TOWN OF JACKSON
WATER AND SEWER
SYSTEMS EVALUATION REPORT

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1 Introduction

1.1 General Description and Introduction

The Town of Jackson (TOJ) is a resort community located in western Wyoming. The year-round population of the TOJ is approximately 10,000 residents. The TOJ is within Teton County, which has a year-round population of approximately 20,000 residents. In addition to the year-round population, the TOJ sees about four million visitors per year.

The TOJ provides water and sewer service to the residents and businesses within the town incorporated limits. In addition to providing services within the town limits, the TOJ also provides water to a limited number of Teton County residents and treats wastewater for several outlying sewer districts in Teton County. There are additionally a few privately owned systems that the TOJ allows to connect to the water and sewer systems.

The TOJ is responsible for operating, maintaining, and if needed, expanding the existing TOJ facilities. These responsibilities include supply, treatment, conveyance, and transmission of both water and sewer systems.

1.2 Project Description

This 2020 Water and Sewer Capacity Study for the TOJ is Part 2 of a comprehensive study commissioned by the TOJ. Part 1 is a Water and Sewer Rate Study being performed by Raftelis Financial Consultants, Inc out of Denver, Colorado. The TOJ has entered into separate contracts with both NE and Raftelis, but the two consulting firms are completing both parts 1 and 2 in a joined team effort.

The last comprehensive water and sewer study was completed in 1993. Due to changes in development regulations, time, and population growths, the TOJ has determined it is a priority to determine capacity limitations in the systems and to continue to provide those services while equitably recovering the costs of services.

This study provides a holistic capacity study which achieves the following objectives:

A. Determine the existing water and sewer systems' service areas and current capacities for supply/distribution and collection/treatment.
B. Determine the portion of existing capacity utilized by current development.
C. Determine the capacity needs for anticipated population and density demands within the TOJ.
D. Determine the capacity needs for anticipated population and density demands outside the Town limits and proximate to the Town's existing areas of service.
E. Ensure the level of service, mandated service areas, and contractual service areas remain a priority.
F. Inform decision making regarding contracted service to areas outside the TOJ, and, if any, the correlated capital expansion necessary.

1.3 Authority

Nelson Engineering entered into a contract with the Town of Jackson in October of 2019 to complete the Town of Jackson Water and Sewer Capacity Study. Note, this Study is in conjunction with Raftelis completing the Town of Jackson Water and Sewer Rate Study.

2 Existing Water System

This section presents information on the current configuration and existing condition of the Town of Jackson Water System. The extents of the existing water system are shown on Figure 1. The TOJ provides water to private and commercial customers within the TOJ limits and also to a limited number of residents and businesses in Teton County. There are approximately 4900 water customers within the TOJ and 95 customers outside of the TOJ limits within Teton County. The TOJ water system consists of seven supply wells, three storage tanks, three booster stations, and approximately 334,000 linear feet of water mains.

2.1 General Water System History

The Town of Jackson operates under Public Water System ID WY5600213. The Town's original water supply system was via the Jackson Pipeline that drew water from Cache Creek at a permitted yield of 2.5cfs with a water right date of 1918. In 1964, two new wells were drilled on the National Elk Refuge to convert the surface water source to a pure, dependable groundwater system. Since that time six additional wells have been constructed of which five are still in use.

The Town constructed reservoirs to provide storage for fire protection, peak hour equalization, and emergency reserve. The 800,000-gallon east reservoir was built in 1964 on the Elk Refuge. This original tank was subsequently replaced in 2012 with a buried 1.3 million gallon buried concrete tank. An additional storage tank was constructed in 1978, this 2-million-gallon tank is still in use and is located on East Gros Ventre Butte north of the Virginian Lodge. An 80,000-gallon private bolted steel storage reservoir was built in the 1970s to serve the Snow King Estates area. Snow King Estates was annexed into the town which included the TOJ taking ownership of the water system. The Snow King Estates Tank was replaced in 2012 with a buried 120,000-gallon tank located on Snow King Mountain. Following is a more detailed discussion and assessment of the existing water system.

2.2 Available Information

The project team reviewed existing information on the Town of Jackson water system. The following documents were collected and considered through the course of the study, the reports have been scanned with Nelson Engineering having digital copies:

- Water Supply Facilities - 1961
- Water Facilities Investigation for Town of Jackson – 1976
- Preliminary Water Supply and Storage Facilities Investigation for Town of Jackson – 1977
- Water Supply and Storage Facilities Investigation for Town of Jackson – 1977
- Jackson Water Feasibility Study – 1984
- Town of Jackson Groundwater Exploration Program – 1985
- Feasibility Study for Water Meter Installation Project for Town of Jackson, WY – 1988

- Town of Jackson Groundwater Exploration Program – 1993
- Town of Jackson Water System Feasibility Study - 1993
- Existing TOJ Hydraulic Water Model
- Water meter data from 2016-2019 and part of 2020
- SCADA data on well production back to 2016
- Meetings and discussions with operators
- As-Constructed record drawings provided by the TOJ
- Teton County Land Development Regulations (LDRs) planning and zoning regulations.

2.3 Contract Service Area

Figure 1 indicates the existing service area of the TOJ Water System. The contracted service areas outside of the TOJ limits are noted on the figure. Those customers are the Teton Science School, Three Creek Subdivision, Saddle Butte Subdivision, and a few private residences. Figure 1 also indicates the locations of the supply wells, storage tanks, pressure reducing valves, water pressure zones, and booster stations. The TOJ service area is separated into three pressure zones, with Zone #3 being separated into 2 subzones with check valves. The pressure zones are also indicated on Figure 1.

MOUNTAIN ACADEMY OF TSS

MOUNTAIN ACADEMY OF TSS BOOSTER STATION (NOT PART OF TOJ SYSTEM)

HIGHWAY 22

SADDLE BUTTE SUBDIVISION

HIGHWAY 89

NO NAME ALLEY PRV

SADDLE BUTTE PUMP STATION (NOT PART OF TOJ SYSTEM)

ZONE 1

WELL #3

WELL #2

WELL #1

ELK REFUGE WATER TANK

BUDGE DRIVE BOOSTER STATION

ZONE 2

VIRGINIAN WATER TANK

VIRGINIAN PRV

BROADWAY AVE

BUDGE DRIVE ZONE

TOWN OF JACKSON

CLARK STREET PRV

WELL #5

SNOW KING ESTATES BOOSTER STATION

WELL #7

WELL #6

WELL #8

ZONE 3a & 3b CHECK VALVE

ZONE 3b

ZONE 3a

JACKSON HOLE MIDDLE SCHOOL

ENOCH FERRIN PRV

SNOW KING ESTATES PRV

SNOW KING WATER TANK

SNOW KING RESORT PRV

BOYLES HILL ROAD

SOUTH PARK LOOP

ZONE 3a & 3b CHECK VALVE

KARNS MEADOW PRV

SPRUCE DRIVE BOOSTER STATION

SPRUCE DRIVE PRV

KARNS HILLSIDE PRV

PINE GLADES PRV

HIGH SCHOOL ROAD

JACKSON HOLE HIGH SCHOOL

SNAKE RIVER

THREE CREEK RANCH

SOUTH PARK LOOP

HIGHWAY 89

RAFTER J

MELODY RANCH

LEGEND

EXISTING WATER MAIN

WATER ZONE DELINEATION

TOJ SERVICE AREA BOUNDARY

CONTRACT SERVICE AREA BOUNDARY

N

E

0 1500 3000

	DATE	6/14/2021	REV.
	SURVEYED	-	
	ENGINEERED	MB	
	DRAWN	BJG	
	CHECKED	MB	
	APPROVED	MB	

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DRAWING TITLE
TOWN OF JACKSON WATER SYSTEM

JOB TITLE
TOWN OF JACKSON
WATER & SEWER CAPACITY STUDY

DRAWING NO
FIGURE 1

JOB NO
19-336-01

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\14 Drawings\Civil\Water CIP Exhibits.dwg (Exhibit A TOJ EXISTING WATER SYSTEM) - Jun 14 2021 04:26:43 pm PLOTTED BY: greenDWG FORMAT: 230

2.4 Inventory of Existing Water System

For this capacity study, NE completed a visual inspection of the TOJ above-ground water components, including those within vaults and manholes. The Manager of the TOJ Water Division, John Ryan, was present during the inspections to discuss operation and maintenance issues with each component. The inventoried facilities included the tanks, pump stations, wells and well buildings, vaults, and booster stations. Each component was visited and catalogued, NE inspected the system components for physical condition and operational capability. Review at each site included taking photos and field notes, and quick inspection for needed repairs.

Information obtained through the course of this investigation, including the field inventory, is presented in these sections. Logs of the inventories along with photos are included in Appendix A.

2.4.1 Groundwater Supply

All municipal water to the TOJ is supplied by seven wells. Wells #1, #2, and #3 are located on the National Elk Refuge along the east end of the TOJ. Well #5 is located in Karns Meadow. Wells #6, #7, and #8 are located on the west end of town near the intersection of Ely Springs Road and Boyles Hill Road. Figure 1 indicates the locations of the wells within the water system. Well #4 was drilled in 1977 on East Broadway just west of St. Johns Hospital and later abandoned due to poor water quality and iron bacteria growth.

All the wells are completed into the alluvial aquifer and were constructed in at various times between 1964 and 1995. Maximum flows given below are from flow meters at the well sites and discussion with water operators. Pump curves for Wells #6, #7 and #8 were located and provided by the TOJ. Pump curves for the other wells were not located by the TOJ. Well records are found in Appendix B.

2.4.1.1 Town of Jackson Well #1, #2, and #3

Wells #1, #2, and #3 are located within the National Elk Refuge and accessed from East Broadway. Wells #1 and #2 were drilled in 1964. Well #3 was added in 1967. Each well has an individual pump station at that location.

TOJ Well #1 is the southern most of the 3 wells, water right Permit Number UW1385. It is completed to a depth of 200-ft. The well was reportedly constructed with a 20-in steel casing perforated from 55 to 100 feet and 114 to 130 feet below the surface. The original water right in 1964 was for 950 gpm. The water right was increased to 1500 gpm in 2002. All State of Wyoming well permits are included in Appendix B.

A 150 HP vertical turbine pump with a maximum flow rate of 1450 gpm is located within the pump house. The house also contains a chlorination facility where chlorine gas is injected into the water along with poly phosphate which is added to address high iron content. Well House #1 also contains a flow meter which provides instantaneous flow reading to the TOJ SCADA system. Well House #1 does not have an independent emergency generator but the generator at Well #2 is capable of operating Wells #1 and #2 during an emergency power outage.

TOJ Well #2 is the middle of the three wells on the Elk Refuge, water right Permit Number UW1386. It is completed to a depth of 200-ft. The well was reportedly constructed with a 20-in steel casing perforated from 60 to 165 feet and 185 to 195 feet below the surface. The original water right in 1964 was for 700

gpm. The water right was increased 950 gpm in 1967 and then an additional 100 gpm in 1991, for a total appropriated flow of 1750 gpm. All State of Wyoming well permits are included in Appendix B.

