State of Washington
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310 • Kent Washington 98032-2388

December 28, 2018

BOARD OF DIRECTORS
WESTSIDE WATER ASSOCIATION
PO BOX 267
VASHON WA 98070

Subject: Westside Water Association, ID# 94950
King County
Routine Sanitary Survey 2018

Dear Members of the Board:

This letter is in follow up to our routine sanitary survey of the water system on November 28, 2018. The purpose of the sanitary survey is to inspect water system facilities, to review operations & maintenance programs, and to reinforce our long-term relationships. Thanks to Pat Call and Doug Dolstad for showing me the system.

I recognize the internal motivation to improve system operations. A few key examples that we discussed to follow.

- Development of an asset management / capital investment program. Recent expenditures include main replacement projects and mapping the system in a geographic information system (GIS) application.
- Collecting source data (production volume by month, and static aquifer level) to make data driven decisions.
- Planned project to provide backup power capability at the primary source wells (Anderson 1 and 2) increasing system reliability.
- Bringing the Anderson wells on-line to provide the best source water available.

The enclosed survey report and this letter reflect my understanding of your water system and highlight key issues we discussed during my visit. Please check for accuracy. **Please, in the next 45 days, respond to this letter.** Send photos of things you can complete in the short term. If you are unable to take action within 45 days, please explain your intentions and provide a schedule for addressing the applicable issues.

Significant Deficiencies – *Potential significant public health risks.*

1. Seals and screens must protect finished water from potential contamination. For the 100,000-gallon concrete storage tank, please plan to replace or retrofit the air vent with a design to protect against surface splatter and windblown contaminants. In addition, please add 24-mesh non-corrodible screen, tideflex, or flapper type valve on the overflow to provide a better insect barrier.

Significant Findings – *Defects in your facilities or operations that need immediate attention.*

2. Verify seals and screens (with photos) on storage tank roof vents, access hatches, level indicator cable entry, overflow, and other penetrations are in excellent condition.

Observations – *To notify you of other violations of drinking water rules.*

3. The 2017 Water Use Efficiency (WUE) report indicates the distribution system leakage (DSL) 3-year running average is 12.5%. Systems reporting a 3-year running average greater than 10% must develop a Water Loss Control Action Plan. Your goals to collect accurate data and replace mains can be described in your WUE report to meet this requirement. As a reminder, the system is due to update the WUE goals and hold a public meeting.

4. Keep working on the planning document. Refer to the following guidance documents in refining key programs. Department publication 331-234, *Guidance Document: Cross-Connection Control for Small Water Systems*, and publication 331-018, *Wellhead Protection Program Guidance Document*. Well done on your asset management and capital improvement program.

Recommendations – *To improve your technical, managerial or financial capacity.*

5. Consider making security improvements at wellhead enclosures and storage tanks. Think about the delay, deter, detect approach to securing water system assets. Add locks on doors and add physical barriers to climbing the storage tanks to delay intrusion. Add 'no trespassing' signs to deter intrusion. The 2008 photo of the Green tank air vent shows tagging, which is evidence of unauthorized access to the tank.

6. The approved ATEC filtration treatment system for arsenic removal is not in use. Continue to consider arsenic removal treatment of the Canyon Well (S06) as a way to increase source capacity.

7. Well done on mapping your distribution and other system components in GIS. If you have access to the database file, consider using the attributes table to track a maintenance schedule. For example, adding a field to input the date of the storage tank cleaning.

8. Please provide a better insect barrier on the hypochlorite solution tanks. I observed upward facing air vents. The air vents should be downward facing and covered with 24-mesh non-corrodible screen.

9. Check on the status of the required source monitoring. Think about collecting the complete inorganic and herbicide source monitoring samples now, before the compliance monitoring period ends.

The Drinking Water Regulations require that all Group A public water systems have a sanitary survey every 3 to 5 years. In order to receive credit for the survey, a sanitary survey fee must be paid. Enclosed is an invoice for $918.00. Please remit your complete payment in the form of a check or money order within thirty days of the date of this letter in the enclosed envelope or send payment to: **DOH, Revenue Section, P.O. Box 1099, Olympia, WA 98507-1099.**

Thank you for all that you do to provide safe and reliable drinking water. If you have any questions please contact me at (253) 395-6770 or brietta.carter@doh.wa.gov.

