

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-16807
Exam Date: 07/25/2018

1. Current Owner:
WOODLAND SHORES WATER & SEWER ASSN C/O ASSOCIATION SERVICES INC
1110 W PARK PL STE 101 COEUR D ALENE ID 83814-2781

2. Accompanied by: Jerry Widener
Phone No: 208-659-2649
Address: P.O. Box 3343 Coeur D'Alene ID 83814
Relationship to permit Holder: Applicant's Representative

3. **SOURCE:**
COEUR D ALENE LAKE

Tributary
SPOKANE RIVER

Method of Determination: Arcmap and DRG.

B. OVERLAP REVIEW

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
95-8402	GROUND WATER	IRRIGATION, DOMESTIC	DECREE
95-9298	GROUND WATER	MUNICIPAL	LICENSE

Comments: 95-8402 is a decreed water right that uses groundwater for irrigation and domestic purposes with a POU that overlaps this permit's POU. 95-9298 is a water right license that uses groundwater for municipal use which overlaps this permit's POU. Both 95-8402 & 95-9298 have the same service as this permit (95-16807) for Woodland Shores Water & Sewer Assn (Association). At time of field exam, the PODs associated with 95-8402 & 95-9298 were de-activated, with sole water for the service area coming from the lake surface source covered in this permit. While not currently serving as production wells for the association, there is potential for use in the future. As such, condition X35 was added to the permit during licensing review to mitigate overlap concerns between 95-8402, 95-9298 and 95-16807 with regard to annual diversion and annual volume.

2. Other water rights with the same point-of-diversion: NO Overlap

Water Right No.	Source	Purpose of Use	Basis

Comments: _____

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

COEUR D ALENE LAKE L3 (SW¼ NE¼), Sec. 18, Twp 48N, Rge 04W, B.M. KOOTENAI County
COEUR D ALENE LAKE L3 (SW¼ NE¼), Sec. 18, Twp 48N, Rge 04W, B.M. KOOTENAI County

Method of Determination: GPS; 2ea intake pipes in lake are located at -116°54.041, 47°30.288

PLACE OF USE: MUNICIPAL and FIRE PROTECTION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
48N	04W	17							X L5			X L5	X L6	X L7			X L7		
48N	04W	18			X L3	X L4									X L4				
48N	04W	20		X L1			X												

Method of Determination: Field exam, Arcmap aerial imagery, and follow-on email correspondence between applicant's representative and water system operator.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

X Indicate weir size/pipe as applicable.

Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

X

X Aerial Photo Attached (required for irrigation of 10+ acres).

X Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
LAKE DIVERSION BY INTAKE PIPE (1 of 2)		3			
LAKE DIVERSION BY INTAKE PIPE (2 of 2)		3			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
FLOWMETER(S)						

2. Measurements: Applicant's water system had flow meters installed, with SCADA software to manage the system. The two pumps were cycled on independently, and then both were operated at the same time to derive the maximum flow rate for the system, which equals 72.8 gpm or **0.17 cfs** considering department rounding standards. Photographs were taken as proof of diverting flow rates with both pumps running.

E. FLOW CALCULATIONS

Measured Method: Flowmeters installed, SCADA software demonstrated a flow rate of 72.8 gpm with both pumps operating, which equals 0.17 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$$

2. Volume Calculations for Other Uses:

Municipal annual volume =

- 75 service connected homes Year 2020 annual volume report = 6,307,000 gal / 325,850 gal per acre foot = 19.4 af
- 47 stub-in lots = 0.6 af x 47 homes = 28.2 af
- Total Municipal annual volume = 19.4 af (service connected homes) + 28.2 af (stub-in lots) = **47.6 af**

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 7/25/2018 with the applicant's representative, Jerry Widener, showed a water system with two intake pipes diverting water from Lake Coeur D'Alene for municipal & fire protection uses for Woodland Shores Water & Sewer Association (Applicant). At the POD, two separate intake pipes routed from the lake to a pump station with a 3HP pump associated with each intake pipe. The water system had been adapted from using groundwater wells to this permit's surface water source to meet the applicant's service needs. Flow meters are installed with SCADA software to manage their system, which was used to obtain flow measurements. With both pumps operating simultaneously, a diversion rate of 72.8 gpm or 0.17 cfs considering Department rounding standards was observed at time of field exam.

The applicant is limited to the permit approved diversion rate of **0.16 cfs** for their municipal beneficial use, as the permit approved rate can't be enlarged. **0.17 cfs** is recommended as the fire protection diversion rate for licensing purposes, which is the observed diversion rate at time of field exam. **0.17 cfs** is also recommended as the maximum diversion rate for licensing purposes. A DEQ 2019 Drinking Water Supply Report was reference when compiling data toward licensing this permit. The DEQ report validates the applicant's drinking water system currently uses lake water as the sole water source, and that all wells associated with existing right 95-8402 had been disconnected from the water system at the time of DEQ's inspection in July and August of 2019.

The applicant's water system operator, Bob Kuchenski, provided a water system diagram that illustrates the water line and fire hydrant placement throughout the municipal and fire protection POU. This four page document has been added for profiling purposes at time of licensing review. The applicant's water system incorporates a slow sand filtration system, and 10,000 gallon & 30,000 gallon storage reservoirs to service 122 lots within the POU. Arcmap parcel data was used to determine that the number of developed lots equals 75, with remaining stubbed-in lots equaling 47. This is supported by the 2019 DEQ report that asserts 8 year round connections and 67 part time connections as of August 2019. Arcmap aerial imagery was used along with information from Mr. Widener to adapt and trace out the municipal and fire protection POU, excluding Forest Shores Subdivision and Benpoint 1st Addition Subdivision, which are not connected to applicant's water system.

Annual Volume reports were requested via email after the field exam, and Mr. Kuchenski provided volume reports for years 2016-2020 via email correspondence on 2/13/2021. Mr. Kuchenski identified that to his knowledge volume reporting did not occur prior to May 2016. The 2020 annual volume report represents the largest diversion volume year provided by the applicants, and while it falls outside the permit's development period, 2020 year volume is recommended and was used in calculating municipal annual volume as shown below:

- Year 2020 annual volume report = 6,307,000 gal / 325,850 gal per acre foot = 19.4 af
- 47 stub-in lots = 0.6 af x 47 homes = 28.2 af
- Total Municipal annual volume = 19.4 af (75 service connected homes) + 28.2 af (47 stub-in lots) = **47.6 af**

Using 2020 volume data, each of the 75 connected lots used an average of 84,093 gallons per year = 0.26 af per lot. This low volume usage represents the largely seasonal in-home municipal use found within the applicant's service area on an

annual basis. As such, the remaining 47 stubbed-in lots were calculated using 0.6 af per lot for future development within the service area. Due to the fire protection beneficial use being a direct flow component, there is no maximum diversion volume applied to the license.

The applicant's permit was approved for a single point of diversion, but at time of field exam two separate intake pipes with pumps were observed diverting from Lake Coeur D'Alene. An application for amendment of permit to add the additional POD prior to licensing was mailed to the applicant on 2/16/2021. As the two intake pipes are co-located, mapping illustrations will only show a single POD point.