A 150 HP vertical turbine pump with a maximum flow rate of 1500 gpm is located within the pump house. The pump house also contains a chlorination facility where chlorine gas is injected into the water along with poly phosphate which is added to address high iron content. Well House #2 also contains a flow meter which provides instantaneous flow reading to the TOJ SCADA system. There is a 260 kW Caterpillar diesel emergency generator at the pump house which has the capacity of running Wells #1 and #2 at the same time. The generator is exercised one time per week for 30 minutes.

TOJ Well #3 is the northern most of the 3 wells, water right Permit Number UW1945. It is completed to a depth of 200-ft. The well was reportedly constructed with a 20-in steel casing perforated from 70 to 100 feet and 178 to 196 feet below the surface. The original water right in 1967 was for 700 gpm. The water right was increased to 775 gpm in 1991. All State of Wyoming well permits are included in Appendix B.

A 100 HP vertical turbine pump with a maximum flow rate of 750 gpm is located within the pump house. The pump house also contains a chlorination facility where chlorine gas is injected into the water along with poly phosphate which is added to address high iron content. Well House #3 also contains a flow meter which provides instantaneous flow reading to the TOJ SCADA system. There is not a generator at the well house and Well #3 is not connected to the generator at Well House #2.

2.4.1.2 Town of Jackson Well #5

TOJ Well #5 is located in Karns Meadow, water right Permit Number UW69746. It is completed to a depth of 148-ft. The well was reportedly constructed to a depth of 148 feet with a 20-in steel casing to a depth of 96 feet. An 18-inch screen with a slot size of 100 is set from 96 feet to 146 feet. The original water right in 1985 was for 2500 gpm. All State of Wyoming well permits are included in Appendix B.

A 200 HP vertical turbine pump with a maximum flow rate of 1800 gpm is located within the pump house. The pump house also contains a chlorination facility and poly phosphate injection facilities. There is a Cummins 275 kW diesel generator at the well house which is exercised one time per week for 30 minutes. The flow meter for the well house is located in an underground vault adjacent to the pump house and provides instantaneous flow reading to the TOJ SCADA system.

2.4.1.3 Town of Jackson Wells #6, #7, and #8

TOJ Wells #6, #7, and #8 are controlled with a single well house. Each well has a submersible pump and motor. The well to the furthest south is Well #8, Well #6 is in the middle, and Well #7 is the furthest north. These wells operate on Variable Frequency Drives (VFDs). There is a Cummins 400 kW diesel generator at the pump station with the capacity to operate all three pumps.

TOJ Well #6 has a water right Permit Number of UW101360 and was completed in 1996. The well was reportedly constructed with a 16-in steel casing and stainless steel screen to a depth of 80-ft, with screen set from 54 to 80-ft. A surface seal of 20-in diameter casing was installed to a depth of 50-ft. The well has a water right for 1300 gpm, the well permit is located in Appendix B.

A 150 HP submersible pump and motor are installed in Well #6 and produce a maximum flow of 1200 gpm.

TOJ Well #7 has a water right Permit Number of UW101361 and was completed in 1996. The well was reportedly constructed with a 16-in steel casing and screen to a depth of 80-ft, with stainless steel screen set from 55 to 80-ft. A surface seal of a 20-in diameter casing was installed to a depth of 50-ft. The well has a water right for 1300 gpm, the well permit is located in Appendix B.

A 150 HP submersible pump and motor was originally installed in Well #7 and produced a maximum flow of 1200 gpm. According to the TOJ, the original pump and motor were pulled for repair/replacement around 2000. When the pump and motor were to be replaced, the assembly could not be set back in the well. Something had occurred with either the casing or the pitless adapter which kept the same pump and motor from fitting in the casing. To accommodate this, a smaller pump and motor was installed which fit into the well. The pump and motor installed was a 75 HP with a maximum flow of 770 gpm. In the Summer of 2020, the TOJ redeveloped the well and repaired the casing. A 150 HP submersible pump and motor were installed in the well, matching the pumps and motors installed in Wells #6 and #8. The well was tested and flowed between 1100 and 1200 gpm. The TOJ installed a pressure transducer in the well such that if significant draw down occurred in the well, the pump would turn off. In the Summer of 2020, the demand in the system got so high that all 3 pumps were running at one time. During which the draw down was enough that Well #7 shut down. During the Summer of 2021 the TOJ is again going to flow test the system while running all three wells to determine if the drawdown will again shut Well #7 down.

TOJ Well #8 has a water right Permit Number of UW101362 and was completed in 1996. The well was reportedly constructed with a 16-in steel casing and screen to a depth of 81-ft, with stainless steel screen set from 56 to 80-ft. A surface seal of a 20-in diameter casing was installed to a depth of 50-ft.

A 150 HP submersible pump and motor are installed in Well #8 and produce a maximum flow of 1200 gpm.

2.4.2 Storage Tanks

The TOJ Water System operates with 3 different storage tanks and a total storage capacity of 3.42 million gallons. The Elk Refuge, Snow King, and Virginian Tanks are all buried concrete storage tanks. Figure 1 indicates the locations of the storage tanks within the TOJ Water System.

2.4.2.1 Elk Refuge Tank

The Elk Refuge Tank is a 1.3 million gallon buried concrete storage tank which was constructed in 2012. The Tank is located on National Elk Refuge land at the east end of Broadway. This tank is fed from TOJ Wells #1, #2, and #3. Water from the tank supplies Zone 1 of the water system. The tank is on leased federal lands.

2.4.2.2 Snow King Tank

The Snow King Tank is a 120,000 gallon buried concrete storage tank which was constructed in 2012. The Tank is located on Snow King Mountain Resort property with a permanent easement, adjacent to the

National Forest. The tank is fed from the Snow King Estates Booster Station located on Zone #1 of the water system. The tank supplies Snow King Estates and Upper Cache developed areas.

2.4.2.3 Virginian Tank

The Virginian Tank is a 2 million gallon buried concrete storage tank which was constructed in 1978. The Tank is located on State of Wyoming land just north of Broadway across from the Virginian Lodge. The tank is fed from the TOJ Well #5. Water from the tank supplies Zone 2 and 3A of the water system.

2.4.3 Booster Pump Stations

Within the TOJ Water System there are three separate booster stations which supply water from Zones 1 and 2, feeding developed areas at higher elevations. Figure 1 indicates the locations of the booster stations within the water system.

2.4.3.1 Snow King Estates

The Snow King Estates Booster Station is located at the end of Redmond Street where it turns to Snow King Drive. The booster station supplies water to the Snow King Estates, Upper Redmond, and Upper Cache developed areas, along with the Snow King Estates Tank. The booster station was constructed in 1992. The station includes two horizontal centrifugal domestic pumps which operate in a lead/lag scenario. The pumps are 10 HP providing approximately 70 gpm each. Also included in the pump station is a horizontal centrifugal fire pump. This pump has a 50 HP motor and will supply 300 gpm fire flow supplemented by flow from the Snow King Estates Tank for fire suppression. The booster station monitors flow and pressure of the supplied water. There is not an emergency generator at the booster station.

2.4.3.2 Spruce Drive

The Spruce Drive Booster Station is located within the Pine Subdivision on Spruce Drive, constructed in 1982. An overhaul of the booster station occurred in 2008. The booster station supplies water from Zone 2 to the Spruce Drive, Pine Drive, Rodeo Drive, and Pine Glades areas. The pumps station operates with a jockey pump handling lower flows, then 2 lead lag pumps supplementing domestic flows, and 2 fire pumps. The pumps operate on VFD's in parallel based on individual pressure sensors. As demand increases and pressure drops additional pumps come on line.

The jockey pump has a 10 HP motor and provides flows up to 80 gpm. The two lead/lag potable water pumps are 20 HP horizontal centrifugal pumps suppling a maximum flow of 160 gpm each. The fire pumps are both 50 HP horizontal centrifugal pumps providing 750 gpm each. The pumps operate in series to maintain a discharge pressure setpoint. The pump station has a Cummins 150 kW diesel generator which will supply emergency power to all the pumps within the pump station.

2.4.3.3 Broadway

The Broadway Booster Station is located along West Broadway Avenue at 625 West Broadway Avenue. The booster station was constructed in 2016. The Broadway Station supplies water and increases pressures from Zone 2 to the users along the north side of the highway from the booster station west to the Highway 22 intersection. Including all the development along Budge Drive. The pump station operates with a jockey pump, two lead lag potable pumps, and three fire pumps. All the pumps operate on VFD's set to maintain a discharge pressure.

The jockey pump has a 5 HP motor and provided flows up to 60 gpm. The two lead/lag potable water pumps are 15 HP horizontal centrifugal pumps suppling a maximum flow of 300 gpm each or 550 gpm in parallel. The fire pumps are all 40 HP horizontal centrifugal pumps providing 900 gpm, 1800 with 2 pumps, and 2500 gpm with three pumps. The pump station has a Caterpillar 117 kW diesel generator which will supply emergency power to all the pumps within the pump station.

2.4.4 Distribution System

The TOJ distribution system is divided into three main pressure zones as indicated on Figure 1. In addition to the three zones there are the three booster stations which were discussed previous that feed the higher elevation developed areas of Budge Drive, Pine and Spruce Drives, Pine Glades, Rodeo Drive, and Snow King Estates. In addition to the buried pipe, the distribution system contains several pressure reducing valves (PRV) in vaults. These PRV's separate the system into the dedicated pressure zones.

In discussions with operators about the distribution system, specifically Zone 3, it was noted that increased demands over the last several years have decreased pressures within the zone. Wells #6, #7, and #8 are operated on VFD's and set to maintain a discharge pressure of 100 psi. As the demands increased, the pumps were not able to meet that discharge pressure set point. To address this, the TOJ installed check valves within the zone to decrease the size of the demand within Zone 3 as fed from Wells #6, #7, and #8. These valves are indicated on Figure 1. In doing so the TOJ essentially created another pressure zone by splitting Zone 3, as indicated on Figure 1, Zone 3 was separated into Zone 3A and 3B. Water is supplied to Zone 3A from Zone 2 through the Virginian and Karns Meadow PRVs. Water is supplied into Zone 3B from Wells #6, #7, and #8. Water can transfer from Zone 3A to 3B if the pressure were to drop low enough in Zone 3B.

The distribution system also includes 385 separate fire hydrants throughout the TOJ. These hydrants were installed between 1963 and 2019. A comprehensive list of the fire hydrants is located in Appendix C. The list includes the hydrant number, zone, location, type, year installed, and extension length.

2.4.4.1 Buried Pipelines

The TOJ's distribution system consists of approximately 340,000 linear feet of buried pipelines and associated valves. The system is primarily ductile iron pipe. There is some limited older steel pipe still in service, most of which has been replaced over the past several years. There is also some polyvinyl-chloride (PVC) within the system along with high density polyethylene (HDPE) installed specifically in the Snow King Estates area in 2019. The TOJ Water System GIS was reviewed to determine if pipe types and sizes could be categorized with overall lengths estimated. When reviewing the Water System GIS, attributes associated with length, pipe size, and pipe type were missing or in the wrong locations on several pipe segments making the data received from the GIS not very valuable. To get an estimate on the pipe lengths of various sizes and types the TOJ Water Model was used. Although this information is somewhat less accurate, it still gives an approximate on the pipe inventory. The lengths of various types of pipe and pipe sizes are indicated in Table 2.4.4.1.