Sincerely,

Brietta Carter

Brietta Carter, P.E.
NW Drinking Water Operations

Enclosures: Invoice Doug Dolstad.

cc: Public Health – Seattle & King County
Brian Boye, Sanitary Survey Program, Washington State Department of Health
Doug Dolstad, Certified Operator, Island Water Management, Inc.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Office of Drinking Water
INVOICE
Engineering, Planning, and Sanitary Survey Review Form

TO: DOUGLAS DOLSTAD
WESTSIDE WATER ASSN
11205 SW CORBIN BEACH ROAD #2
VASHION ISLAND WA 98070

ATTN: ACCOUNTS PAYABLE DEPT

Invoice Number	N03253
Invoice Date	December 28, 2018
Billing Period	30 days NW

DATE	DESCRIPTION	QTY	COST	AMOUNT
12/28/2018	SURVEY FEE WESTSIDE WATER ASSN KING COUNTY PWS ID 94950 DATE OF SURVEY: 11/28/2018	1	1	$918.00
	Total			**$918.00**
	Payment due within 30 days. Interest shall accrue at 1% per month after 30 days.			

Make Checks Payable to Department of Health
Return Lower Portion to:
Department of Health
PO Box 1099
Olympia, WA 98507-1099

Office of Drinking Water
Engineering, Planning, and Sanitary Survey Review Form

NAME	WESTSIDE WATER ASSN
INVOICE NUMBER	N03253
INVOICE DATE	December 28, 2018 NW
AMOUNT	**$918.00**

DOH Form #331-332

Return to:
Department of Health
Revenue Section
PO Box 1099
Olympia, WA 98507-1099

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

2 044129 00878

SANITARY SURVEY FEE WORKSHEET

Department of Health
Office of Drinking Water
Sanitary Survey Time Tracking

System Name	Westside Water Association	PWS ID #	94950
County	King		
Surveyor	Carter, Brietta	Date of Survey:	11/28/18

System over 10,000 Connections? NO

	Quantity			Cost
Department of Health Paid Costs	**Hours/Miles**			
Survey program RO Coordination	1	$ 102	$	102.00
Survey Program Administrative Support	1	$ 102	$	102.00
Travel expenses (Mileage)	52	(# Miles) x ($.337/Mile)	$	17.51
Technical Assistance	1	$ 102	$	102.00
Travel Time <10,000	4	102	$	408.00
Total Department of Health Costs to Perform All Surveys			$	731.51
Water System Paid Costs	**Hours**			
Scheduling, research, prep	1	$ 102	$	102.00
Survey Field Work	4	$ 102	$	408.00
Survey documentation – preparation of survey report to the purveyor	4	$ 102	$	408.00
Additional Water System Paid Costs for systems serving 10,000 or more connections	**Hours**			
		$ -	$	-

	Total Cost of Survey	$	1,649.51
	Total Department of Health Unreimbursed Costs	$	731.51
	Water System Paid Costs (Less than 10,000 Connections)	**$**	**918.00**

State of Washington
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310 • Kent Washington 98032-2388

ROUTINE SANITARY SURVEY REPORT

November 28, 2018

WESTSIDE WATER ASSOCIATION

ID # 94950, King County

Persons attending

Doug Dolstad, Certified Operator, Westside Water Association
Pat Call, Board of Directors, Data Miner, Westside Water Association
Brietta Carter, Regional Engineer, Washington State Department of Health

2013 sanitary survey issues completed (see previous survey notes for details)

- *Update the Water Facilities Inventory with the current number or active connections.* – Consider updating the source use from Permanent supply to Seasonal for sources used only during the summer to meet annual peak demand.

- *Have a licensed professional engineer submit engineering documents for coagulation filtration facility.* – Refer to submittal 12-0706.

- *Update Coliform Monitoring Plan (CMP) to include changes with the groundwater rule.* – The Association updated the CMP to reflect the changes in the revised total coliform rule and included the *E.coli* response plan. We talked about the find and fix approach now implemented for total coliform detections and the elimination of the non-acute maximum contaminant level (MCL).