Condition 26A was removed from the permit during licensing review. Condition 128 was updated to accurately describe the water supply system by number and PLS description. All other condition on the permit will remain on the license. Overlap concerns: 95-8402 is a decreed water right that uses groundwater for irrigation and domestic purposes with a POU that overlaps this permit's POU. 95-9298 is a water right license that uses groundwater for municipal use which overlaps this permit's POU. Both 95-8402 & 95-9298 have the same service area as this permit (95-16807) for Woodland Shores Water & Sewer Assn (Association). At time of field exam, the PODs associated with 95-8402 & 95-9298 were de-activated, with sole water for the service area coming from the lake surface source covered in this permit. While not currently serving as production wells for the association, there is potential for use in the future. As such, condition X35 was added to the permit during licensing review to mitigate overlap concerns between 95-8402, 95-9298 and 95-16807 with regard to annual diversion and annual volume. There are no additional overlap concerns for this water right.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
MUNICIPAL	01/01 to 12/31	0.16 CFS	47.6 AF
FIRE PROTECTION	01/01 to 12/31	0.17 CFS	

Totals: 0.17 CFS

2. Recommended Amendments

Change P.D. as reflected above X Add P.D. as reflected above None

Change P.U. as reflected above Add P.U. as reflected above X None

I. AUTHENTICATION Luke Bates - Water Resource Agent

Field Examiner's Name

Date

Reviewer

Date

8/2/2021

8/12/2021

State of Idaho
Department of Water Resources
Attachment to Water Right License
95-16807

MUNICIPAL and FIRE PROTECTION photograph and illustrative map of point of diversion and place of use.



04W

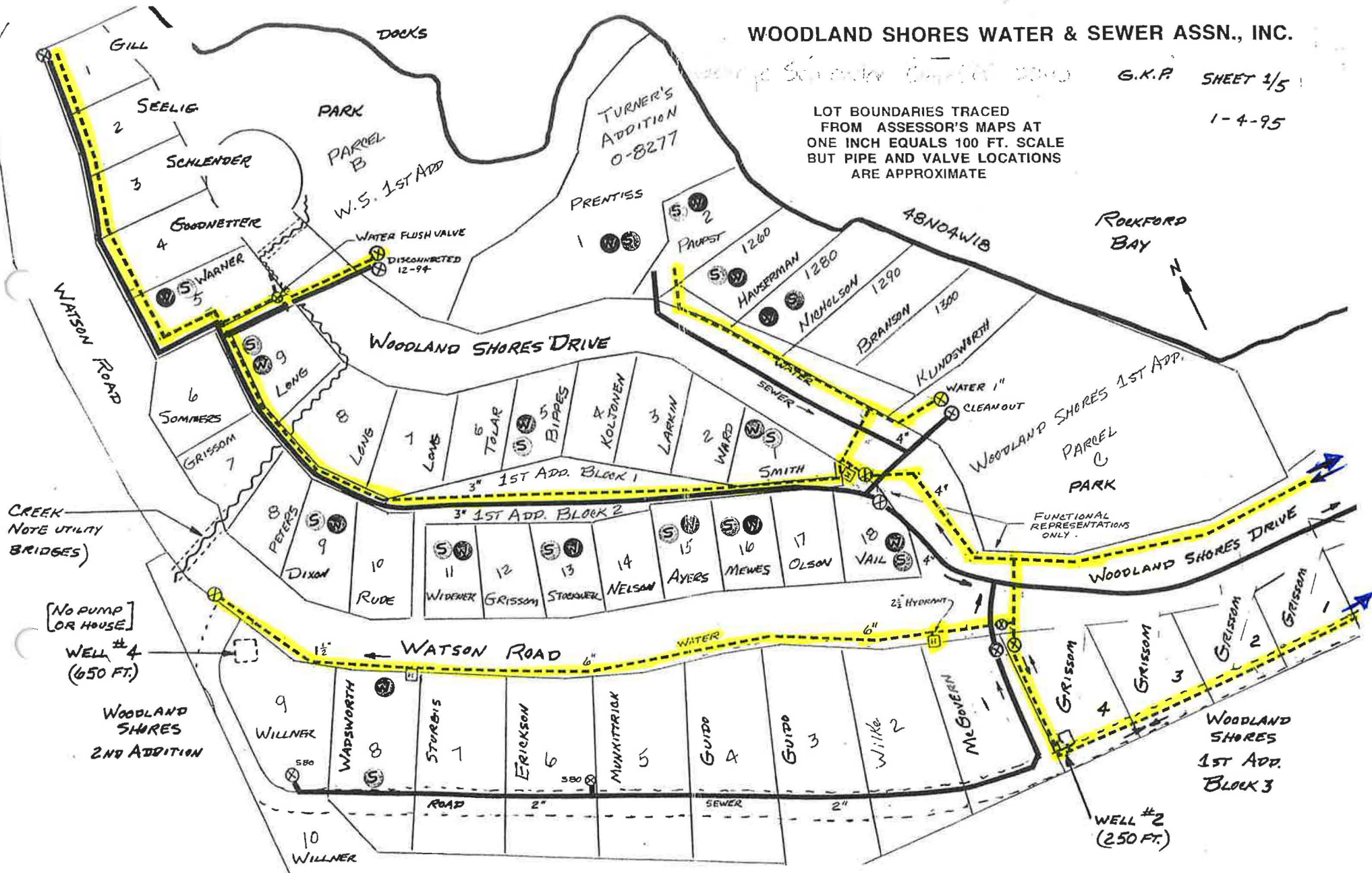
-  Point of Diversion
-  Water Service Area Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.15 0.3 0.6 Miles



