April 28, 2017 Sandra Bodamer King Water Co Po BOX 2243 Oak Harbor, WA 98277	West Beach Rd ID #17970	
	County:	Island
	System Type:	Group A Community
	Operating Permit Color:	Green
	Surveyor:	Virpi Salo-Zieman
	Inspection Date:	April 25, 2017

Thank you and Jim Patton for meeting with me to conduct a sanitary survey of this water system. Sanitary surveys are the Office of Drinking Water's (ODW) way to inspect public water systems through a field visit. ODW is also able to offer technical assistance to help utilities improve their system operations and ensure that public health is protected.

This report documents the findings of this survey. Your water system appears in good condition and significantly improved since the last survey in 2014. The improvements include coating of the reservoir roof, replacing the reservoir vent and water level cable system, resealing of the reservoir hatch, installation of a new iron and manganese treatment system, moving the back-up generator away from the sanitary control area, and installing a new well pump. This is quite the list of improvements in three years.

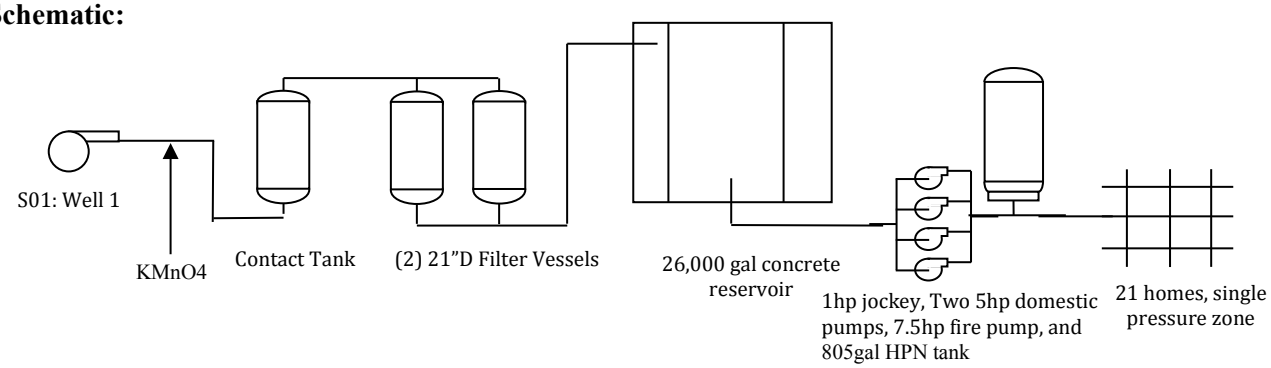
During this survey, I did not observe any significant deficiencies or findings that would need your immediate attention.

SYSTEM INFORMATION

West Beach Rd water system is located northwest of Coupeville, just north of Sierra Country Club and Seawest water systems. The system serves 21 residential connections and about 50 people and has been approved to serve 25 connections. The water system is an association governed by an elected board. The water system has maintained a contract with King Water Company to operate and maintain the water system.

Water is supplied by one well. Water is treated to remove iron and manganese and is then led to the system's 26,000 gallon reservoir from where it is pumped to all customers. The water demand in the system is typically less than 4,000gpd. Average daily demand was 178gpd/ERU in 2015 and 188gpd/ERU in 2016. The design values for the system are average day demand of 350gpd/ERU, maximum day demand of 800gpd/ERU and peak hourly demand of 73gpm. Additionally, the system is designed to provide residential fire flow. Water rights appear as 20gpm and 16 AFY.

Schematic:



SECTION 1: SOURCE

S00	Name	Description	Ecology Tag	SWI* Class
01	AGA969 well 1	Drilled in 1984, 287ft deep well with 1st open interval at 282ft, 18' surface seal, Pumping capacity of 20gpm, well pump replaced in 2016		Very high

* SWI classification based on Island County Seawater Intrusion Code.