- *Develop a Stage 2 disinfection by-product monitoring plan and start sampling in October of 2013.* – Missing the 2014 and 2017 annual samples suggest this plan needs review.

- *Develop a Small Water System Management Program.* – This is an on-going process. Please refer to the cover letter.

- *Recommended routine inspection of spring collection points quarterly.* – Spring collection points are difficult to access during the wet season. They inspect at least once per year.

- *Develop an Operations and Maintenance (O&M) manual for routine operations and preventative maintenance tasks.* – In progress. The operator's apprentice is developing video tutorials of system operations. I look forward to reviewing these during the next routine survey of the system.

- *Recommend inspecting and cleaning reservoir interiors every five years.* – The Green storage tank was cleaned and inspected last year. The condition of the tanks and the small amount of

System overview

The system serves an upper pressure zone and two lower pressure zones by a combination of springs, wellpoints, and drilled well sources. Two storage tanks (total volume of 256,000-gallons), three booster pump stations (BPSs), and five pressure reducing valves (PRVs) feed water throughout the system. The disinfection treatment requirement for Sand spring (S01), driven wellpoints (S03), and Canyon Well (S06) must be at least 6 milligrams-minutes per liter (CT6) before the first customer. The Anderson wellfield (S09) treatment provides CT6 for all but the first customer. The system has a detectable disinfectant residual requirement.

The system holds a blue operating permit and has approval for 227 residential connections. The approved design capacity does not include the non-residential connections. An engineering Capacity Analysis of the water system, as well as a Small Water System Management Program, needs to be reviewed and approved by the Department in order for the system to obtain a Green Operating Permit. They meet the certified operator requirement (WDM1, CCS).

Sources and treatment

The Association has developed the Anderson Wellfield (S09) as their primary production wells (Figure 1). The Anderson Wellfield is comprised of two wells.

- Anderson Well (S07). – Private well purchased for the system. 23gpm.
- Anderson Well #2 BNJ285 (S08). – Drilled well, 138-feet to first open interval.

The Herrin controller and pressure switch control the well pumps (Figures 2 and 3).

Hypochlorite disinfection provided on site to maintain a constant free chlorine residual in the distribution system. A single 30-gallon tote (4:1 solution of 12.5% sodium hypochlorite) and two LMI feed pumps provide treatment for Anderson Well and Anderson Well #2 (Figures 2-4).

Figure 1. (Left) Anderson Well wellhouse and hypochlorite solution. Think about adding a lock to the door. (Right) View of Anderson Well#2 from the Anderson Well (S07) wellhouse. No potentially hazardous contaminants in the sanitary control area.