Table 2.4.4.1 Pipe Types and Lengths

Diameter (in)	Material	Length (ft)
4	Ductile Iron	1,250
4	Steel	9,400
4	PVC	320
6	Ductile Iron	46,600
6	Cast iron	500
6	Steel	600
8	Ductile Iron	102,000
8	Cast iron	3,800
8	Steel	2,260
8	PVC	7,500
10	Ductile Iron	19,000
10	Steel	2,500
12	Ductile Iron	95,500
12	Cast iron	4,400
12	Steel	250
14	Ductile Iron	9,800
14	Steel	1,600
16	Ductile Iron	3,100
	Unknown	29,620

2.4.4.2 PRV and Check Valve Vaults

The TOJ Distribution System contains a mix of PRVs and check valve in buried vaults separating the town into the pressure zones. In the system there are 11 PRV vaults and 2 check valve vaults. Figure 1 indicates the locations of the PRV and check valve vaults. Some of the vaults contain two valves addressing low and high flows. Table 2.4.4.2 includes information on the number and size of valves, type of valve, inlet and outlet settings, and pressure zone.

Table 2.4.4.2 PRV Settings

PRV (Name, Location)	Number	Size	Type	Settings (psi)		Pressure Zone
				Inlet	Outlet	
Karns Hillside Subdivision PRV	2	2"	Cla Valve	96	78	2
		6"	Cla Valve	96	78	
Snow King Ave Karns Meadow PRV	2	2-1/2"	Cla Valve	92	58	2
		6"	Cla Valve	92	58	
Aspen Booster Pine Drive PRV	1	4"	Cla Valve	140	118	2
Spruce Drive PRV	2	1"	Watts	140	100	2
		4"	Cla Valve	140	111	
Pine Drive/Pine Glades PRV	2	2"	Cla Valve	67	35	2
		6"	Cla Valve	67	35	
Clark Street PRV	1	4"	Cla Valve	93	43	2
Snow King Estates PRV	2	1"	Unknown	110	50	1
		1-1/2"	Cla Valve	110	50	
Enoch Ferrin PRV	1	4"	Cla Valve	106	41	1
No Name Alley PRV	3	6"	Unknown	108	41	1
		4"	Unknown	108	43	
		2"	Unknown	108	43	
Virginian PRV	2	8"	Cla Valve	85	45	2
		2"	Cla Valve	85	45	
Snow King Resort PRV	1	6"	Cla Valve	93	44	1

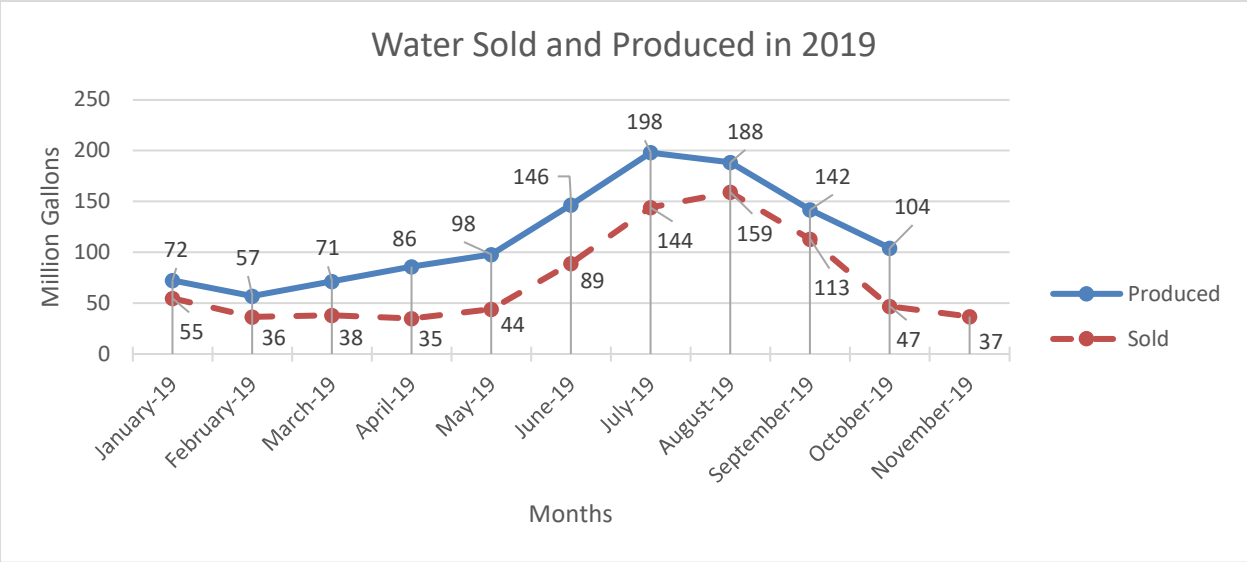
2.5 Existing Water Use

Water demand in the TOJ system varies seasonally, daily, and hourly. Irrigation and tourist impacts increase the demand significantly in the summer months. To determine water usage, meter data was gathered from the TOJ Finance Department. Meter data from January 2016 through December 2019 was collected for each customer. The meter data was associated with a parcel and parcel number. As expected, water use raises and lowers as visitors and irrigation increase and decrease. Figure 2 indicates the total water sold from January 2019 through December 2019. In addition to tracking the water sold, the TOJ records the total water produced in all wells both manually and digitally. Figure 2 also indicates the total water produced during this same period of time with an overlay of the water sold. Comparing the water produced in the TOJ to water sold it indicated a significant amount of unaccounted for water in the system.

One anomaly analyzed during the compilation of the data is that Zone 3 totals for customer meter data were found to be substantially less (27%) than what is reported in well production for Zone 3 (Wells #6, #7, and #8) alone. The large discrepancy is believed to be a result of uncalibrated meters at the Well House facility. This inaccuracy was found by evaluating well pump curves, motor operating frequencies, and meter flows of Well No. 7. The evaluation demonstrated that flow readings were in excess of approximately 25% of the pump capability. The existing meters for Wells #6, #7, and #8 were cone meters

that had been calibrated in the past but were fairly old. During this study the TOJ made the decision to replace the cone meters with new mag meters for Wells #6-#8. The new meters were installed in September of 2020. Reviewing the water production values from October 2020 through January 2021 indicated that a significant reduction in water produced occurred when compared to previous years. This verified the assumption that the old flow meters were indicating inflated production values. At this point in the study, the TOJ is in the planning process to contract with a flow meter supplier to perform tests on Wells #1, #2, #3, and #5 to determine if the existing cone meters at those locations are inflated as well.

Figure 2



All values indicated are in million gallons.

In order to determine maximum daily demand and peak hour demands some assumptions had to be made because of the inaccurate meter data which was discovered with water production volumes associated with Wells #6, #7, and #8, as discussed later in this report along with demand calculations.

2.5.1 Determining Maximum Day Demand

Monthly water meter data is collected by the TOJ for billing of customers. From the metered flows, average day use per customer can be calculated throughout the TOJ. To determine a peaking factor to calculate from the average day in the maximum month to a maximum day demand, the day of highest use must be determined. Because the customer meters are only read monthly, the only way to determine which day results in a maximum flow, the total amount of water produced must be acquired and utilized to estimate the peaking factors. This data is available through SCADA and also logged daily.

Water department operators manually record daily production data at all wells sites. In addition, SCADA data, consisting of cumulative flow readings for each well, was provided from January of 2016 through January of 2020 in 10 second increments. The data acquired is massive because of the 10 second

increments and requires a significant amount of time to reduce and put into a usable format. Because of the time commitment, select months were identified and data reduced into a usable format. NE was able to utilize the SCADA data to calculate average daily flow for the months of July and August of 2017, 2018 and 2019. By totaling the average day demands for each month, it was found that July of 2019 resulted in the maximum month for well production for years 2017 through 2019. Once the maximum month was identified the daily flows were analyzed to determine the maximum day demand (or maximum day of water production). Maximum day demand (MDD) was found to lie on July 23rd, 2019 at 4790 gpm. Peak hour demand (PHD) was found by evaluating SCADA readings over the maximum day in one-hour increments; a peak hour flow of 6920 gpm found to take place during the 1am hour on July 23rd, which coincides with nighttime irrigation demands. This data gives the production values of the average day use in the maximum month, maximum day demand (production), and peak hour use (production), these values then allow for estimation of peaking factors in the system. Unfortunately, because this data from the supply wells is not entirely accurate as noted in the section above, additional assumptions had to be made. As noted previously, replacing of the cone meters with mag meters at Wells #6, #7, and #8 in September 2020 resulted in a significant reduction in well production values when compared to previous years. The TOJ performed a review of the remaining cone meters in the system on Wells #1, #2, #3, and #5 in March of 2021. In that process it was determined that the cone meters were in fact inflating the overall well production. The percentage at which the meters inflated the flows varied significantly amongst the meters.

Early in the study discussions with the TOJ indicated that all the meters on the supply wells had been recalibrated in October of 2019. To verify the results, the total water produced in November 2019 was compared to the total water sold in November 2019. Total water produced from SCADA data was 89,131,658 gallons and total water sold from billing records was 36,800,000, resulting in an unaccounted water amount of 41 percent. This number seemed very inaccurate, leading NE to recommend to the TOJ that the flow meters in Wells #6-#8 be replaced with mag meters. Once the meters were replaced in September 2020 the overall production values for Wells #6-#8 from October 2020 through January 2021 were compared to the water sold in Zone 3B during the same period. Attempting to calculate this unaccounted for water in Zone 3B, which would allow NE to use as an assumption system wide. Unfortunately, the data was still not giving an accurate unaccounted for water percentage in Zone 3B. When comparing water produced in Wells #6-#8 to the water sold during the same period the unaccounted for water percentage ranged from 41% to 75%. In discussions with the TOJ it was decided that there is either a significant leak within Zone 3B or existing customer meters are aged enough that they are inaccurate and need replacement. Because of these inaccuracies, a reasonable unaccounted for water percentage was not achievable with the current data available.

With many unknowns in determining the percentage of unaccounted for water in the system, NE made some assumptions though this study to evaluate the water system and determine Maximum Day Demands. A blanket 15% was used for a leakage percentage on the entire system. This value is believed to be conservative but allow for a base use when evaluating the system.

As a result of discrepancies in flow readings and utilizing an assumed unaccounted for water value, the approach to determine maximum day and peak hour peaking factors uses a combination of water

produced and water sold values. It is assumed that even though the water produced flow values are inaccurate, there is a standard variation in the average and maximum flow values recorded. In basic terms, even though the flow value is off, the day and hour in which the maximum flows are observed can still be determined by looking at the data and assumed to be off by the same factor. As stated above the maximum day demand (MDD) was found to lie on July 23rd, 2019 at 4790 gpm. Peak hour demand (PHD) was found to be 6920 gpm at 1AM on that day. Looking at the total production for July 2019 it is 197,100,000 gallons, which results in an average day during the maximum month of 4,415 gpm. The total production capacity, discussed later in this report, is 285 Million Gallons in the month of July. The maximum month demand (MDD) accounts for approximately 70% of the current capacity. These values result in the peaking factors noted below.