WELLHEAD	S01
	Yes No
System has well log	☒ ☐
*Wellcap sealed	☒ ☐
*Openings sealed	☒ ☐
*Vent screened	☒ ☐
Terminates 6" above grade	☒ ☐
*Protected from flooding	☒ ☐
Source meter	☒ ☐
**Raw water sample tap	☒ ☐
**Protected from unauthorized access	☒ ☐
Structure in good condition	☒ ☐
*SCA has no unmitigated contaminants	☒ ☐
**Protected from physical damage	☒ ☐
Frequency of routine site visit	2x/week
Frequency of source meter reading	2x/week

WELL PUMP EQUIPMENT	S01
	Yes No
*Functional and reliable pump and pump controls	☒ ☐
*Pump control valve or vacuum relief valve with a protected air gap at discharge	☒ ☐

WELL PUMP EQUIPMENT	S01
	Yes No
Generator available	☒ ☐
Generator has automatic startup	☐ ☒
Generator fuel source	gasoline

EMERGENCY SOURCES - none

SECTION 2: DISINFECTION – not practiced

SECTION 3: OTHER TREATMENTS

Potassium permanganate oxidation and greensand plus filtration. After permanganate addition, there is a 120-gallon contact tanks followed by twin 21" diameter filter vessels. The treatment is sized for 24gpm. Backwash takes place every 2,100gallons of treated water and includes 6 min backwash (at 13gpm/ft^2), 45 min rinse cycle with potassium permanganate and 5min rinse. One filter remains in service while the other one is being backwashed. Backwash water is discharged on a little swale covered with river rocks near the road ditch.

Finished water is tested for iron and manganese on a weekly basis and the results have been variable, but remained below the MCLs. Higher results can be expected by the end of a filter run. The raw water is very high in iron and manganese.

#	Treatment Process	Chemical Added	Purpose	On WFI Yes No*	Location in system
1	Oxidation and filtration	Potassium permanganate	Iron and manganese removal	☒ ☐	Pump house

TREATMENT	1
	Yes No
*Operated & maintained properly	☒ ☐
*RPBA or air gap at water fill line to chemical tank	☒ ☐
**Post treatment sample tap	☒ ☐
Schematic of treatment facilities available	☒ ☐
Adequate testing equipment available and used	☒ ☐
Test kit calibrated and maintained properly	☐ ☐
Chemical feed proportional to flow	☒ ☐
**Approved chemicals used	☒ ☐

SECTION 4: DISTRIBUTION SYSTEM

One dead-end line of 6" PVC with three hydrants and blow-off at the end. System is designed to provide fire flow.

FEATURES	Yes No
Service area and facility map	☒ ☐
Minimum pressure requirements met	☒ ☐
Service meters - reading frequency (quarterly)	☒ ☐
Leak detection program	☒ ☐
Water system leakage (%)	4.7%
Number of breaks within last year	none
Main break response protocol	☒ ☐
Adequate valving for flushing and pipe repair	☒ ☐
Blow-offs on dead ends	☒ ☐
Routine flushing – frequency (quarterly)	☒ ☐
Routine valve exercise – frequency (quarterly)	☒ ☐

CROSS CONNECTION CONTROL (Community Systems)	Yes No
System has enabling authority	☒ ☐
Ongoing hazard inspections	☒ ☐
High hazards identified	☒ ☐
High hazards protected	☒ ☐
Annual testing	☒ ☐
System has installation standards	☒ ☐
CCS on staff or under contract	☒ ☐
Cross connections observed have been eliminated	☒ ☐

The cross connection control program is covered by the system bylaws and water service agreements. All customers have been surveyed. No need has been identified for a backflow prevention device in this community.

SECTION 5: FINISHED WATER STORAGE

Res	Reservoir Name	Description	Year Built	Volume
1	West Beach Rd	Octagonal concrete tank, roof was sealed in 2015, Last cleaning took place in October 2016, new hatch seal, vent and water level cable system.	1984	26,000gal

TOP OF RESERVOIR	Res #1
	Yes No
Hatch: Locked	☒ ☐
*Hatch: Watertight seal or gasket	☒ ☐
Hatch: Over-lapping cover	☒ ☐
*Screened air vent	☒ ☐
*Openings sealed/protected	☒ ☐

FEATURES	Res #1
	Yes No
Separate inlet/outlet	☒ ☐
Accessible drain outlet	☒ ☐
*Protected overflow outlet	☒ ☐
*Overflow connects to sanitary sewer with an air gap	☒ ☐
Operational water level gauge	☒ ☐
Bypass piping or isolation possibility	☒ ☐
**Protected from unauthorized entry	☒ ☐
Low level alarms	☒ ☐
Sample tap at outlet	☒ ☐

MAINTENANCE	Res #1
	Yes No
Frequency of interior cleaning and inspection	Annual
Frequency of appurtenance inspection	2x/week
Frequency of routine site visit	2x/week
**Structure in good condition	☒ ☐
Clear of excessive vegetation	☒ ☐

There is a red light outside the pump house that will lit if reservoir level is low.