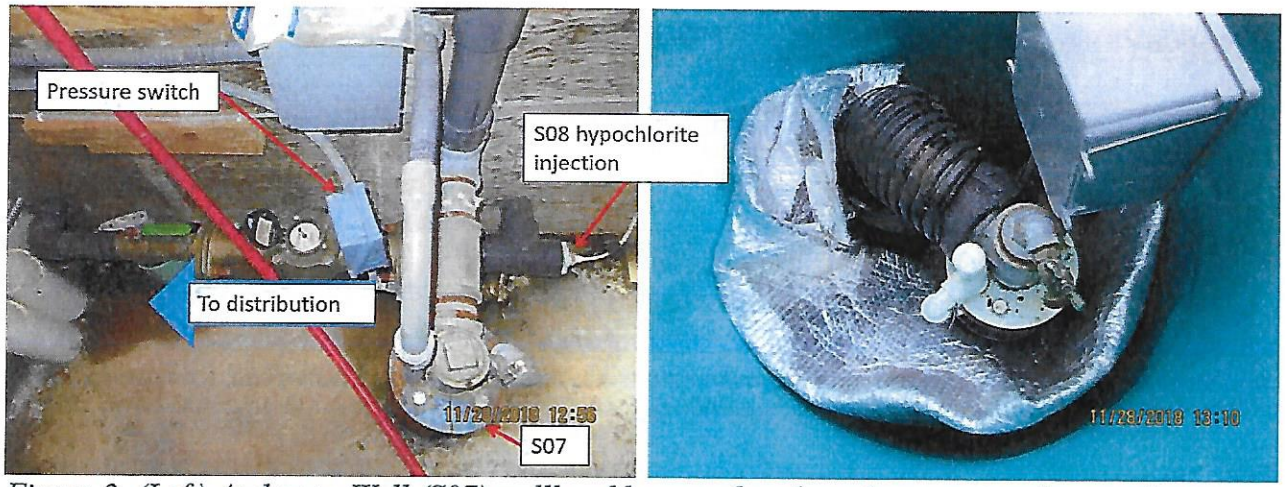

Figure 2. (Left) Anderson Well (S07) wellhead has good seals and screens, and a sample tap. Anderson Well #2 (S08) and meter shown here entering the building behind S07. (Right) Anderson Well #2 (S08) wellhead has good seals and screens, and a sample tap. The enclosure is tightly sealed and effective at keeping critters out. It is not clear how air gets in the enclosure.

Figure 3. (Left) S07 hypochlorite injection and meter is on the back wall. (Right) Controls for Anderson Wells. Upper right shows the Herrin controller.

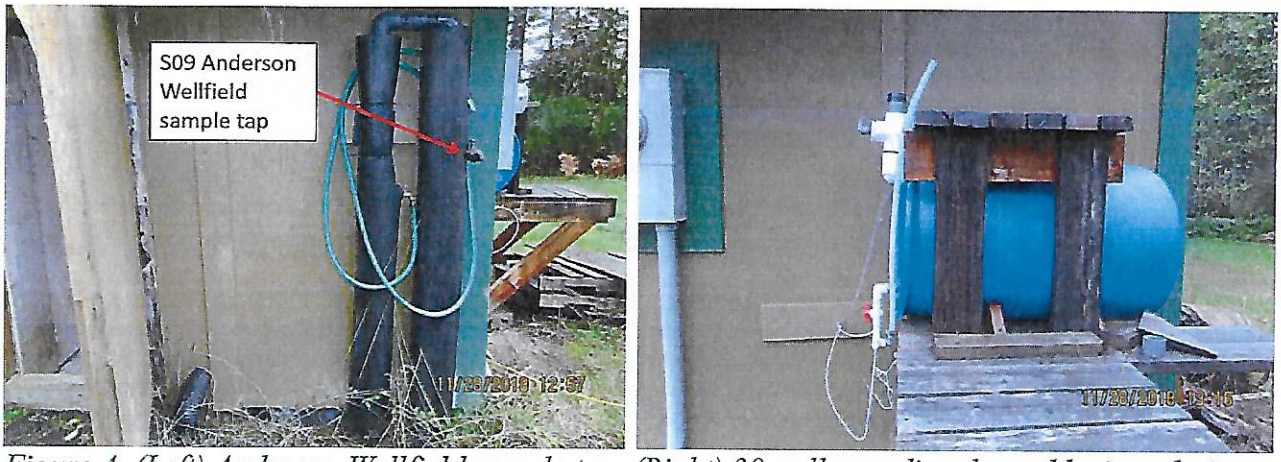

Figure 4. (Left) Anderson Wellfield sample tap. (Right) 30-gallon sodium hypochlorite solution.

The spring source, wellpoints, and Canyon Well (when in use) are blended.

- Canyon Well (AHM851) (S06) – Arsenic 30ppb. Not used in the past couple years. When in use, they blend with the Sand Spring and Driven Wells to reduce arsenic loading to the system (Figure 5). The approved ATEC filtration for arsenic removal is not in use (please refer to submittal 12-0706).
- Wellfield – Driven Wells 1-9 (S03) includes Wells 1-9 (S05) – Groundwater with hydraulic connection to surface water (Figures 6 and 7). (We were unable to access the driven wells during the survey.)
- Sand (S01) – the Sand Spring. Groundwater with hydraulic connection to surface water (Figure 7). (We were unable to access the Sand Spring collection site during the survey.)

Hypochlorite disinfection provides CT6 with at least 0.5ppm free chlorine residual at entry point to distribution (Figures 7 and 8). The system did not meet the minimum disinfection treatment requirements for the month of July 2018 or the summer months of 2015.