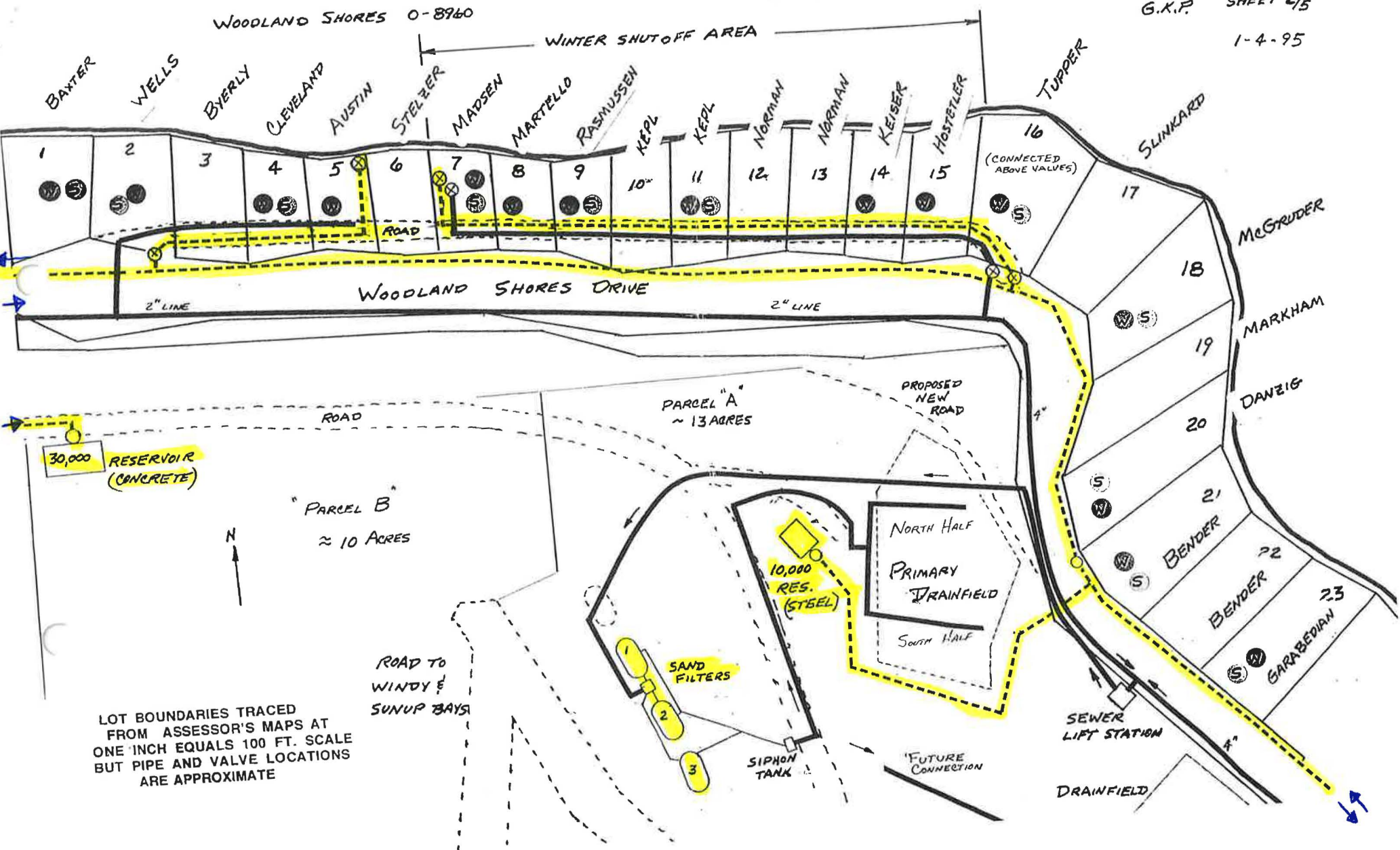
LOT BOUNDARIES TRACED
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BUT PIPE AND VALVE LOCATIONS
ARE APPROXIMATE

1-4-95



WOODLAND SHORES WATER & SEWER ASSN., INC.