SECTION 6: PRESSURE TANKS

Site	Location	Number and Size of Hydropneumatic Tanks	Number and size of Bladder Tanks
1	Pump house	(1) 805 gal	

HYDROPNEUMATIC	Site: 1
	Yes No
Pressure relief valve	☒ ☐
Pressure gauge	☒ ☐
Water level sight glass	☒ ☐

HYDROPNEUMATIC	Site: 1
	Yes No
Can be isolated	☒ ☐
**Oilless Air compressor	☒ ☐
**Structurally in good condition	☒ ☐

BUILDINGS/ENCLOSURE	Site: 1
	Yes No
Facility secure	☒ ☐
Structure in good condition	☒ ☐

SECTION 7: BOOSTER PUMPS AND FACILITIES

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BPS	Name	Description	Capacity (gpm)
1	West Beach Rd	(1) 1hp Goulds pump, Jockey, set at 51psi/59psi (2) 5hp Goulds, rated 145gpm at 40 psi, in lead/lag, typical domestic flow and backwash, turns on at 50 psi and the second one at 45psi. (1) 7.5hp Goulds for fire flow, 35psi	

BOOSTER PUMPS	BPS 1
	Yes No
Number of pumps	4
Frequency of routine site visit	2x/week
Isolation valves	☒ ☐
Pressure gauge(s)	☒ ☐
Pressure relief valve	☐ ☒
Pump failure alarm	☐ ☒
*Functional pump and pump controls	☒ ☐
Protected from flooding	☒ ☐
Redundant pumps	☒ ☐
Equipment in good condition	☒ ☐
Generator available	☒ ☐
Generator has automatic startup	☐ ☒
Generator fuel source	gasoline

BUILDINGS/ENCLOSURE	BPS 1
	Yes No
Facility secure	☒ ☐
Structure in good condition	☒ ☐

There is a pressure relief valve on the side of the hydropneumatic tank.

SECTION 8: WATER QUALITY MONITORING AND REPORTING

All monitoring is current. The well water has elevated iron, manganese, TDS, and conductivity. The conductivity is around 800umhos/cm. Chlorides have remained low below 100mg/L. The treatment has been successful in removing iron and manganese. The results have been 0.14-0.25mg/L for iron and 0.012-0.046 mg/L for manganese.

Please refer to the Water Quality Monitoring Schedule for your monitoring requirements and status. If you have any questions on source monitoring, please contact Steve Hulsman at (253) 395-6777.

CHEMICAL	
Sample Point	**Description**
1	

CHEMICAL	Sample Point 1
	Yes No
Monitoring adequate	☒ ☐
ODW WQ data reviewed	☒ ☐
Sample collection sites correct	☒ ☐

COLIFORM	Yes No
Monitoring adequate	☒ ☐
Monitoring plan adequate	☒ ☐
Monitoring plan followed	☒ ☐
Number of violations since last survey	3

This system had an acute *E. coli* MCL violation/incident in 2014 of which special purpose investigation turned into a sanitary survey. After this incident, the system sealed the reservoir roof and replaced the treatment plant. In 2016, there were two additional treatment technique triggers (previous non-acute coliform violations), one in June and another in September. The level 1 and level 2 assessments identified deficiencies with the system's reservoir that have been addressed. If these incidents continue to occur, you may need to install continuous disinfection treatment as an additional barrier for health protection.

LEAD & COPPER	Yes No
Monitoring adequate	☒ ☐
Results below action level	☒ ☐
Optimal WQ Parameters achieved	N/A

Your next set of lead and copper samples are due this year.

SECTION 9: SYSTEM MANAGEMENT AND OPERATIONS

This system has an active board and appeared well managed and operated. Jim Patton has been the water manager for long time and maintains excellent records of the water system and communicates well with the community and the board. The pump house was organized and all critical information and equipment were posted or neatly placed in the pump house. The system also maintains a board for maintenance tasks that shows when they are due and when they were done. All the pipes are labeled and even the media or water levels in the tanks have been marked for future reference. This is very exemplary work!