Figure 5. Canyon Well. Source meter and sample tap (not shown here) are located behind the Canyon pump house. (Left) Wellhead enclosure. (Center) Good seals and screens. (Right) Wellhead enclosure front bottom board has rotted and could be replaced.

Figure 6. Wellpoints (Left) Charging station. Tap plumped to the charging station is used to siphon the wellpoint lines as needed. (Right) Wellpoint transmission lines.

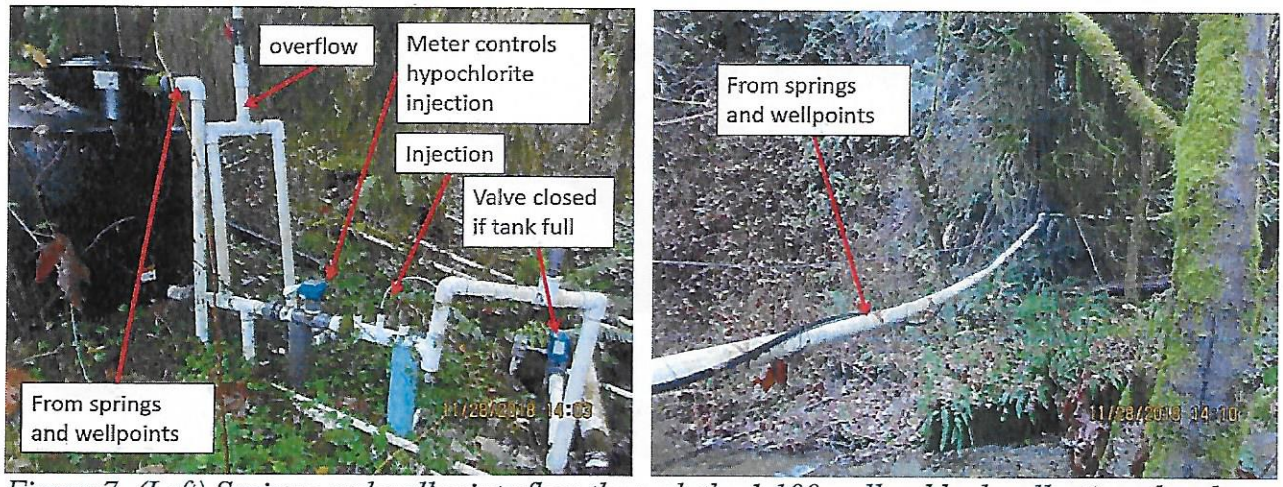

Figure 7. (Left) Springs and wellpoints flow through the 1,100-gallon black collection chamber. The overflow and surge protection piping are screened with air gap. Hypochlorite injection is after the overflow and before entering the 15,000-gallon fiberglass holding tank below the Canyon pump house. (Right) Water from the springs and wellpoints comes through the woods and across the river through PVC.

Figure 8. (Left) Blue hypochlorite solution tank. LMI feed pump for the springs and wellpoints on the exterior wall of the Canyon pump house. (Right) Screened air vent for 15,000-gallon holding tank below the Canyon pump house. Treated water is pumped from the holding tank to the Green tank.

Other sources (we did not inspect during this visit)

- Jack (GWI) (S02) – Emergency source. Springs with GWI determination of surface water source type. The system is interested in utilizing the water right. Potential to redesign spring collection box and resample for the GWI determination. Consideration given to adding surface water treatment.
- Shinglemill Creek / Spring (S04) – Emergency source. Surface water.

Green tank and 156th Street BPS

All sources feed the 156,000-gallon steel tank (the Green tank) (Figure 9). The 156th Street BPS pressurizes the system from the Green tank (Figure 10). Entry point samples are collected are collected after the Green tank at the 156th Street BPS (Figure 10).

Figure 9. Green tank. (Left) Overview. Drain line daylights at roadside. (Right Upper) Exterior overflow with air gap and flapper valve. (Right Lower) Two inlets. Possible remnant of previous operation of the Green tank and Cove tank in parallel rather than series.