Table 2.5.1.1 Maximum Day and Peak Hour Water Flows

DESCRIPTION	FLOW	UNIT
Well Production Flows		
Total July Production Capacity	285	mgal
Maximum Month (MMD) - July, 2019	197	mgal
Percent of Total Capacity	69%	
Avg. Day Max Month (July 2019)	4,415	gpm
Max. Day (July 23, 2019)	4,790	gpm
Peak Hour (July 23, 2019, 1AM)	6,920	gpm
Max. Day Peaking Factor	1.10	
Peak Hour Peaking	1.50	
Customer Meter Flows		
Maximum Month Billed Use (Aug. 2019)	159,036,140	gal
Unaccounted for Water	15%	
Total Estimated Supplied to System (Aug. 2019)	182,891,561	gal
Avg. Day Max Month (Aug. 2019)	4100	gpm
Max. Day (Aug. 2019) (1.10 Peaking Factor)	4500	gpm
Peak Hour (Aug. 2019) (1.5 Peaking Factor)	6750	gpm

Using the peaking factors calculated from the well production, the metered flows were increased 15% for the unaccounted water. The maximum day demand and peak hour flows were calculated and are shown in the table.

2.5.2 Existing Water Customer Uses

To determine the percentage of total water sold to out-of-town contracted customers during the maximum month of August 2019 the meter data for Saddle Butte, Teton Science School, and Three Creek Subdivision was Subtracted from the total billed. Table 2.5.2.1 indicates the percentages of the total water sold to each of the outside users.

Table 2.5.2.1 Outside TOJ Water Use

	Total Water Sold August 2019	Town of Jackson	Teton Science School	Saddle Butte	3 Creek
Gallons Sold	159,036,140	145,814,711	310,000	1,476,000	11,435,429
% of Total	-	91.69%	0.19%	0.93%	7.19%

In addition to the comparison of in town customer to out-of-town contracted customer use, NE thought it was valuable to determine the percentage of water use within the TOJ that is irrigation use, commercial use, hotel use, or bar/restaurant use for the system during the same maximum month period of August 2019. The meter data was separated as much as possible to split up the associated uses withing the TOJ. Table 2.5.2.2 below indicates the percentages used by each water use.

Table 2.5.2.2 Water Use

	Total Water Sold August 2019	Hotels	Hotels with Restaurants	Restaurants	Commercial	Irrigation	Residential
Gallons Sold	159,036,140	12,932,000	3,945,000	5,212,000	5,967,000	21,728,140	109,252,000
% of Total		8%	2%	3%	4%	14%	69%

2.6 Leak Detection Survey

The TOJ is currently on a biannual leak detection program schedule. Each year the TOJ contracts with a leak detection company to review half of the water system. The water system is separated at Flat Creek Drive. The system east of Flat Creek Drive was completed in May of 2018 and is scheduled again for review in May of 2020. The west side of the system was completed in May of 2019. When leaks are detected, the TOJ prioritizes them based on amount of water lost and repairs during the summer months after the leak detection survey is completed.

2.7 Geographic Information System

The TOJ Public Works Department has developed a GIS for the TOJ water system based on known information and as built construction plan sets. This GIS data contains pipe sizes and types where known and the locations of valves, hydrants, vaults, pump stations, and wells. In 2020/2021 the Town is updating its GIS software from MapInfo to ArcGIS.

2.8 Hydraulic Model

At the kickoff of this capacity study, NE received the latest hydraulic water model of the TOJ system. The existing water model was created and updated using WaterCAD network analysis software. A complete update of the water model was completed by Jorgensen Associates in 2003 along with a report detailing the construction of the model. Since 2003 some of the improvements to the water system have been modified in the model that was delivered to NE. The discussion of the water model is expanded upon future in the evaluation of the water system below. Water models are useful in reviewing the hydraulic capacity of the water system. The water model can be utilized to determine maximum fire flow ability of the water system in various locations. Additionally, operating system pressures can be reviewed for various locations through the system.

2.9 Evaluation of Existing Water System

Evaluation of the water system included a site visit with the Manager of the TOJ Water Division, discussions with personnel, review of existing conditions, updating the existing water model, and performing model run scenarios.

On November 4, 2019 a review of all visible water system components was completed with NE Staff and John Ryan the Manager of the Water Division. The site visit consisted of visual inspection of all the facilities, photographing, and completing an inventory log. The logs for each of the reviewed facilities are included in Appendix A.

In addition to the site evaluations, discussions were held with John Ryan about the entire water system. Those discussions included methods of maintenance and operation along with system needs and deficiencies. From these discussions, items of note were recorded and are included in the evaluation discussion below.

Along with the visual and operational review with the system, the existing water model was utilized to determine any shortcomings within the system based on existing development. The model runs included peak hour flows along with fire flows to determine inadequate facilities. The GIS was reviewed to determine the locations of dated steel water mains that need to be replaced.

The result of the evaluation of the water system is a list of facilities which are in need of repair/updating based on the existing condition or demand. A list is included later in this report which notes these improvements.

2.9.1 Hydraulic Model

After receiving the latest model from the TOJ, NE reviewed to determine if recent improvement projects had been included or updated. It was determined from the review that several improvement projects dating back to 2003 had not been included on the current model. The TOJ provided a list of water projects that have been completed since 2002. This list along with the model and the GIS were reviewed to determine whether they both had been updated. The TOJ provided as built drawings for these projects and the model was updated. The GIS is up to date until projects which have been completed since 2016. It is NE's recommendation that the GIS be updated with the most current completed projects. During this study it was also recommended that the TOJ attempt to calibrate the model by running various hydrant flow tests on the water system and compare the field results with the model results. These field tests were completed in Fall of 2020. The results of the field tests indicated that static pressures within the system and model are relatively close. The operating pressures between the model and the field during hydrant flows were off by varying amounts in various locations through the Town. At the time of this report the final results of the calibration effort had not been finalized. It is NE's recommendation that model scenarios be run with various PRV's and valves closed to determine if the field results can be mimicked by the model. If they can then operational measures should be taken to address the issues in the field, ie addressing PRV's which are not working, or closed valves.

Along with review of the model configuration, the demands within the model were updated. NE utilized the peak hour demand determined and discussed previous to populate the model with current system demands. Utilizing the GIS component, the meter demands and numbers provided by the TOJ, NE was able to populate the model with demands that are both accurate in quantity and also in location.

In addition to running the model with base demands, a series of fire flow demands were modeled. To get a representative fire flow demand for the analysis, requirements by the Insurance Services Office (ISO) were used. Fire flows are based on the square footage of the largest buildings in Town, proximity to other buildings, type of construction, and presence of a sprinkler system. The TOJ requires that all buildings over 5000 sq ft be fire sprinklered. This requirement substantially reduces the water system facilities required by the ISO. Utilizing the formula established by the ISO and considering the existing un-sprinkled

buildings, a fire flow of 3,000 gpm was used through the model analysis. The locations chosen for review throughout the TOJ were where larger structures exist. To be discussed in Section 2.9.2 below, the supply into Zone 3B is limited by the production capacity of Well #7, which was replaced in the summer of 2020. For modeling purposes, the supply into that zone was set up to meet the peak hour flow plus the fire flow. This allowed NE to evaluate existing pipe sizes in the system within that zone. Table 2.9.1.1 below describes the fire flow locations along with the total fire flows modeled. Since fire flows were assumed at fire hydrants, the flows were split to two different nodes. In the analysis, any pipes in which velocities exceed 10 ft/s and nodes in which pressures drop below the DEQ minimum 35 psi for normal working pressures and 20 psi for fire flow pressures were noted for review. Results of the model runs allowed NE to evaluate several system components. Table 2.9.1.2 lists the locations of exceedances throughout the TOJ. If issues were noted in the model review, replacement of the system component is noted in the system deficiency section below.

Table 2.9.1.1 Model Fire Flow Locations

Location of Fire Flow	Model Junction	Modeled Fire Flow (gpm)	Notes
Hwy 22 & Coyote Canyon Rd FF	J-600	3000	Teton Science School
Whitehouse Dr & Josephine Loop FF	J-286	1500	Cottonwood Flats
	J-330	1500	
Blair Pl Loop FF	J-329	3000	Blair Apartments
Corner Creek Ln & Lilac Ln FF	J-230	3000	Cottonwood Subdivision
South Park Loop Rd & Middle School Rd FF	J-241	1500	Colter Middle School
	J-242	1500	
High School Rd & Gregory Ln & Middle School Rd FF	J-209	1500	Jackson Hole Public High School
	J-210	1500	
High School Rd & S HWY 89 FF	J-283	1500	Smiths
	J-301	1500	
Gregory Ln & Martin Ln FF	J-207	3000	Bison Lumber
W Broadway & HWY 22 FF and Buffalo Way & Alpine Ln	J-187	1500	Albertsons
	J-262	1500	
Meadowlark Ln & Powderhorn Ln FF	J-191	1500	Creekside Village
	J-192	1500	
Maple Way & Powderhorn Ln FF	J-181	1500	"New" Post Office
	J-182	1500	
W Broadway & Budge Dr FF	J-318	3000	Sidewinders
W Broadway & Virginian Ln FF	J-170	2500	Virginian Hotel
	J-376	2500	
570 Broadway FF	J-392	3000	Shell Gas Station
Clissold St & W Simpson Ave FF	J-123	3000	Cowboy Village Resort
Flat Creek Dr & W Karns Ave FF	J-134	1500	Fairgrounds
	J-270	1500	
W Broadway & Millward St FF	J-86	3000	Bin 22
Millward St & W Gill Ave FF	J-149	3000	White Buffalo
N Cache St & Mercill Ave FF	J-154	3000	Lexington Hotel
N King St & E Gill Ave and N King St & E Deloney Ave FF	J-143	1500	Teton County Recreation Center
	J-140	1500	
Center St & E Broadway Ave FF	J-95	3000	SE Corner of Jackson Square
S Cache St & E Simpson Ave FF	J-83	3000	Center for the Arts
S Cache St & E Kelly Ave FF	J-81	3000	First Baptist Church
S Gros Ventre St & E Simpson Ave FF	J-71	3000	Jackson Lumber
Snow King Loop & Snow King Loop FF	J-5	1500	Snow King Resort
	J-341	1500	
Snow King Loop & E Snow King Ave FF	J-76	1500	Snow King Resort
	J-312	1500	
Redmond St & E Broadway Ave FF	J-25	3000	St. John's Hospital
Upper Cache Creek Dr & Cache Creek Dr FF	J-38	3000	Burns Ferrin Subdivision Trailer
Rancher St & E Simpson Ave FF	J-19	3000	Condominiums, Apartments, Townhomes and Single Family Residential Houses