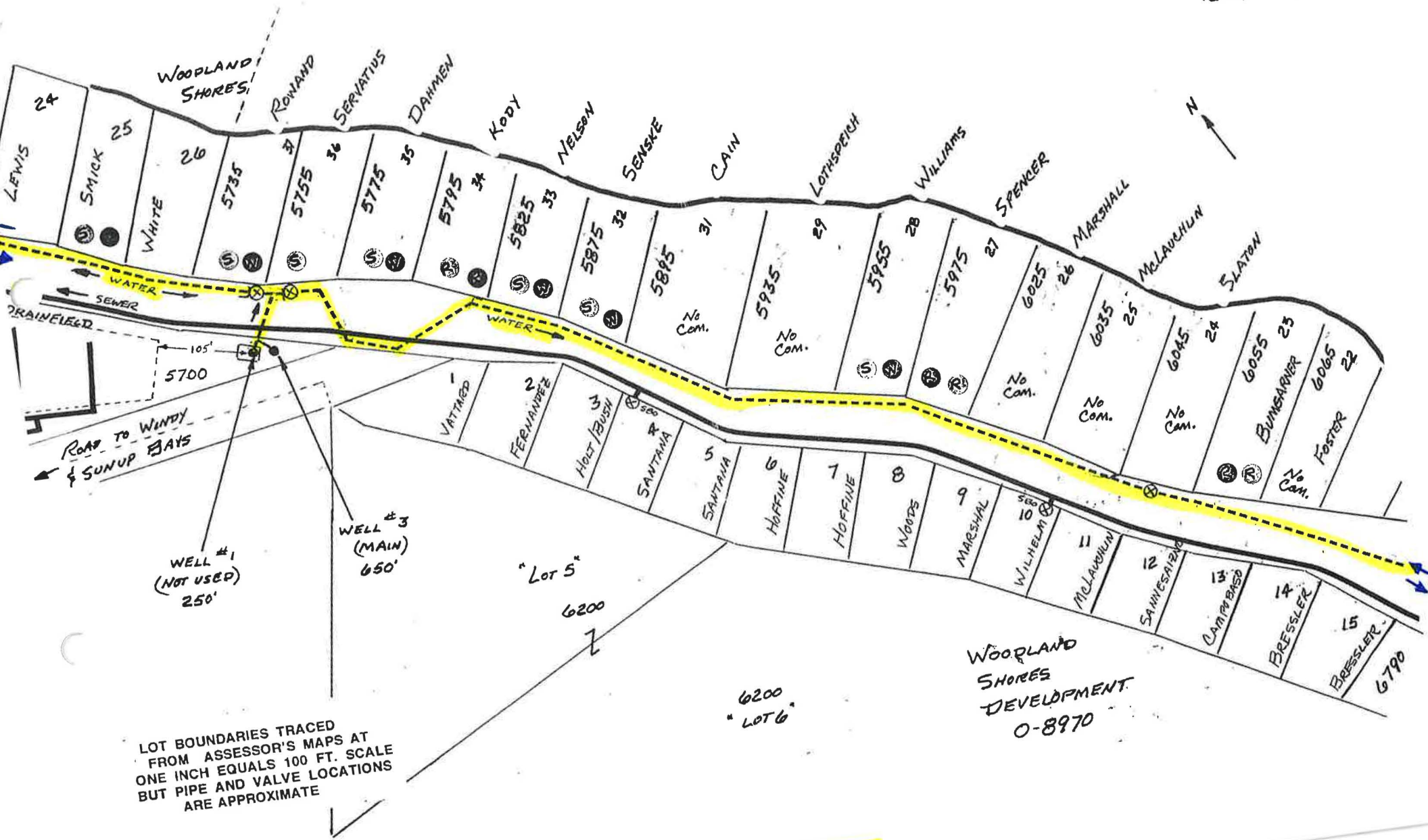
G.K.P. SHEET 2/5
1-4-95



LOT BOUNDARIES TRACED FROM ASSESSOR'S MAPS AT ONE INCH EQUALS 100 FT. SCALE BUT PIPE AND VALVE LOCATIONS ARE APPROXIMATE

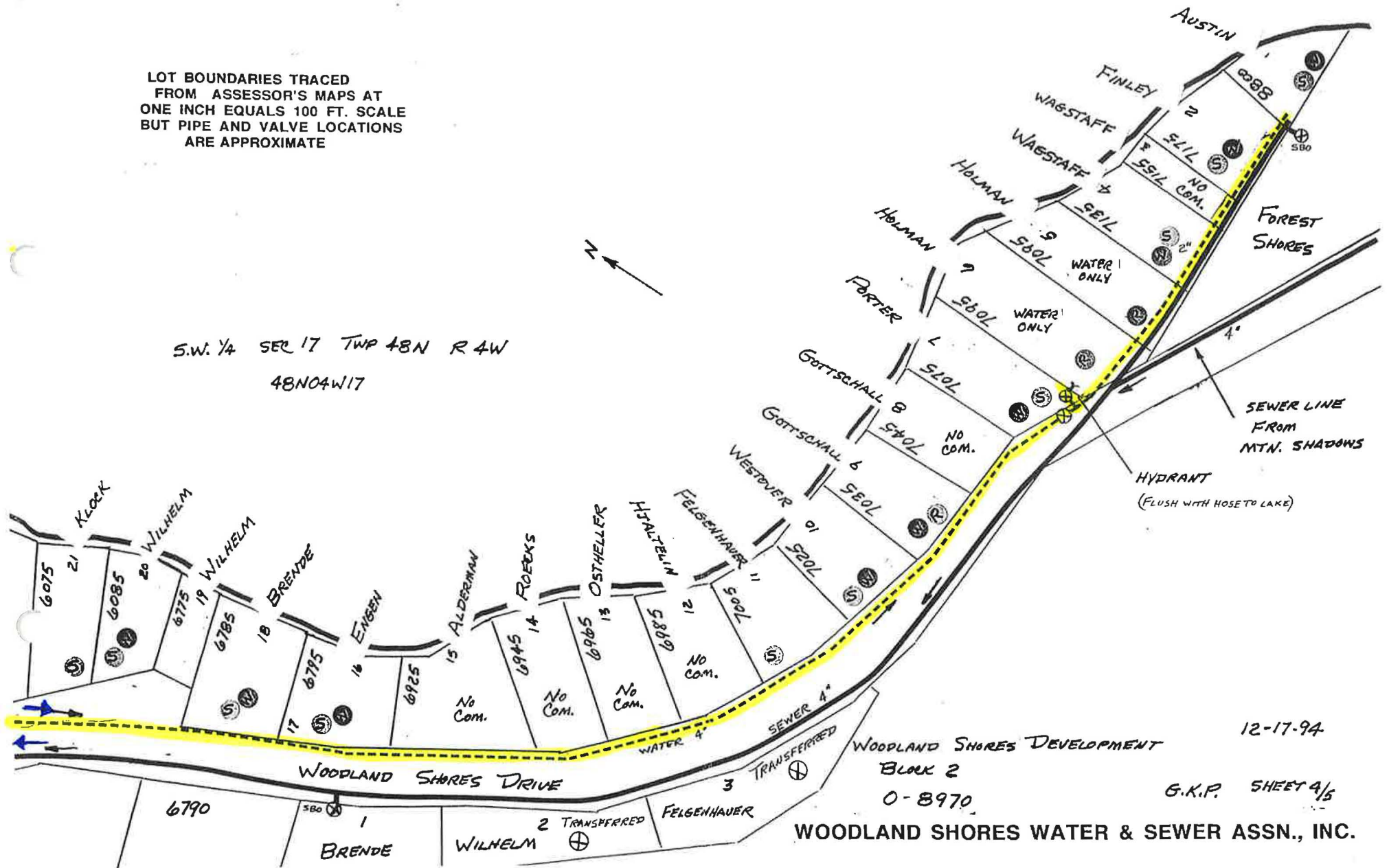
WOODLAND SHORES WATER & SEWER ASSN., INC.

G.K.P. SHEET 3/5
12-17-94



LOT BOUNDARIES TRACED
FROM ASSESSOR'S MAPS AT
ONE INCH EQUALS 100 FT. SCALE
BUT PIPE AND VALVE LOCATIONS
ARE APPROXIMATE

S.W. 1/4 SEC 17 TWP 48N R 4W
48N04W17



12-17-94
G.K.P. SHEET 4/5
WOODLAND SHORES WATER & SEWER ASSN., INC.

2019 Drinking Water Supply Report

Idaho Department of Environmental Quality

System: Woodland Shores Water Association

PWS #: ID1280203

County: Kootenai

Date of Survey: July 25th and August 15th 2019

System Representatives Present at Survey: Ian Kuchenski, Licensed System Operator

Surveyed by: Suzanne Scheidt, Senior Drinking Water Analyst

Primary Source: Lake Coeur d'Alene

Water System Type: Transient Non Community

Estimated Population: 200

Service Connections: 75 (8 residential, 67 seasonal)

System Overview

The Woodland Shores Water Association public drinking water system (system) is located on the southern shore of Rockford Bay. The system is administered by the Woodland Shores Water and Sewer Association Board and serves approximately 8 full-time residential and 67 seasonal residential connections.

The system draws from Lake Coeur d'Alene. Surface water treatment consists of two slow sand filtration bays with recirculation capacity followed by disinfection and contact time. Approved treatment configuration provides 2-log (99%) removal (filtration) credit for giardia, cryptosporidium and viruses. Disinfection and contact time is credited with 1-log giardia inactivation (90%) and 4-log (99.99%) viral inactivation.

A primary logic controller (PLC) is installed in the well 5 pump building. The PLC receives input from the raw water flow meter, individual filter effluent flow meters, and combined boosted discharge to distribution. Pressure transducer (water level) readings from filter bays and contact chamber are also routed through the PLC equipped with an autodialer.

Electrical components of the treatment system and raw water intake pumps are equipped with back-up power via a propane gas generator equipped with auto switchover. In the event of power loss, filtered water is gravity discharged via the 3-way valve to the recirculation vault. The distribution system is then supplied by available gravity storage.

System History

Records indicate the system was constructed and privately owned by Guy Dumais of General Industries, Spokane until 1993. The system was then sold as a non-profit corporation and renamed Woodland Park Water and Sewer Association (Association). System design capacity was approved by the Department at 98 residential connections.

At the time the system was first inspected by Idaho Department of Welfare staff in 1982, well 1 (flowing artesian) supplied the system. The existing 10,000 gallon steel tank rode on distribution. In 1983, the 30,000 gallon reservoir was constructed.

In response to declining production of well 1, wells 2, 3, 4 and 5 were drilled between 1988 and 2006. Wells were insufficient to meet demand and contributed elevated levels of iron. In conjunction with the 2016 survey, all wells were physically disconnected from the potable system.

Source

The system currently utilizes Lake Coeur d'Alene as its sole source. The Association holds a water right from the Idaho Department of Water Resources of 400 gallons per service connection per day to supply 125 services at 35 gallons per minute (gpm).

The intake structure is located approximately 200 feet off shore at a summer depth of 30 feet (approximately 23 feet in winter). The raw water intake main was installed below lake bed surface via directional boring at an adequate depth to prevent freezing in winter months.

Two 1 horsepower (hp) submersible pumps discharge against 75 feet of head to provide a metered flow rate of 38 gpm each to slow sand filter supernatant bays. Collective pump discharge is 78 gpm. Pumps are installed in separate slotted PVC intake structures extending three feet above the lake floor. Pumps are equipped with quick disconnect couplings to facilitate easy removal for maintenance purposes. Raw water (3-inch HDPE) main routes water from the intake to the treatment plant. Raw water flows through an instantaneous/ totalizing electro-magnetic flow meter prior to discharge to supernatant bays.