PROJECT/PLANNING	Yes No
System approved	☒ ☐
Current WSP or SWSMP	☒ ☐
Year WSP or SWSMP approved	not
Emergency Response Plan	☒ ☐
Financial Plan (rate structure)	☒ ☐
Asset Inventory & Assessment	☒ ☐
Capital Improvement Plan	☒ ☐

REPORTING	Yes No	N/A
WFI reviewed and updated with purveyor	☒ ☐	---
Consumer Confidence Report - Community only	☒ ☐	☐
Water Use Efficiency report - Municipal Water Suppliers	☒ ☐	☐
Cross Connection Control annual report > 1000 conn	☐ ☐	☒

OPERATOR CERTIFICATION

This system must maintain the services of WDS and WTPO1 certified operators. The system maintains a contract with King Water Company, an approved SMA in Island County.

Name of Operator	Certification Number	Certifications	Mandatory
Sandra Bodamer	013082	WDM2, WTPO2, CCS	☒
Nathan Driscoll	013795	WTPO1	☒

WDS-Water Distribution Specialist; WDM-Water Distribution Manager; WTPO-Water Treatment Plant Operator, BTO-Basic Treatment Operator; CCS-Cross Connection Specialist; BAT-Backflow Assembly Tester. If you have any questions or this information is inaccurate, please contact Operator Certification at (800) 525-2536.

OPERATIONS	Yes No
Operational records maintained	☒ ☐
Complaints followed up	☒ ☐
Complaints documented	☒ ☐
# of complaints recorded at ODW (since last survey)	none
Written operation and maintenance program	☒ ☐
Previous survey deficiencies/findings corrected, if no list below.	☒ ☐

As I noted above, this system has significantly improved since the last sanitary survey. The findings of the last survey as well as the defects identified in the level 1 and 2 coliform assessments have all been corrected.

CLOSING

Because this system has had coliform violations since the last survey, your next survey is due in 3 years.

The Drinking Water Regulations require that all Group A public water systems have a sanitary survey every 3-5 years. In order to receive credit for the survey, a sanitary survey fee must be paid. Enclosed is an invoice for $510.00. 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**.

If you have any questions, please contact me at (253) 395-6761 or by e-mail at virpi.salo-zieman@doh.wa.gov.

Sincerely,

Virpi Salo-Zieman, P.E.
Office of Drinking Water, Regional Engineer

cc: Jim Patton, West Beach Rd
Island County Public Health

Pump house (reservoir behind)

Well enclosure

Well 1, Source 1

Contact tank (chem feed on the right)

Twin 21” D filters with individual control valves

Pot Perm saturators for filter regeneration

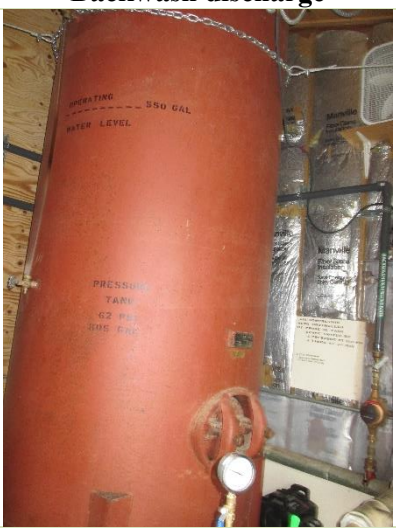
Reservoir hatch

Reservoir overflow

Reservoir level gauge

Backwash discharge

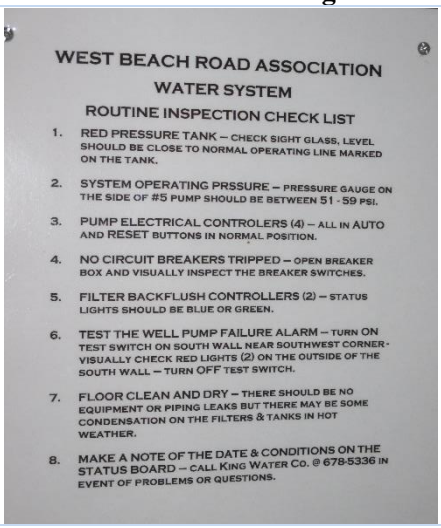
Pump station



HPN tank, PRV on the back side

Backwash discharge

Red light for low reservoir level



Laminated checklists in the pump house

Equipment manuals in the pump house

New housing for the generator

Gasoline powered portable generator