Table 2.9.1.2 Model Analysis Results

Zone	Fire Flow Location	Pipe High Velocity (ft/s)	High Velocity Location	Low Pressure (psi)	Comments
3a	W Broadway & Virginian Ln FF	17.65	6" line on Virginian Lane from Broadway to Snow King Ave	-	Replacing the 6" with a 10" will bring velocities to 7.75 ft/s
2	N Cache St & Mercill Ave FF	11.83	6" line on W Mercill Ave from N Glenwood St to N Cache St	-	Replacing the 6" with a 10" will bring velocities to 7.68 ft/s (note that the 8" on N Cache St from Broadway to E Deloney was changed to 10" also due to a high velocity in that pipe of 9.3 ft/s)
2	N King St & E Gill Ave and N King St & E Deloney Ave FF	10.19	8" line on N Cache St from Broadway to Deloney Ave	-	Replacing the 8" with a 12" will bring velocities to 6.2 ft/s (note that the 8" line on E Deloney Ave from N Cache St to N Willow St was replaced with a 10" and also on E Gill Ave from Center St to N King St due to additional high velocities)
2	S Gros Ventre St & E Simpson Ave FF	14.86	6" line on S. Gros Ventre St where E Simpson Ave jogs	-	Replacing the 6" with an 8" on S Gros Ventre St from E Hansen Ave to E Pearl Ave will bring velocities to 7.6 ft/s
1	Snow King Loop & Snow King Loop FF	10.6	8" line on Clark St connecting at Snow King Loop and Snow King Loop	-	Replacing the 8" with a 12" will bring velocities to 6.25 ft/s
1	Snow King Loop & E Snow King Ave FF	12.78	8" line on Snow King Loop from E Snow King Ave to Snow King Loop	-	Replacing the 8" with a 12" from Clark St to Snow King Loop, around Snow King Loop and connecting to E Snow King Ave including the line connecting to the hydrant at Snow King Resort on E Snow King Ave will bring velocities to 7.9 ft/s and raise pressures, although model results indicate pressures are not a concern presently with fire flows

2.9.2 Wells and Well Houses

Physical evaluation of the well houses indicated that the structures and all components are kept in very good condition. The structures and equipment are very well maintained with no immediate repairs or

replacements being suggested. The evaluation included review of all above ground facilities, discussion with John Ryan about all equipment and mechanical components. The evaluation also included review of emergency generators and chlorination facilities. To evaluate if the wells are adequately sized, per WYDEQ, supply pumping shall provide the average daily flow with the largest pump out of service. Reviewing the system this would mean that Wells #1 (1450 gpm), #2 (1500 gpm), and #3 (750 gpm) can supply Zone 1 the average daily flow with Well #2 out of service. Since Well #5 (1800 gpm) feeds Zone 2 and 3A but Wells #1, #2, and #3 can flow into those zones through the PRV's, the analysis needs to review Wells #1, #2, and #3 supplying the average daily flow to Zones 1, 2, and 3A. Wells #6 (1200 gpm), #7 (1000 gpm), and #8 (1200 gpm) feed Zone 3B, with Wells #6 and #8 producing the same flows which are slightly more than Well #7, the analysis assumes either Well #6 or #8 is out of service. Table 2.9.2.1 below indicates the average day demands (ADD) in each zone and the well production assuming the largest well is out of service. Note that the 15% unaccounted for water is added to each ADD. Reviewing the results, it can be seen that the wells are adequately sized to handle flows with specific wells out of service.

Table 2.9.2.1 Well Production Review

Zone	August 2019 ADD (gal per day)	Well Capacity (gal per day)	Comments
1	939,179	3,168,000	Assuming Well #2 out of service.
1, 2 & 3A	4,000,850	5,328,000	Assume Well #5 is out and Wells #1, #2, and #3 all provide flow to Zones 1, 2, and 3A
3b	1,830,434	3,168,000	Supply from Well #7 and Well #6 or #8

Well Houses #1, #2, and #3 are the oldest of the seven. As noted previous, there is only one generator at Well House #2 which can provide emergency power to both Wells #1 and #2. With current demands, providing power to those two wells is adequate and emergency power to Well #3 is not needed. The Wells are adequately sized and provide the existing water demand through a rotation of the three wells. In discussions with John Ryan it was noted that the limiting factor at Wells #1, #2, and #3 is the transmission mains between the well houses. This main is sized adequate for the existing demands in the system but will be reviewed in the capacity analysis for future flows. From a well capacity standpoint the wells are adequately sized, the transmission mains need to be upsized to be able to accept flows from all three wells simultaneously. The is addressed later in the report in the noted CIP projects and future capacity needs.

Much like Wells #1-#3, Well House #5 is in very good condition. The well produces the amount of water needed to meet required demands in the system. To verify, the maximum production of the well at 1800 gpm is 2.6 MGD, the maximum metered demand in Zones 2 and 3A is 2.6 MGD, including when Snow King snow making demands are high in the early winter. Other than continuing maintenance on the house, pump, and motor, Well #5 is meeting requirements of the existing system.

Wells #6, #7, and #8 all utilize the same well house. The well house is in good condition and maintained regularly. This pump station operates different from the others in that the pump and motors supply water to the system with the use of VFD's while maintaining a working pressure of 100 psi at the pump house.

As discussed in Section 2.5 above, during this study it became very apparent that the accuracy of the existing flow meters in the well house were very suspect. The TOJ replaced the cone meters in September of 2020 with mag meters. The production values have decreased significantly with the replacement.

During this study it was determined that supply into Zone 3B through Wells #6, #7, and #8 needed to be addressed. Because of the small size pump in Well #7, this well had to be used by itself. When Wells #6 or #8 were operating, Well #7 could not overcome the head and therefore would not produce any water. During the summer of 2020 the TOJ redeveloped Well #7. During that exercise the casing was also addressed so that a larger pump and motor could be installed. As stated previous, the same pump and motor was installed in Well #7 that exists in the other 2 wells. One item of note, during the improvement process the TOJ installed a pressure transmitter within the Well #7 casing so that if draw down in the well were to be enough the well would shut down. During the Summer of 2020 an event occurred in the system in which all three pumps ran at the same time. During this time the draw down was enough that Well #7 shut down. In Winter of 2021, NE with TOJ staff performed additional studies on the production capacity of Wells #6, #7, and #8. During that study it was determined that with all three wells running, Well #7 was able to flow 800 gpm without significant draw down. Prior to the improvements to Well #7, Wells #6 and #8 were not able to maintain the set discharge pressure of 100 psi at the pumphouse during the summer and peak irrigation. The improvements to Well #7 occurred after the peak irrigation season, so at this time it is unknow whether the discharge pressure can be met with all three pumps running. Based on an analysis of the pump curves and the observed tested flow it appears that the discharge pressures will be met with all three pumps operating at the same time. Even with the improvements to Well #7, an additional water source for Zone 3B is being recommended to keep the current level of service discharge pressure during high irrigation periods, planning process for Well #9 has begun and the TOJ is looking at various well locations.

2.9.3 Tanks

A visual inspection of the outside of the tanks was performed, but being buried concrete tanks there is little that can be viewed from the outside. The Snow King Tank and Elk Refuge Tank were both constructed in 2012. The Virginian Tank is the oldest constructed in 1978. All tanks were cleaned and videoed in 2018. Inspection at that time revealed that all the tanks are in excellent shape. Little to no leakage is assumed to be occurring in any of the tanks. Other than continued cleaning and inspection of the tanks it can be assumed that the tanks will not require any improvements or repair.

The existing storage volume of the tanks was evaluated for adequacy.

WDEQ design criteria for Finished Water Storage is provided in CH. 12, Sec. 13, (a), (i) of the WQRR's. Design standards are stated as follows:

> *(C) Water systems serving in excess of 500,000 gallons on the design average daily demand shall provide clearwell and system storage capacity equal to 25 percent of the design maximum daily demand, plus added fire storage based on recommendations established by the State Fire Marshall or local fire agency.*

(D) Storage need not be provided in a well supply system where a minimum of two wells are provided and the maximum hour demand or fire demand, whichever is greater, can be supplied with the largest well out of service.

Existing demands are in excess of 500,000 gpd, which falls under DEQ minimum design standard (C), above.

Flow Equalization Storage: Required equalization storage is typically 15% to 25% of maximum day demand, however, in Jackson, 6% is recommended since the system has multiple wells with the aquifer providing clear water storage.

Emergency Reserve Storage: Emergency reserve storage was considered to be 25% of maximum day demand because of the multiple wells and standby generators. This recommendation is also consistent with WDEQ minimum design standards for systems with demands in excess of 500,000 gpd. Without generators for well pumps, emergency storage should equal 100% of max. day, or 7-8 days at average day domestic demand (winter demand).

Fire Storage: Fire supply for the TOJ is assumed to be 3,000 gpm for 3 hours, based on previous ISO discussion.

As established in Section 2.5.1, the maximum month demand (August), or flow required by supply wells for each zone is noted in Table 2.9.3.1 below. The maximum day demand using the 1.09 peaking factor from average day to maximum day is calculated below, see Table 2.5.1.1.

Table 2.9.3.1 Existing Tank Size Review

Zone	Tank	Tank Size (Mgal)	August 2019 Total Customer Metered Flow (gal/month)	August 2019 MDD* (gal/day)	Flow Equalization Storage (gal)	Emergency Reserve Storage (gal)	Fire Storage (gal)	Tank Min. Storage (Mgal)
1	Elk Refuge	1.3	25,317,000	1,033,097	61,986	258,274	540,000	0.9
2 and 3A	Virginian	2.0	82,532,000	3,367,838	202,070	841,960	540,000	1.6
SK	Snow King Estates	0.12	1,368,216	55,832	3,350	13,958	90,000	0.11

*Determined from August 2019 Customer Metered Flow calculated for average day in August with the 1.10 peaking factor added to average day to determine Maximum Day Demand (MDD) with an additional 15% unaccounted for water value.

The equation, below, describes the design equation utilized for sizing of a tank taking into account volumes associated with each zone maximum day demand, fire flows and equalization.

Eqn. *(Required Finished Water Storage):*

$$V_{Tank} = V_{Emergency\ Storage} + V_{Equilization} + V_{Fire}$$

where,

$V_{Emergency\ Storage} = Q_{Max.Day}\ (25\%)$
$V_{Equilization} = Q_{Max.Day}\ (6\%)$

$V_{Fire} = Q_{Fire}(3hr)$

Because the Snow King Estates Tank serves a residential area only, a smaller fire flow of 90,000 gallons was assumed, 1500 gpm for 1 hour was utilized.

Reviewing the data in Table 2.9.3.1 it is noted that the tanks are adequately sized for the current water demands in Zones 1, 2 and 3A.