Treatment

Slow Sand Filtration

The filter control building is equipped with adequate heat, ventilation and floor drains. A six-foot locked fence encloses the slow sand filter control building, slow sand filter bays and contact chamber.

The 3-inch HDPE raw water transmission main transitions to 3-inch PVC upon entering the filter control building. An electro-magnetic raw water flow meter with read out display is installed in the filter control room below the floor grate. Raw water tees to supply each filter supernatant bay via a 2-inch schedule 80 PVC pipe running the inside length of each filter bay. Raw water is diffused via equally spaced $\frac{3}{4}$ -inch holes drilled through the length of the pipe at 180 degrees from sand surface. Filter surfaces were not subject to scouring from the introduction of raw water. A Hach benchtop turbidimeter (2100Q) is used to monitor daily raw water turbidity.

Submersible pressure transducers are installed within 4-inch perforated PVC vertically fastened to the interior wall above the maximum sand level of each filter bay to actuate intake pumps in alternating lead/lag to maintain 4.5 to 5.5 feet of raw water above maximum sand surface or the equivalent of 7.5 to 8.5 feet above the supernatant bay floor. Under routine effluent flow control configuration, one transducer actuates raw water pumps to maintain equalized water levels in both bays. Alternatively, each filter may be operated individually via respective pressure transducer.

The O&M Manual indicates the interior dimension of each filter is 13.5 ft by 28.3 ft (382 ft²). The Operation and Maintenance Manual (O&M Manual) reflects each filter bay was provided

with 36 inches of sand, supported by four layers of underdrain aggregate. Each filter was bedded with 36 inches of approved filter sand from Emmett, Idaho. Sieve analyses of "FILTERSIL" sand indicated an effective size of 0.35 micron and a uniformity coefficient of 1.54. A trace amount of colloidal material was reported as passing through the 200-mesh screen. Sand was underlain by 16 inches of support media consisting of 3 inches of course sand, underlain by 3 inches of pea gravel, underlain by 3 inches of small gravel. The 4-inch PVC underdrain was bedded in 10 inches of drain rock. Each filter underdrain consists of four sticks of PVC spaced 3 feet apart manifolding to a 4-inch PVC discharge main to the clear well.

It is necessary to remove filter schmutzdecke approximately twice per year to maintain head loss at an operational level. Sand filter depth is estimated at 33 inches.

According to the O&M Manual a chamfer strip (keyway) or visual indentation/notch was constructed into the concrete partition wall of each filter bay at a height of 3 feet 8 inches from the floor of the bays to alert the operator when sand levels have reduced to 24 inches. The chamfer strip also prevents filtration short circuiting along the partition wall. As per the Idaho Rules for Public Drinking Water Systems (Idaho Rules), when sand filter depth reaches a minimum level of 24 inches, the filter bed must be re-sanded with a Department approved source of sand.

Filter bays are equipped with individual supernatant overflows, supernatant drains and underdrain filter to waste discharging to a common collection pipe via air gap in the filter control room. The contact chamber overflow discharges to this common main to daylight in proximity to the recirculation vault. The outlet to daylight is equipped with 4-mesh screen to prevent contamination.

Ball valves on individual filter effluent may be slowly opened to allow for filtration rate adjustment as schmutzdecke accumulates on sand surface. Filtration rates are measured utilizing instantaneous and totalizing electro-magnetic flow meters installed on individual filter effluent discharge. Flow meter displays are affixed above individual flow meters; readings are saved to the PLC.

Slow Sand Filtration Operation and Maintenance

As per the O&M Manual, under routine operation filtration rates are maintained via effluent flow control. A pressure transducer installed in each filter bay may signal actuation of raw water intake pumps in order to maintain 4.5 to 5.5 feet of raw water above the sand level at all times.

Individual filter effluent is equipped with a ball valve, allowing the operator to manually adjust filtration rates. Filters may also be operated via influent flow control; however, the practice is sub-optimal for raw water intake pump operation.

Slow sand filtration maintenance requires a physical removal of schmutzdecke (dirt blanket) when head loss is demonstrated. As supernatant levels above the sand filter are maintained via raw water intake and recirculation pumps, head loss at Woodland Shores would be recognized through a decrease in filtration rates or increase in pressure differential as indicated by piezometers installed on raw and filtered lines of each filter. Filter bays are scraped using the method described in detail on pages 10-12 of the O&M Manual.

Following scraping of the schmutzdecke, the filter bed may be filled slowly by gravity via the underdrain effluent intertie from the alternate sand filter (valve #6). The process allows for the release of air that may have been trapped when the filter was partially drained prior to cleaning and minimizes disturbance to sand filter biological integrity. It is recommended the filter is refilled from the bottom at a rate of 0.3 to 0.6 foot bed depth per hour until water level is 6-12 inches above the top of the sand. Raw water is then introduced to refill the supernatant bays to operational levels at a slow velocity to prevent surface scouring.

After operational water levels are maintained above the sand surface, filtered water is discharged to waste until filtered turbidity levels are consistent with levels comparable to filtered turbidity prior to cleaning as required by Idaho Rules. This process generally requires filters discharge to waste for 24-48 hours. A one hour filter to waste period is suggested for each hour the filter bay is offline with a minimum filter to waste period of 24 hours. System operators monitor filtered turbidity levels during the filter to waste cycle to ensure filtered turbidity levels return to normal operating levels prior to discharge for potable use as required by Idaho Rules.

As previously indicated, sand must be replenished when levels reach 24 inches. As described on page 12 of the O&M Manual, a trenching (integration) process should be implemented to biologically re-seed the filter and most expediently achieve biological maturity. DEQ should be contacted in advance to approve replacement sand media.

Surface Water Treatment, Monitoring and Reporting

Operation of slow sand filtration includes daily monitoring of: individual filtration rates, filter head loss via piezometer level, and combined filtered turbidity levels analyzed from contact chamber/clear well discharge. In order to demonstrate adequate disinfection and contact time is provided; flow rates from the contact chamber to distribution are monitored daily via the instantaneous and totalizing electro-magnetic meter on boosted discharge to distribution. Finished water pH and temperature (Hach HQ11d ion electrode probe) and chlorine (Hach DPD color wheel) are analyzed daily from a yard hydrant downstream of the pipeline gallery. The hydrant is reflective of post contact time water quality conditions. Data are provided on a monthly operating report summary to the DEQ Coeur d'Alene Regional Office within ten days following the end of each month as required.

Raw water turbidity is analyzed daily using a Hach 2100Q turbidimeter from a sample tap drawing from the 4-inch PVC water line entering the plant. In the event raw water turbidities exceed 10 NTU, it is recommended the system operate off storage as possible to prevent filters from plugging off prematurely.

As previously indicated, individual filtered flow rates are measured by instantaneous and totalizing electro-magnetic flow meters. At the time of the survey, filtration rates from filter 1 and filter 2 were observed between 10.3 and 10.4 gpm. Under normal operating conditions, filtration rates are manually adjusted on the effluent of each filter. Changes in filtration rates are conducted slowly to minimize the potential for detachment of particulate and microbial consumers residing within interstitial spaces of sand. As the system serves a transient population consisting of secondary (weekend) properties it is necessary to increase filtration rates to meet demand fluctuation. In order to maintain slow sand filtration removals,

fluctuations in filtration rates must be no greater than 50% over a 24- hour period.

