

## 2018 Year-in-Review Report to City of Nevada

### Water Treatment Plant Highlights

1. Regular maintenance and filter change outs to the 5-micron filter pots have added efficiency to the treatment process
2. Alliance staff performs daily maintenance activities to ensure the proper operation of equipment
3. Continued update to Safety Data Sheets concerning all chemicals located at the WTP
4. Continued internal Alliance safety and ReCap annual audits to ensure regulatory compliance
5. AWR staff continues to provide information to Black & Veatch in regards to recommended improvements to update the WTP
6. Worked with Allgeier/Martin and Associates on the development of plans for the WTP piping and valve improvements
7. AWR provided site tours to outside contractors interested in bidding on WTP piping and valve improvements
8. Developed and implemented a respiratory protection plan for (non-SCBA) respirators.
9. Water treatment plant laboratory was recertified by Missouri Department of Health and Senior Services in 2018.

### Water Distribution Highlights

1. Staff repaired 28 water service lines and repaired 14 water main leaks
2. Staff completed 5,020 service work orders during the year.
3. Water main valves were located with GPS equipment to update system mapping.
4. AWR staff developed specifications for the purchase of a Valve exercising - hydro-vac machine. Machine was received and put into service on 11/2/18
5. AWR identified, cleaned, and exercised multiple water main valve locations throughout the system. Formal exercising program for 2019 going forward is under development.
6. AWR staff replaced 185 water meters in the distribution system.
7. AWR staff completed spring and fall water main flushing program. This program entails the flushing of 474 fire hydrants and 53 flush valves.
8. AWR staff continues to read all of the system water meters monthly.
9. AWR staff completed 1,299 locates on water service lines, water mains and sewer mains throughout the year.
10. AWR staff implemented a schedule to clean and paint the fire hydrants within the distribution system.

### OUR MISSION

*We partner with communities to deliver the finest water and wastewater services available at a competitive price. We are committed to keeping water safe and clean while serving people and taking care of communities with improved technical operations, careful management and financial oversight, and ensured regulatory compliance.*

**Alliance Water Resources, Inc.**

**206 S. Keene St.  
Columbia, MO  
65201**

**(573)874-8080**

### **Waste Water Treatment Plant Highlights**

1. Staff land applied 267.4 dry tons of bio-solids to approximately 351 acres of farm and pasture ground.
2. NPDES permit limits were adhered to with no violations or exceptions.
3. Annual calibrations were performed on scales, weights, and thermometers in the laboratory.
4. AWR maintained the Ultra Violet Disinfection system including bulb and component change outs and upgrades
5. AWR staff completed repairs on blower systems providing air to the extended aeration treatment system
6. Repairs were completed on the one of the return activated sludge pumps servicing the clarifiers
7. AWR staff completed an annual review from Missouri Department of Natural Resources of the wastewater pre-treatment program
8. AWR staff completed an annual laboratory audit consisting of reviewing lab procedures, equipment and overall lab quality and functionality.
9. Lab standard operating procedures were reviewed and updated
10. AWR staff continues to monitor and manage the wastewater pre-treatment program

### **Waste Water Collection Highlights**

1. AWR staff Inspected and tested 4 new City sewer main replacements with a total footage of 1,376’.
2. AWR staff inspected and tested 12 newly installed manholes which were added to the collection system.
3. AWR staff inspected and assessed for repair, 109 existing manholes within the sanitary sewer collection system.
4. AWR staff smoke tested 577’ of sanitary sewer mains in an effort to locate sources of Inflow and Infiltration.
5. AWR staff affected repairs to 13 different sewer mains within the system, 5 of which were identified sources of Inflow and Infiltration.
6. Staff assisted public works staff on various projects with Hydro-Excavation.
7. AWR staff located and raised 9 manholes to proper grade.
8. AWR staff completed GIS mapping of the collections system manholes.

**Water System Annual Summary Report**

<b>Water Drawn From Wells</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Annual Total MG	375.44	386.471	386.471	340.818
Average MGD	1.03	1.05	0.98	0.93
Peak Month/Avg MGD	July/1.10	July/1.17	July/ 1.07	July/1.07

**Annual Water Production**

Finish Water Distribution (MG)	296.19	307.770	289.823	287.838
Billed Consumption (MG)	270.38	250.770	245.839	245.417
Total Water Loss Estimate (MG)	19.48	57.00	43.98	42.42
Accounted For Estimate (MG)	5.20	6.10	6.17	5.98
Unaccounted For Estimate (MG)	14.28	50.90	37.18	36.44