As noted, Zone 3B does not currently have a storage tank. For this analysis it was assumed that if a new tank were constructed it would feed Zone 3B and 3A and the check valves that split the 2 zones would be removed. A quick calculation to determine the minimum tank size based on existing demands was completed in the same manner as reviewing the existing tank sizes. The August 2019 customer meter flow for Zones 3A and 3B was 64,924,140 gallons, resulting in an average day of 2.1 MGD with a peaking factor of 1.10, a maximum day demand of 2.3 MGD. Flow equalization of 6% of the maximum day demand is 138,000 gallons, emergency reserve of 25% of maximum day demand is 575,000. Lastly the fire storage would be 540,000 gallons, all resulting in a minimum tanks storage volume of 1.25 million gallons. Note this does not take future flows into account, only calculated based on existing water system demands in the Zones. Shortfalls in storage within Zone 3 have been known by the TOJ for some time. The TOJ commissioned NE to prepare the Feasibility Study for Town of Jackson Zone 3 Water Storage Tank. This report is being composed at the same time as this capacity study. The study provides documentation as to the current need for a 2 million gallon storage tank with Zone 3 of the TOJ Water System if no other well source is developed. If another well is developed in Zone 3 the size of the tank may reduce depending on the production of the well.

2.9.4 Booster Stations

As discussed in Section 2.4, the TOJ booster stations were constructed as the Town annexed properties over a period of time. The booster stations are stick built with different layouts and capacity requirements.

The Broadway Booster being the most recent constructed is in excellent condition. All components are in near new condition. The capacity of the booster station is adequate for the existing demand and was designed for some increased capacity.

The Snow King Estates Booster Station was constructed in 1992. The pump station is in good condition and well maintained. The existing demand is currently being met by the pump station. The newly installed Snow King Estates Tank provides adequate fire flow to the zone. The station is dated and there is little room inside the facility for expansion. Additionally, there is not an emergency generator at the station,

replacement of the pump station would include a generator. Replacing of the pump station is not critical at this time, but should be planned in the next 10-15 years as capacity is limited by space in the station.

The Spruce Drive Booster Station was constructed in 1982 with a major interior overhaul in 2008. Like the others, the pump station is well maintained and in good condition. Demands are being met with the existing equipment and the station does not require attention other than regular maintenance. There is a generator at the site and room inside the building for some expansion if needed. Replacement or major upgrade is not expected to be required in the next 15-20 years.

2.9.5 Transmission and Distribution Systems

Although a physical inspection of the transmission and distribution system is not feasible, there are ways to assess the condition and evaluate the need for replacement of pipe sections. Examples for improvement needs to the transmission and distribution systems are 1) Replace old pipes which are currently a leakage/maintenance issue, 2) Replace pipes which are old and constructed of a material which leakage is or will be a concern, i.e. steel water mains, and 3) Replace pipes which are undersized and cannot convey the amount of water needed in the system.

Reviewing the TOJ system, from the biannual leakage testing it can be inferred that there are not any large sections of water main that are a constant issue requiring replacement. There are isolated leaks which occur that are dealt with on a regular basis. As noted above, there is approximately 16,500 linear feet of steel water main (assumed from the model) existing in the system which will require replacement. Many of the identified CIP water projects include replacement of steel water mains as noted in the System Deficiencies section below.

Section 2.9.1 above discussed hydraulic model run results throughout the water system. Undersized water mains were noted in Table 2.9.1.2. Water main velocities exceeding 10 feet per second during fire flow scenarios were considered undersized and in need of replacement.

2.9.6 System Deficiencies

Based on the review of the existing water system, performing hydraulic analysis of the system, and discussion with operators and the TOJ Public Works department, several upgrades to the water system are recommended in this section. Several of these have been previously identified and marked for future funding in the TOJ's 10-year CIP plan. Other additional recommendations have been identified from this capacity study. Below is a discussion of the improvements. For the projects noted below, Appendix D contains exhibits which indicate locations.

2.9.6.1 TOJ Known CIP Water Improvements

The TOJ provided NE with a list of know CIP water improvement projects which have been forecasted through Fiscal Year 2030. Several of these projects are being proposed to be completed with the TOJ Complete Streets Program. The TOJ has determined that in conjunction with surface improvements to streets and sidewalks, it is a good practice to improve the buried utilities. Most of the projects being proposed are the replacement of old or undersized water mains. A list of the projects is noted in Table 2.9.6.1 along with the fiscal year being proposed and a brief description for the project need.

Table 2.9.6.1 TOJ 10 Year Water CIP Plan

Appendix D Exhibit	Project	Description	Purpose/Goal	FY
	Well #7	Perform System Tests on Well	Determine the extent of the well drawdown with all three wells running.	2021
1	N King Water	Replace 530' of pipe from Gill to Deloney Ave	Project coincides with complete streets program and replaces old undersized water main.	2021
	High School/South Park PRV	Install PRV on water main feeding 3 Creek Development	To lower delivered pressures to the 3 Creek Development to reduce irrigation use and conserve water in Zone #3B	2021
	Zone 3 Tank and Supply	Study for construction of a Zone 3 Tank and additional well	Provide additional flow and storage into Zone 3 of the water system.	2021
2	Rancher St	Replace 1250' of 10" steel watermain with 12" D.I. watermain on Rancher St between Broadway and Hansen	Project coincides with complete streets program and replaces old undersized water main.	2022
	Well #9	Install Well #9	Supplement supply into Zone 3	2022
	Flat Creek South	Replace 1500’ of water main from Karns to Snow King Ave.	Project coincides with complete streets program and replaces old water main	2022
	Gregory Lane	Replace 3510‘of dated water main	Project coincides with complete streets program and replaces old water main	2023
3	Vine St	Replace 850' of 4" steel watermain with 8" D.I. watermain on Vine St from Kelly Ave south to Snow King Ave	Project coincides with complete streets program and replaces old undersized water main.	2024
4	Snow King Ave Mainline	Remove/abandon 1850' of transmission line from Karns Meadow area and install new D.I. pipe within Snow King Corridor, from Flat Creek to Karns Meadow Dr	Replace undersized and aged line and also put in a location where the main can be easily maintained.	2024
5	W Aspen St (Flat Creek to Millward)	Replace watermain on West Aspen Dr between Flat Creek Dr and Millward	Replaced old and undersized steel water main with ductile iron.	2025
7	Spruce Dr (East of Millward)	Replace 540' of steel watermain with D.I. watermain on Spruce Dr	Replaced old and undersized steel water main with ductile iron.	2025
	Zone 3 Tank	Construct 2 million gallon storage tank	Install a new tank in Zone 3 to supplement supply and fire demands	2025
8	Pine Dr (East of Millward)	Replace 470' of steel watermain with D.I. watermain on Pine St	Replaced old and undersized steel water main with ductile iron.	2025
10	N Millward Phase 1 (Broadway to Mercill)	Replace 860' of steel watermain with D.I. watermain on Millward St	Replaced old and undersized steel water main with ductile iron.	2026

Table 2.9.6.1 TOJ 10 Year Water CIP Plan (Continued)

Appendix D Exhibit	Project	Description	Purpose/Goal	FY
9	E Broadway Waterline	Replace 1460' of steel watermain with D.I. watermain on East Broadway Ave	Project coincides with complete streets program and replaces old undersized water main.	2027
11	N Millward Phase 2 & Mercill Ave	Replace 1260' of steel watermain with D.I. watermain on Mercill Ave	Replaced old and undersized steel water main with ductile iron.	2027
6	S Millward Waterline (Kelly to Pearl)	Replace 900' of steel watermain with D.I. watermain on South Millward St from Pearl to Kelly	Project coincides with complete streets program and replaces old undersized water main.	2028
	Powderhorn Lane	Replace 3000’ of dated water main	Project replaces old water main and coincides with replacement of the sewer main.	2028
12	Snow King Dr Water Line & Pump House	Replace 450' of steel watermain with D.I. watermain near Snow King Dr, including new booster station	Replaced old and undersized steel water main with ductile iron and replace the dated booster station.	2028
13	Upper Cache Creek Dr Phase 1	Replace 1190' of 6" steel watermain with 8" D.I. watermain on Upper Cache Creek Dr	Replaced old and undersized steel water main with ductile iron.	2029
14	Broadway HWY 22 to Animal Hospital	Replace 750' of steel watermain with D.I. watermain on West Broadway Ave/Hwy 22	Replaced old and undersized steel water main with ductile iron.	2029
15	Upper Cache Creek Dr Phase 2	Replace 2280' of 6" steel watermain with 8" D.I. watermain on Upper Cache Creek Dr	Replaced old and undersized steel water main with ductile iron.	2030
16	Crabtree Ln Waterline	Replace 2400' of 6" steel watermain with 8" D.I. watermain on Crabtree Ln and on Powderhorn Ln from Meadowlark Ln south to the south leg of Crabtree Ln	Replaced old and undersized steel water main with ductile iron.	2030
17	Berger Ln	Replace 810' of 6" steel watermain with 8" D.I. watermain on Berger Ln	Replaced old and undersized steel water main with ductile iron.	2030

2.9.6.2 Additional Recommended Water Improvements

Through this existing system evaluation additional improvements to the water system have been identified and recommended by NE. During this study, as discussed previous, the flow meters at Wells #6-#8 were not accurate and reading what is assumed incorrect values, changes to those flow meters indicate that this was the case. Because of this, NE is recommending that the flow meters in all the well houses be replaced with mag meters. The mag meters will require less calibration over time and will result in a more accurate flow measurement. Most mag meter manufacturers will note that the life cycle of the meters is 20-25 years.

Another issue which was discovered during this study was the difficultly in which acquiring flow production data from the wells could be gathered by the TOJ. The TOJ SCADA system does not have an efficient way of totalizing the flow data and relies on a controls contractor to gather the immense amount of data remotely. NE recommends the TOJ have the well SCADA data transmission modified so that at a minimum daily totalized flow is recorded and stored within the system so that it can be acquired at any time by the TOJ for review. The total water produced in the system should be compared to the total water sold on a quarterly basis at a minimum with a monthly basis being recommended.

In discussions with the TOJ water department and the Jackson Hole Fire and EMS, fire hydrant flow tests have not been performed for several years. Working with the hydraulic model during this study made it apparent that a review of the system hydraulics would be beneficial for all parties involved. The flow tests could be used to calibrate the hydraulic model with real world results. NE recommends the TOJ perform a fire hydrant flow test and calibrate the existing hydraulic model. Another water system recommendation is that the TOJ institute a yearly valve maintenance program. Setting aside funds to inspect and operate the TOJ water valves will allow for better operation of the system. Valves which are left unused for long periods of time may not operate during an emergency. Valve boxes can become full of debris, or vales themselves will become full of sediment and closing of valves is not feasible.

The additional system recommendations for water system improvements from the hydraulic modeling and discussions are noted in Table 2.9.6.2. The existing 6-inch water main in Virginian Lane shows very high velocities during a fire event at the Virginian Lodge, it is recommended that the main from Broadway to Snow King Avenue be replaced with a 10 inch main. Also placing a fire flow near Jackson Lumber on South Gros Ventre showed a high velocity in the 6 inch main in South Gros Ventre, it is recommended that this main be replaced with an 8-inch minimum. Lastly, a fire flow at Snow King Resort indicated high velocities in the 8-inch main from Clark Street through the Snow King Resort to Vine Street. Upsizing this main to a 12-inch minimum would lower the velocities.