Idaho Rules specify a maximum slow sand filtration rate of 0.1 gpm per ft². The surface area of each filter bed is 395 ft², allowing for a maximum filtration rate of 39.5 gpm per filter. Idaho Rules were updated in 2013 to require a minimum slow sand filtration rate of 0.02 gpm per ft². When filters are producing potable supply, individual filtration rates must not decrease below 8.0 gpm. As system demand may decrease significantly during non-summer months, filter operation may be alternated so that one filter is discharging to the contact chamber with the second filter discharging to the recirculation tank. Under this configuration, a minimum filtration rate of 8 gpm must be maintained from each filter effluent.

Combined filtered turbidity levels from bays 1 and 2 are analyzed via a Hach 1720E turbidimeter; data are downloaded to a Hach sc200 controller and reported to the PLC. Turbidimeters are calibrated once every three months according to Hach specifications. As part of the calibration, Hach indicates flow through the turbidimeter unit should be measured and if necessary adjusted to provide a consistent flow through the unit of 0.5 – 1.0 liter per minute.

Disinfection and Contact Time

Filtered water is injected with sodium hypochlorite solution (HASA Multi-Chlor 12.5% NSF 60) prior to discharge to the baffled contact chamber providing disinfection and contact time. Two Pulsatron electronic metering pumps provide flow paced injections via 4-20 ma signal from individual filter effluent flow meters. Metering pumps draw from a common 30 gallon day tank to inject sodium hypochlorite injection on individual filter effluent discharge downstream of each 3-way valve. Following sodium hypochlorite injection, chlorinated filtrate flows through two 45 degree elbows and one 90 degree elbow prior to discharge to the contact chamber. The PLC signals the electronic metering pumps to actuate only when the three way valve is discharging filtered water to the contact chamber. A pressure transducer in the contact chamber signals the PLC to route filtered water through the 3-way valve to waste when the contact chamber is full. In the event of a power outage, a battery back-up system will automatically default the 3-way valve to discharge filtered water to waste.

The 30 gallon sodium hypochlorite day tank is provided with secondary containment and vents to the contact chamber.

The baffled contact chamber is programmed via the PLC to maintain a minimum volume of 6,660 gallons at all times. In the event the contact chamber volume decreases below this threshold, booster pumps are automatically cycled to shut down. Three polypropylene curtains provide serpentine flow through four chambers. According to Steve Tanner, contact time was calculated based on a 35:1 length width ratio and a baffling factor of 0.5 (50%) efficiency for a total contact volume of 3,330 gallons. Page G-4 of stamped plans indicated an additional 240 gallons of contact volume from the serpentine pipeline gallery constructed of 40 feet of 12-inch C-900 main. Total effective contact volume is 3,540 gallons. A review of Monthly Disinfection Reports reflect a conservative contact volume of 3,300 gallons is used to calculate contact time. This may be increased to a maximum of 3,540 gallons in the future.

Three 5 hp centrifugal booster pumps draw finished water via a suction line from the contact chamber and are actuated via telemetry signal from the pressure transducer installed in the 30,000

gallon concrete storage reservoir. The lead pump is equipped with a VFD, two additional booster pumps producing 49 gpm each will operate in lag and lag/lag to meet system demand as necessary. It is anticipated the two additional booster pumps will not be necessary to meet demand until additional storage is constructed. As previously indicated an instantaneous and totalizing electro-magnetic flow meter on boosted discharge to distribution provides required peak hourly flow data to calculate contact time.

The contact chamber is equipped with an internal overflow that outlets in the vicinity of the recirculation tank. The outlet is adequately protected with 4-mesh screen.

Recirculation System

As indicated in Section 10, page 8 of the O&M Manual, filters must be operated continuously to remain biologically mature. In order to prevent the contact chamber from overflowing and to reduce raw intake pump energy costs, individual filter discharge is equipped with a 3-way valve system.

As previously described, flow direction through the 3-way valve is controlled by a pressure transducer installed in the contact chamber. When water levels in the chamber decrease below a pre-set level, the 3-way valve opens to allow filtered water to gravity supply the chamber. When the chamber is full the 3-way valve diverts flow via a 6-inch HDPE main to the 1,000 gallon recirculation tank located between the treatment plant and lake shore.

A 30 gpm sump pump actuated by a float system in the recirculation tank discharges filtered water to the 3-inch raw water line to supply supernatant bays. The tank is equipped with an overflow to a drainage ditch.

Storage

Combined gravity storage to the system consists of the 10,000 gallon steel reservoir was constructed as part of the original system while the 30,000 gallon concrete reservoir was constructed in 1983. Access hatches to both tanks were not found to be locked and are evaluated as significant deficiencies as per IDAPA 58.01.08.544.04 must be equipped with suitable locking mechanisms to prevent unauthorized access.

The 10,000 gallon shared inflow/outflow steel reservoir is partially buried and may be isolated from distribution. The tank is equipped with two points of access: a steel bolted reservoir lid and an access riser. Access hatch seals were found to be water tight. Tank vents and combined overflow/drain were observed to be adequately screened. It was apparent during tank inspection that inadequate turnover of water was likely. Water quality studies were discussed with the operator for further evaluation and included free chlorine residual and total coliform (construction) sampling.

The 30,000 gallon shared inflow/outflow concrete tank is also partially buried and may be isolated from distribution. If necessary, the tank may be drained through a nearby distribution hydrant. The tank is equipped with one access hatch equipped with a water tight seal. The tank lid was found to be covered with a significant amount of moss preventing inspection. Moss is required to be removed to facilitate inspection; cracks in the lid are required to be repaired as

necessary. The joint between the tank lid and access hatch does not appear to be water tight and is evaluated as a significant deficiency as per IDAPA 58.01.08.544.03 and is required to be sealed. The combined reservoir vent/overflow is adequately screened.

Distribution Main

Water distribution main is comprised of 2-, 3-, 4- and 6-inch PVC main providing water service up to but not including the Mountain Shadows residential subdivision. While the Association has capacity to provide water service to the Mountain Shadows subdivision upon request, it does not have capacity to provide wastewater service.

The distribution main is not looped and dead end mains are equipped with flushing hydrants. Dead end mains are required to continue to be flushed at a minimum frequency of twice per year at a minimum velocity of 2.5 ft/second.

Two air vacuum relief valves are installed on distribution main and equipped with 24-mesh screen.

The Association does not meet or provide fire flow. If necessary, Worley Fire District may utilize water drawn from Lake Coeur d'Alene to provide fire flow.

Cross Connection Control

The Association is responsible for ensuring no inadequately protected cross connections exist on the System. Due to prior limited potable supply from the wells, the previous operator indicated a high probability that some Association users maintain an unapproved auxiliary supply drawing from Lake Coeur d'Alene for irrigation purposes. The lack of evaluation to determine if adequate cross connection control exists is considered a significant deficiency of the Rules that must be evaluated, and if necessary addressed. Please provide a timeline in response to this report in which the Association intends to implement provisions for adequate cross connection control protection. Implementation of adequate cross connection control protection would require annual testing of backflow prevention assemblies by an Idaho Licensed Backflow Assembly Tester.