**Power Consumption Cost**

Pumping Cost	\$69,184	\$67,674	\$60,459	\$54,284
Power Consumption (pumping) kWh x 1,000	725	776	642	561
Treatment Cost	\$102,646	\$101,978	\$93,762	\$91,613
Power Consumption (treatment) kWh x 1,000	1,309	1,361	1,196	1079
Total Cost	\$160,257	\$169,652	\$154,221	\$145,897
\$/MG/Pumped	\$176	\$175	\$168	\$165
\$/MG/Treatment	\$354	\$332	\$324	\$318

**Chemical Consumption**

Chlorine Total lbs. / lbs. per MG	27,750/95.7	29,250/95.0	27,150/93.9	27,550/92.2
Sulfuric Acid Total gallons / gallons per MG	9,361/37.0	8,822/28.66	8,065/27.90	7,835/27.2
Caustic Soda Total gallons / gallons per MG	12,962/44.71	12,572/40.85	12,413/42.95	13,797/47.9
Sodium Hypochlorite Total gallons / gallons per MG	18,040/62.23	11,880/38.60	10,780/37.30	5,506/19.13
Anti-Scalant Total gallons / gallons per MG	1,217/4.1	989/3.22	870/3.01	1,090/3.79

**Customer Service – Maintenance**

Customer Service Work Orders Completed	5,138	5,564	5,167	5,020
Water Service Line Repairs	50	43	32	28
Water Main Repairs	12	10	15	14
Water Main Locations				1,299

**Average Finish Water Hardness**

Calcium Hardness	61 mg/L	64 mg/L	57 mg/L	55mg/L
Total Hardness	100 mg/L	109 mg/L	98 mg/L	95mg/L

**Customer Information (Residential, Commercial, Industrial)**

Number of Industrial/Commercial Customers	587	566	559	555
Number of Residential Customers	3,258	3,072	3092	3,101
Total Number of Customers	3,845	3,638	3651	3,656
Residential Avg Consumption/Gallons	36,828	36,156	36,444	35,645

### Sewer System Annual Summary Report

<b>Wastewater Treatment Plant Flows</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Average Daily Flow in MG	1.65	1.25	1.54	1.14
Peak Month/Avg MGD	May/3.26	May/1.68	April/3.79	Sept./2.11
Average Flow % of Design (2.0 MGD)	82.5%	62.5%	77.0%	57%
Annual Flow Treated in MG	604.01	456.68	561.82	417.12

#### **Power Consumption Cost**

Pumping Cost	\$18,229	\$20,444	\$18,348	\$16,514
Pumping Power Consumption kWh x 1,000	174	188	215	166
Treatment Cost	\$123,474	\$124,625	\$115,087	\$119,187
Treatment Power Consumption kWh x 1,000	1,486	1,503	1,480	1414
Total Cost	\$141,703	\$145,069	\$133,435	\$135,701
\$/MG/Pumped	\$44	\$34	\$32	\$39
\$/MG/Treated	\$296	\$206	\$206	\$285

#### **Plant Effluent Quality Annual Avg**

BOD mg/L	4	4	4	3
TSS mg/L	3	2	4	2
E coli #/100mL	30	43	15	13
Ammonia	0.35	0.38	0.32	0.10
Oil/Grease (All results were <5)	2.5	1.25	1.0	<5
pH minimum – maximum	6.7 – 7.4	7.1 - 7.3	6.7-7.4	6.7- 7.0

#### **Sewer Collection System**

Sewer Main Cleaning	38,674'	24,559'	20,094'	37,957'
CCTV Inspection	8,236'	2,793'	1,000'	10,720'
Total Sewer Calls	88	110	73	70
Caused by Roots in main	6	4	17	2
Caused by Grease in main	3	2	1	0
Caused by Other	63	51	2	18
Miscellaneous	4	7	3	16
Issues on the Customer's side	12	46	50	34
Sewer Calls Peak Month / # of calls	Nov/15	Jan/8	April/12	Sept/10
Sewer Line Locations				1,299

#### **Customer Information**

Number of Industrial/Commercial Customers	531	537	529	526
Number of Residential Customers	3,185	3,072	3,150	3,171
Total Number of Customers	3,716	3,609	3,709	3,697

## **Water Loss Calculation**

**Water Loss %:** The water loss is calculated by subtracting the “Identified Water Loss” (IWL) and the “Billed Consumption” (BC) from the “Total Water Delivered” (TWD) to come up with the “Unidentified Water Loss” (UWL). To calculate the “Water Loss %”, divide “Unidentified Water Loss” by the “Total Water Delivered”.

$$\text{TWD} - (\text{IWL} + \text{BC}) = \text{UWL}$$

$$287.83 - (5.98 + 245.41) = 36.44$$

$$\text{UWL}/\text{TWD} = \% \text{ of water loss}$$

$$36.44 / 287.83 = .126$$

**2018 Annual Total Water Loss Percentage = 12.6%**