Table 2.9.6.2 NE Water System Improvement Recommendations

Appendix D Exhibit	Project	Description	Purpose/Goal
	Well SCADA Update	Update the SCADA system for all well production in the system.	Provide operators a much more user-friendly form of tracking and recording monthly flow production from each well.
	Hydrant Flow Test	Flush and test all hydrants in the water system.	Gather flow data through the system from hydrant flow tests. To be used by the TOJ and fire department.
	Calibrate Water Model	Complete an update to the existing model, review all piping and components of the model, calibrate the model.	Update the model with current field conditions and calibrate using the hydrant flow results.
18	Virginian Lane Water Main	Replace the 6-inch water main in Virginian Lane with a 10-inch main.	Lower the velocities in the water main with an enlargement of the existing main.
19	South Gros Ventre Water Main	Replace the 6-inch water main in South Gros Ventre Street from East Hansen to East Pearl with an 8-inch main.	Lower the velocities in the main during a fire flow situation.
20	Snow King Loop (Private Main)	Replace the 8-inch water main beginning at Clark Street, through the Snow King Loop to Vine Street with a 12 inch.	Lower velocities in the main during fire flows and also provide additional fire flows to a large resort area.

3 Existing Sewer System

This section presents information on the current configuration and existing condition of the Town of Jackson Sewer System. The extents of the existing sewer system service area, including out of town Teton County residents are shown on Figure 3. The TOJ provides sewer service to TOJ residents and several out-of-town Teton County residents. These out-of-town Teton County residents are called Non TOJ Sewer Customers in this report. The extents of the TOJ owned and operated sewer infrastructure are indicated in Figure 4. There are approximately 4,900 sewer customers within the TOJ and 1,400 customers outside of the TOJ limits within Teton County. The TOJ sewer system consists of seven sewer lift stations, 284,000 feet of sewer main, and one sewer treatment plant.

3.1 General Sewer System History

The original Town wastewater treatment plant was located in the Karns Hillside Addition area adjacent to Snow King Avenue; this early plant was later replaced by a mechanical treatment plant, located south of town on what is now High School Road, constructed in 1969 for a peak design population of 5,000. The new mechanical plant exceeded its design capacity by 1971. Subsequent modifications in the mid-1970s did not improve the operation and efficiency of the system. A facilities plan was prepared in 1974 out of which came an EPA-funded study of the estimated 850,000 gpd of inflow/infiltration. Heated discussions occurred as to the best course of action for the overcapacity treatment facility: expand the existing plant, build a new mechanical plant in the Boyle's Hill area, or build an aerated stabilization pond near the South Park Elk Feedground. The facilities plan was revisited and updated in 1978 with an estimated 1995 design

flow of 2.65 MGD plus the capacity to treat the approximately 0.85 MGD of infiltration for a total hydraulic capacity of 3.5 MGD. An oxidation ditch option was an added alternative to the facilities plan, but ultimately an aerated lagoon/rapid infiltration facility was chosen for the South Park Lower Bench site based on the lower operation and maintenance costs and site expansion potential. The facility was built in the early 1980s and remains in the same general footprint today.

A sewer rehabilitation program began in 1977 but had little net effect on eliminating extraneous flows. Replacement of clay sewer lines began in the late 1980s and by the mid to late 1990s inflow/infiltration had been greatly reduced by the use of cutting edge "slip-lining" and "pipe-bursting" techniques, the net effect of which was an increase the overall capacity of the wastewater treatment facility. Upgrades to the plant were designed in 1995 and constructed in 1997 to its current permitted capacity of 5 MGD.

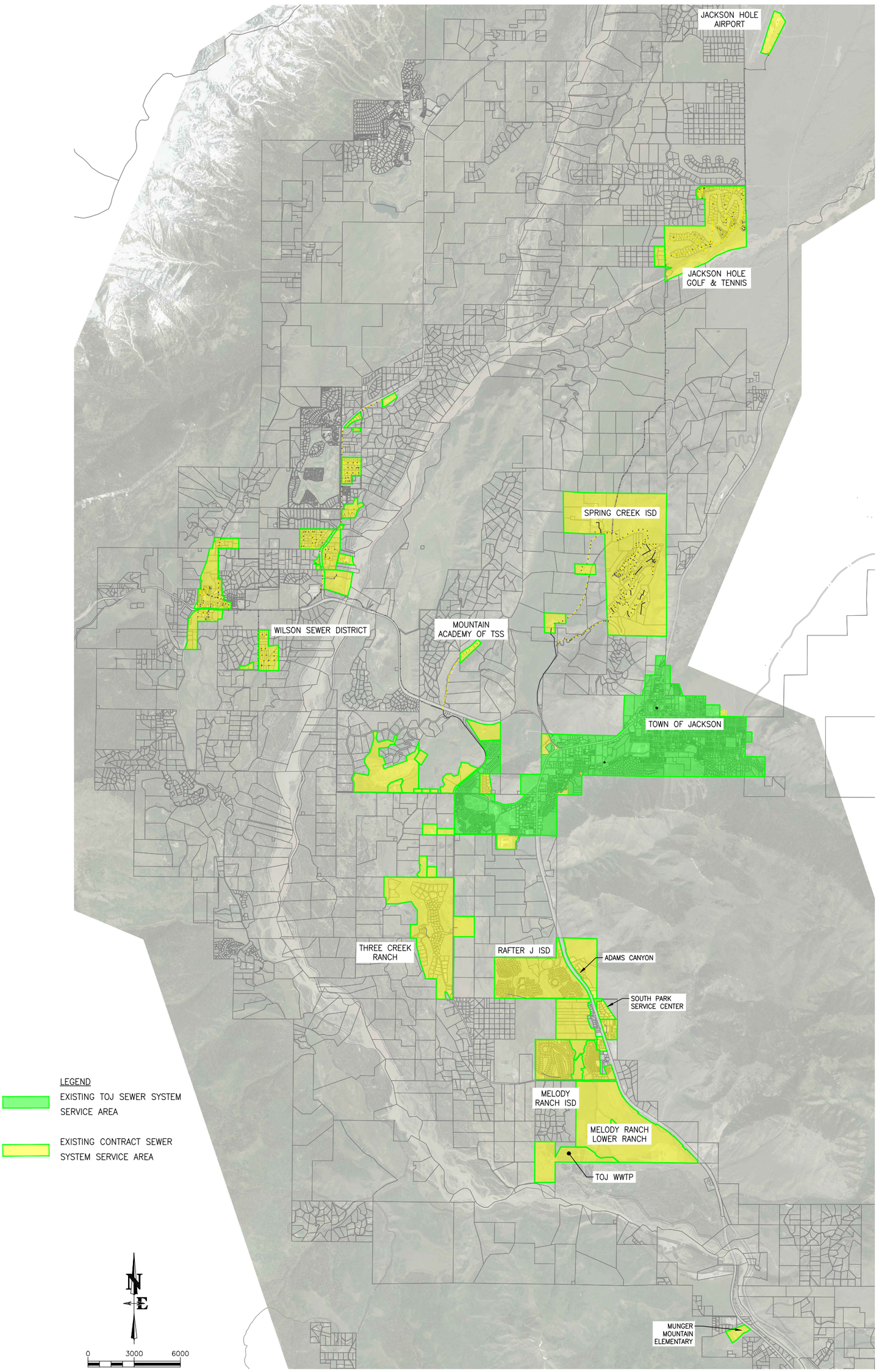
3.2 Available Information

The project team reviewed existing information on the Town of Jackson Sewer System. The following documents were collected and considered through the course of the study:

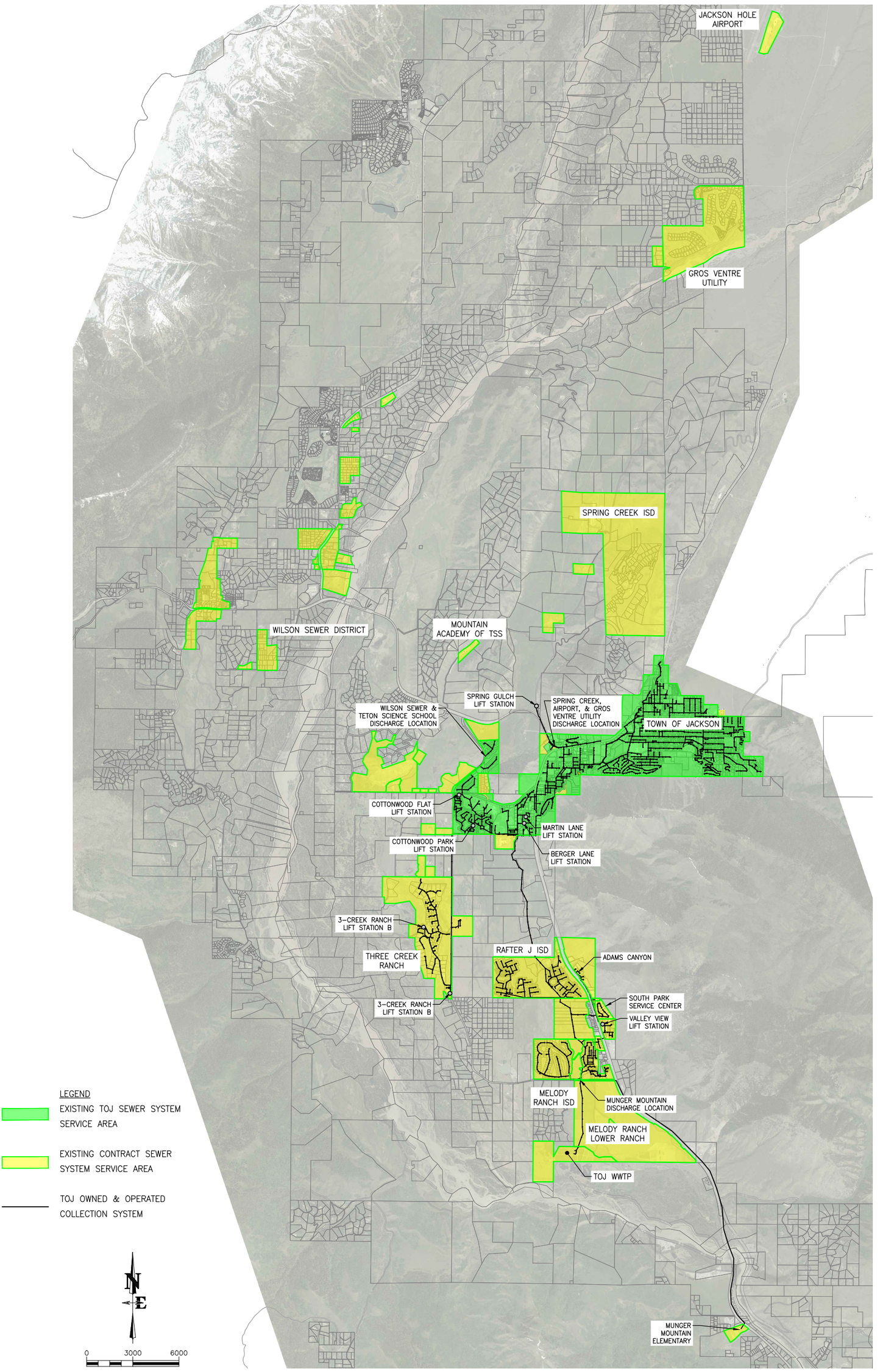
- Jackson Wyoming Sewer System Analysis and Evaluation – 1975
- Jackson Wyoming Wastewater Facilities Plan Update - 1978
- EPA Final EIS WWTF – 1979
- EPA Record of Decision WWTF – 1979
- Jackson Wyoming Sewer System Infiltration Study – 1988
- SCADA data on wastewater treatment plant influent flows
- Meetings and discussions with operators
- As-Constructed record drawings provided by the TOJ
- Teton County Land Development Regulations (LDRs) planning and zoning regulations.