Monitoring and Reporting

As a transient, surface water supplied public drinking water system, monthly monitoring for total coliform from the distribution system is required. The Revised Total Coliform Rule went into effect April 1, 2016 and requires the System review and update as necessary their Total Coliform Rule Sample Siting Plan. Additional information is available on the Public Water System Switchboard, <http://www.deq.idaho.gov/water-quality/drinking-water/pws-switchboard.aspx> under the "Revised Total Coliform Rule" tab. Routine total coliform monitoring sampling sites demonstrate samples are rotated throughout the distribution system and include the following the residences: Learn, Widener, Schulensen, Cleveland and Schlendler.

Monitoring is also required to be conducted annually for nitrate and once per 9 years for nitrite from the entry point to distribution (hydrant currently used for daily pH, temperature and chlorine residual).

Administration and Operation

The Association is administered by a Board. Carey Learn serves as Board President. Water services are not metered; water and sewer users pay an annual fee of \$1875 per connection which includes \$125 to water system capital reserve and \$350 to sewer system capital reserve.

The System is under the designated oversight of licensed operator, Bob Kuchenski, who holds a Distribution Level 2 (DWD2-14719) and a Treatment Level 2 (DWT2-10956) license. The System is required to be under the designated supervision of a Treatment Level 1 operator. Ian Kuchenski serves as operator under Bob Kuchenski. Ian Kuchenski holds a Distribution Level 1 (DWD1-21471) due for renewal on July 20, 2020.

Conclusion

The Woodland Shores Water and Sewer Association is operated mostly in compliance with the Idaho Rules for Public Drinking Water Systems. At the time significant deficiencies noted below are corrected, the system will be considered operating in full compliance with the Rules. Below please find a summary of the survey findings. Please provide the required plan of correction that includes a timeline in which significant deficiencies will be corrected within 45 days of receipt of this report.

Significant Deficiencies

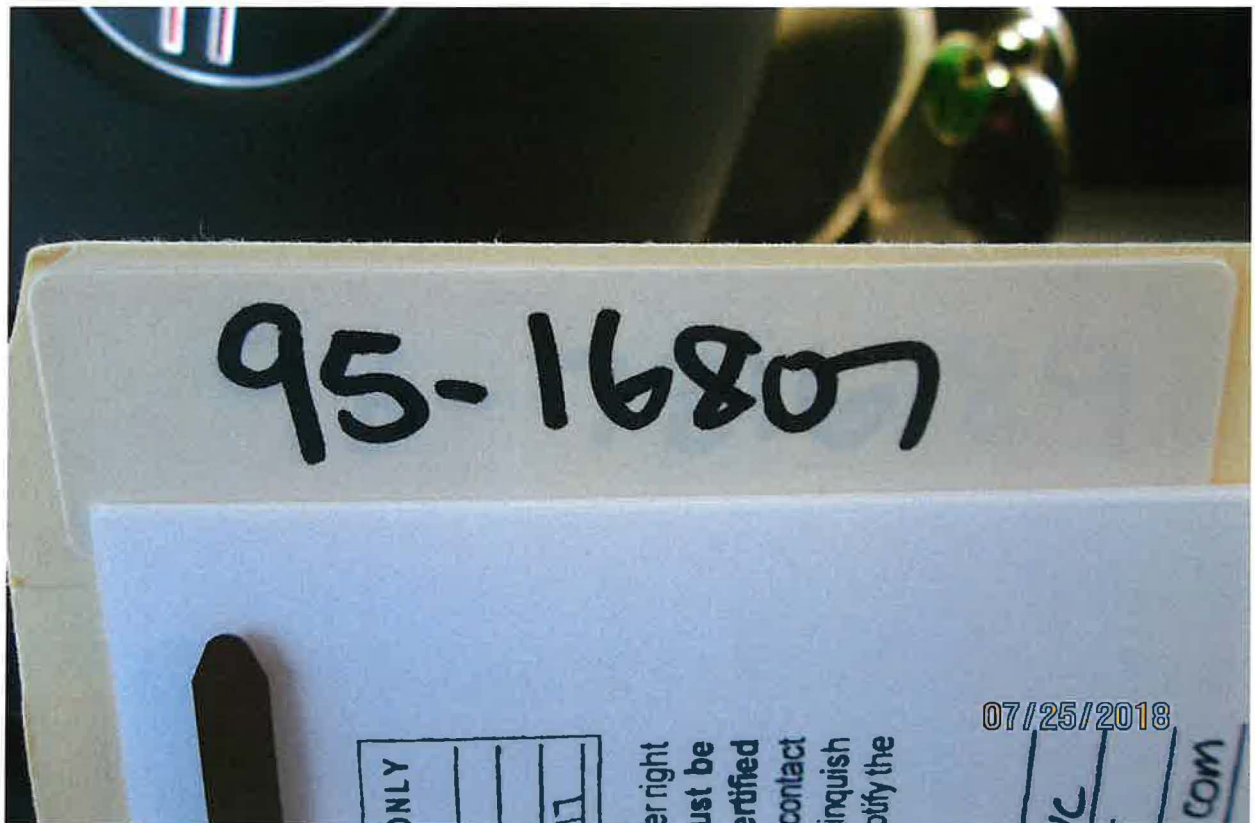
1. The lack of evaluation to determine if adequate cross connection control exists is considered a significant deficiency of the Rules that must be evaluated, and if necessary addressed as per IDAPA 58.01.08.543. Please provide a timeline in response to this report in which the Association intends to implement provisions for adequate cross connection control protection.
2. Tank access hatches must be sufficiently locked as per IDAPA 58.01.08.544.04
3. The joint between the 30,000 gallon tank lid and access hatch does not appear to be water tight and is required to be sealed as per IDAPA 58.01.08.544.03.

Additional Requirements

1. Moss must be removed from the 30,000 gallon tank lid to allow for inspection of lid condition. Cracks discovered upon moss removal are required to be repaired.
2. Studies to evaluate turnover in the 10,000 gallon tank must be completed prior to September 30, 2019.
3. Dead end mains are required to be flushed at a minimum frequency of twice per year at a minimum velocity of 2.5 ft/second.

Recommendations

1. A total contact volume of 3,540 gallons is available for purposes of calculating disinfection and contact time.
2. System control and isolation valves should be maintained and exercised on a regular basis.
3. System water rates should be evaluated to ensure adequate funding is available for future system improvements.



