the public meeting and adoption.
4. A digital copy of the report must be made available for review to the public and/or concerned agencies.
5. Public comments, along with a signed copy of the commissioners meeting minutes will be included in the final report in Appendix 11.