Figure 10. 156th Street BPS. (Left) Exterior view showing the entry point to distribution sample tap. (Right) Interior view.

Cove tank and Cove tank PS

The 156th Street BPS fees the 100,000-gallon concrete tank (the Cove tank) (Figures 11 and 12). The PRV, normally not in use, at the Green tank site allows the Cove tank to serve the system while the Green tank is offline.

Figure 11. (Left) Cove tank. (Right) Cove tank PS. 65-psi discharge pressure. Please add a 24-mesh screen to the air-vacuum valve vent.

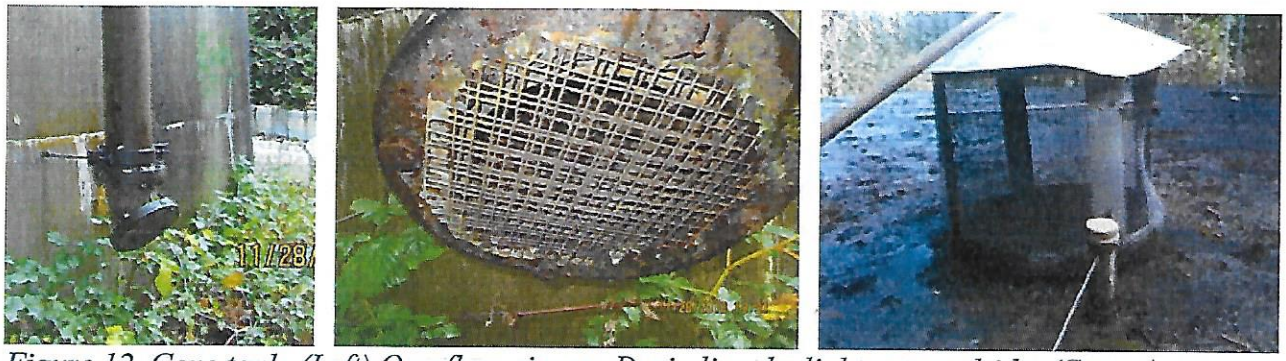

Figure 12. Cove tank. (Left) Overflow airgap. Drain line daylights at roadside. (Center) Overflow screen. Not an adequate insect barrier. (Right) Air vent. Vulnerable to surface splatter and windblown contaminants (photo provided in 2013).

Distribution water quality, and operations and maintenance (O&M)
O&M activities include, but are not limited to, the following.

- Exercise valves by memory. No written program.
- Hydrants were tested last year, but no regular program in place. Main size and storage volumes are not sufficient to provide fire suppression.
- They read service meters every other month and replace ten service meters per year.

Distribution consists of asbestos concrete, PVC, HDPE, PE, and wrapped steel. One 3-inch steel section of the main passes through private property and completes the loop in the northern part of the system. Consideration is being given to replacing the 3-inch steel section and / or adding a section of main along 121st avenue SW to loop in the southern part of the system.

Water quality monitoring and reporting
Required distribution monitoring includes 1) disinfectant by products, 2) lead and copper, 3) coliform, 4) detectable chlorine residual, and 5) asbestos. The system missed the compliance period for disinfection by products in 2017 and 2014.

Coliform monitoring and* E.coli *response plan
The system has a recently updated CMP and *E.coli* response plan. They are required to collect one routine sample per month. Since the last routine survey, all routine samples were satisfactory. A missed routine sample in May 2018 resulted in a monitoring violation.

Water Use Efficiency
Efforts to minimize distribution system leakage (real and apparent) include, but are not limited to, the following.

- In 2016, they modified the conservation rate structure.
- They replaced the source meter when they realized the Anderson wells 1 and 2 meter reads did not match the downstream totalizing meter.
- Ongoing effort to detect leaks and make repairs.
- Installed a zone meter on Westside Highway SW at SW 148th Street to detect leaks past this point to the north.
- Daily monitoring of source meter data.

Cross connection control program (CCCP)
The system does have a CCCP with authority in place through resolution and bylaws. There are no testable backflow prevention assemblies in the system. The hazard evaluation is partially complete. Potential cross-connection hazards include the swimming pool and auxiliary water supplies (private wells used for irrigation, presumed not connected to the system).