POD – 2EA SUBMERGED SCREENED INTAKE PIPES IN LAKE COEUR D'ALENE



PUMPING STATION



SLOW SAND FILTER BYA AND CONTACT CHAMBER



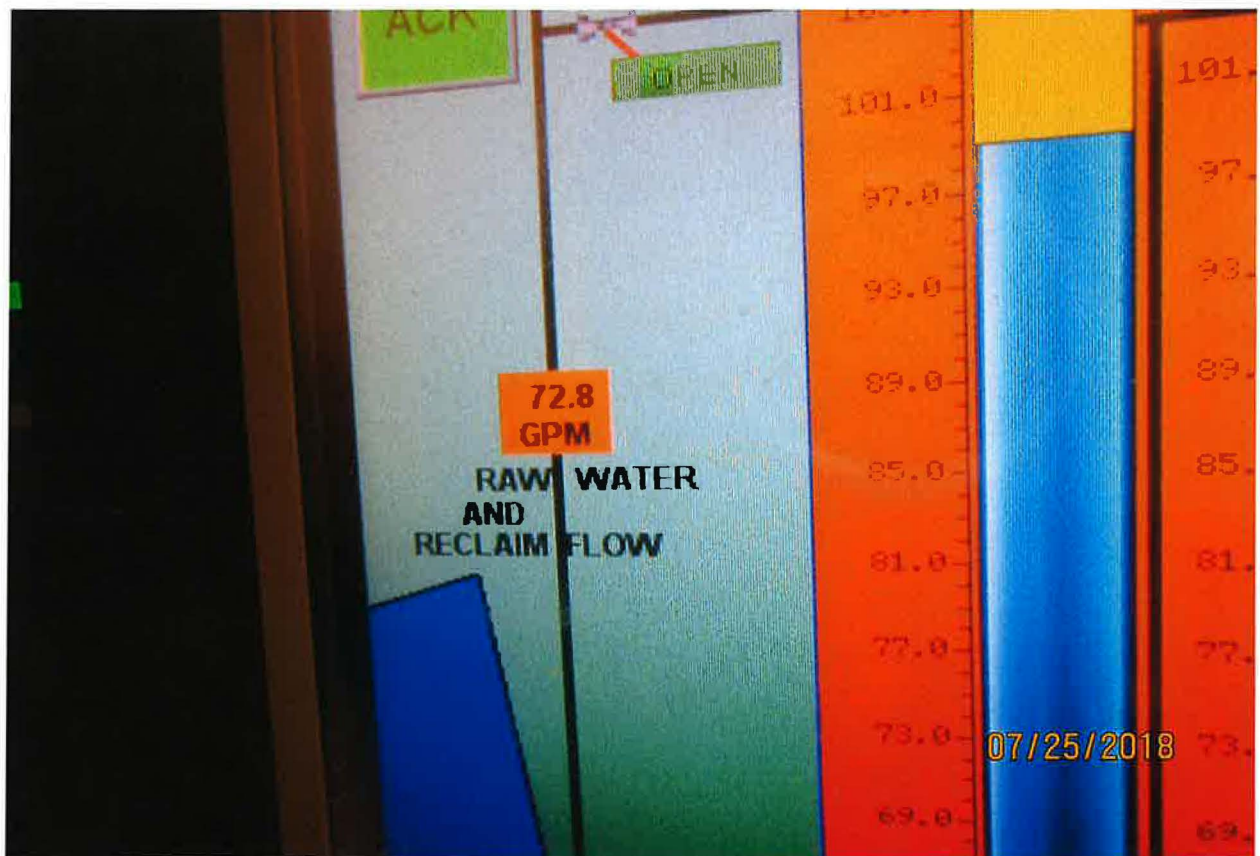
INTAKE PIPES FROM LAKE ROUTE TO PUMP STATION IN BACKGROUND OF PHOTOGRAPH



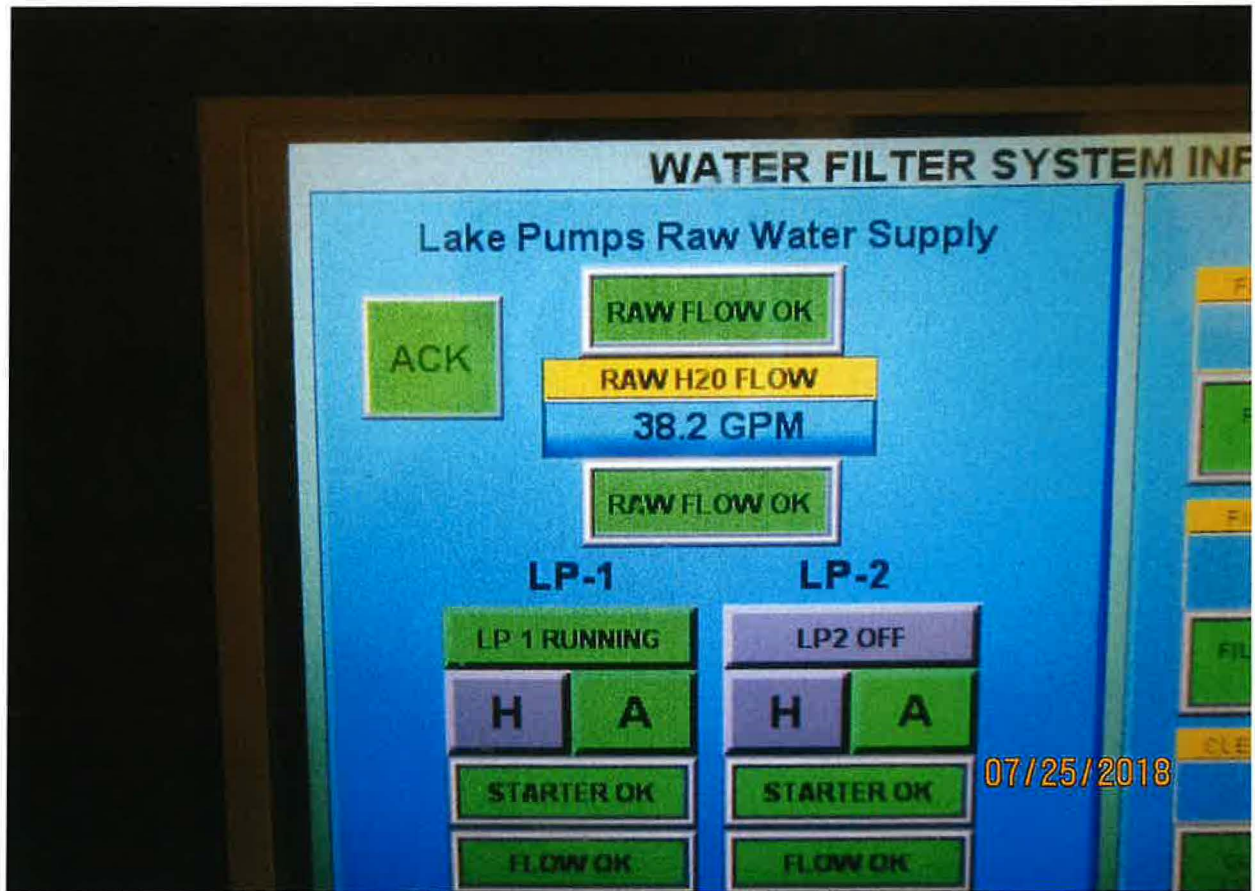
TWO 3HP PUMPS ASSOCIATED WITH DIVERSION SYSTEM



TWO 3 HP PUMPS – CONTROL PANEL



72.8 GPM FLOW RATE OBSERVED WITH BOTH PUMPS OPERATIONAL



38.2 GPM FLOW RATE WITH SINGLE PUMP OPERATIONAL



30,000 GALLON STORAGE TANK ACCESS HATCH



10,000 GALLON STORAGE TANK ACCESS HATCH



POU – MUNICIPAL



POU – MUNICIPAL





POU – MUNICIPAL