3.3 Contract Service Area

Figure 3 indicates the existing service area of the TOJ Sewer System. In addition to the residents of the TOJ, the Non TOJ Sewer customers include several areas within Teton County. The Non TOJ Customers served outside the TOJ include: Three Creek Subdivision, Wilson Sewer District, Teton Science School, Rafter J Subdivision, Melody Ranch Subdivision, Spring Creek Ranch, Gros Ventre Utility Company, Jackson Hole Airport, Adams Canyon, South Park Service Center Subdivision, Valley View Subdivision, Munger Mountain School, and some private residences. Figure 4 also indicates the sewer lift stations and pipe locations along with the tie in locations of the out-of-town customers.



DRAWING NO: FIGURE 3	JOB TITLE: TOWN OF JACKSON WATER & SEWER COMPREHENSIVE CAPACITY STUDY JACKSON, WYOMING	DRAWING TITLE: TOWN OF JACKSON SEWER SYSTEM EXISTING SEWER SYSTEM SERVICE AREA	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE: 6/14/2021	REV.
JOB NO: 19-336-01				SURVEYED: GIS	
				ENGINEERED: BJG	
				DRAWN: BJG	
				CHECKED:	
				APPROVED:	



DRAWING NO: FIGURE 4	JOB TITLE: TOWN OF JACKSON WATER & SEWER COMPREHENSIVE CAPACITY STUDY JACKSON, WYOMING	DRAWING TITLE: TOWN OF JACKSON OWNED & OPERATED SEWER SYSTEM COMPONENTS	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE: 4/23/2021	REV.
JOB NO: 19-336-01				SURVEYED: GIS	
				ENGINEERED: BJG	
				DRAWN: BJG	
				CHECKED:	
				APPROVED:	

3.4 Inventory of Existing Sewer System

For this capacity study, NE completed a visual inspection of the TOJ above-ground sewer components, including those within vaults and manholes at lift stations. These facilities included not only those within the TOJ but also those that are maintained by the TOJ outside of the Town as indicated on Figure 4. TOJ Sewer Department employee Sam Stephens, was present during the inspections to discuss operation and maintenance issues with each component. The inventoried facilities included the lift stations and locations of collection maintenance issues. The evaluation of the sewer system also included a site evaluation of the wastewater treatment plant with Vista Engineering. Each component was visited and catalogued, NE inspected the system components for physical condition and operational capability. Review at each site included taking photos and field notes, and quick inspection for needed repairs.

Information obtained through the course of this investigation, including the field inventory, is presented in these sections. Logs of the inventories along with photos are included in Appendix E.

3.4.1 Treatment Facility

The Town of Jackson Wastewater Treatment Plant (WWTP) was constructed as a lagoon system with infiltration ponds in 1979. An upgrade project in 1995 modified the infiltration ponds to aerated cells, and constructed a preliminary treatment building, UV disinfection system building, Blower Building No. 3, and Intermediate Pump Station building. After this upgrade, the permitted capacity of the WWTP was 5.0 MGD, with planning for Phase 2 flows of 6.5 MGD.

3.4.2 Lift Stations

Within the TOJ Sewer System there are a total of seven lift stations which are owned and operated by the TOJ. The lift stations vary in age and type. Figure 4 indicates the locations of the lift stations. Of the lift stations four serve customers within the town limits and three serve customers outside the town limits but are maintained and operated by the TOJ. Force mains from the lift stations to discharge locations are a mix of age, pipe type, and size. Each lift station is discussed below along with discussion the existing force mains.

3.4.2.1 Three Creek A

Three Creek A Lift Station is located in the Three Creek Subdivision approximately 2.5 miles south of the Town of Jackson. The lift station is located at the south end of the maintenance area of the subdivision, see Figure 4 for the location. The lift station is located in a structure connected to a maintenance facility building and was constructed in 2006. The lift station contains a separate below ground wet well and dry well. The wet well contains the Pentair/Hydromatic submersible sewage pumps that were replaced in 2020. The below ground dry well contains piping, valving, flow meter, and two grinder pumps. The pump station operates as a duplex system with two 40 HP pumps flowing 320 gpm into a 6” HDPE force main. The force main conveys effluent from the lift station 2.5 miles north along South Park Loop Road to the TOJ gravity system near Cottonwood Park. The lift station has a flow meter which totalizes effluent pumped but only registers locally, totalized flows are not sent to a system SCADA system. The lift station is not connected to the TOJ SCADA system but is scheduled to be in the Summer of 2021. There is a Cummins 3 phase 125 kW diesel generator at the location for emergency power.

3.4.2.2 Three Creek B

Three Creek B Lift Station is located in the Three Creek Subdivision at the end of Spring Water Lane. The lift station serves very few properties and sees little flow. See Figure 4 for the location. The lift station was constructed in 2006 and includes a duplex pump system with separate wet and dry wells. The wet well is a buried concrete manhole and includes the 5 HP HOMA sewage pumps that were replaced in 2020. The pumps will convey 165 gpm. The dry well is adjacent to the wet well and is also a buried concrete vault. Controls for the facility are on a H panel next to the dry and wet wells. The force main discharges to the east into the Three Creek gravity sewer system. There is an existing auto dialer on the control panel but it is not functioning. There is no emergency generator at the location. There is no communication between the lift station and the SCADA system but is scheduled to be in the Summer of 2021.

3.4.2.3 Berger Lane

The Berger Lane Lift Station is located in the TOJ along Berger Lane just east of the Carol Lane intersection, see Figure 4. The lift station serves very few properties and sees little flow. The lift station includes a duplex pump system with separate wet and dry wells. The wet well is a buried concrete manhole including the 5 HP HOMA sewage pumps. The lift station was completely rebuilt in 2020 except for the wet well. The dry well is adjacent to the wet well and is also a buried concrete vault. Controls for the facility are on a H panel next to the dry and wet wells. The lift station will flow 200 gpm into a 4" PVC force main. The force main conveys wastewater from the lift station to the west to a gravity manhole at the intersection of Carol Lane. There is no emergency generator at this location. Alarms are programmed through a SCADA system that calls operators as needed.

3.4.2.4 Martin Lane

The Martin Lane Lift Station is located in the TOJ along Martin Lane just east of the Carol Lane intersection, see Figure 4. The lift station serves very few properties and sees little flow. The lift station includes a duplex pump system with separate wet and dry wells. The lift station also includes another emergency dry well which can hold effluent but requires pumping if utilized. The wet well is a buried concrete manhole including the 2 HP HOMA sewage pumps. The lift station was completely rebuilt in 2020 except for the wet well. The dry well is adjacent to the wet well and is also a buried concrete vault. Controls for the facility are on a H panel next to the dry and wet wells. The lift station will flow 200 gpm into a 4" PVC force main. The force main conveys wastewater from the lift station to the west to a gravity manhole at the Carol Lane intersection. There is no emergency generator at this location. Alarms are programmed through a SCADA system that calls operators as needed.

3.4.2.5 Cottonwood Flat

Cottonwood Flat Lift Station is located in the Cottonwood Flat Addition, see Figure 4. The lift station is located on a utility lot owned by the TOJ. The lot is fenced with a gravel base. The lift station is a packaged Gorman Rupp submersible pump system with a concrete wet well and above ground valving and piping located in a fiberglass heated enclosure. The lift station was constructed in 2010 but the Gorman Rupp pumps were replaced in 2019 with Homa Pumps. The 6.2 HP duplex system is able to flow 100 gpm into a force main. The force main discharges effluent directly to the east, approximately 400' to the TOJ gravity main. The lift station site includes an emergency generator and davit crane. The generator is a diesel

Cummins 25kW. In addition to local alarms there is a telephone dialer to alert operators to faults. The site is not connected to the SCADA system but is scheduled to be in the Summer of 2021.

3.4.2.6 Cottonwood Park

Cottonwood Park Lift Station is located in the Cottonwood Park Subdivision, see Figure 4. The lift station is located on a utility lot owned by the TOJ. The lift station is fenced with a gravel base. The lift station is a packaged Gorman Rupp submersible pump system with a concrete wet well and above ground valving and piping located in a fiberglass heated enclosure. The lift station was constructed in 2010 but the Gorman Rupp pumps were replaced in 2019 with Homa Pumps. The 6.2 HP duplex system is able to flow 400 gpm into a 6" force main. The force main discharges effluent directly to the east, approximately 300' to the TOJ gravity main. The lift station site includes a Cummins 35kW diesel generator and davit crane. In addition to local alarms there is a telephone dialer to alert operators to faults. The site is not connected to the SCADA system.

3.4.2.7 Spring Gulch

The Spring Gulch Lift Station is located on Spring Gulch Road, 800 feet north of the intersection with Highway 22. The lift station was constructed in 2018 and conveys all wastewater flows from the Gros Ventre Utility, Airport, and Spring Creek Ranch to the TOJ sewer system. From the lift station, wastewater is pumped through a 6" force main approximately 2000 feet to the gravity collection system in Highway 22 at 1255 West Highway 22. The lift station includes a above ground building and a below grade wet well and dry well. The wet well contains a duplex pump system with two 30 HP Pentair/Hyrdomatic submersible pumps. The pumps operate on VFD's to maintain wet well levels. The dry well contains all valving, piping, flow meter, and grinder pumps. The controls are located in the building along with the Cummins 3 phase 125 kW emergency generator. The lift station is capable of pumping 736 gpm to the TOJ system. The Spring Gulch Lift Station is connected to the TOJ SCADA system.

3.4.3 Collection System

The collection system of the TOJ Sewer System includes approximately 285,000 linear feet of gravity sewer mains, force mains, trunk lines, sewer interceptors, and approximately 1,100 manholes. Historically many of the collection mains in the TOJ system were clay until the late 80's. Since that time the TOJ has replaced or PVC lined a majority of the clay pipes. As with the water system, the sewer system GIS was not set up with attributes in the proper location so getting pipe types and lengths is not very accurate using the GIS. To get a rough estimate of the amount of clay pipe still in use the sewer model was queried. There is approximately 36,000 linear feet of clay sewer main still in use with the system. This number also does not seem accurate, it is assumed that many of the mains indicated as clay in the model have previously been PVC lined.

There are several locations within the collection system where Non TOJ Sewer Customers systems discharge to the TOJ system. These locations are noted on Figure 4. The collection system also includes approximately 4.5 miles of trunk lines conveying wastewater from the TOJ limits to the WWTP.

The TOJ attempts to clean and jet roughly 25% of the sewer mains once per year. The collection system is divided up into nine zones for cleaning purposes, of which two to three zones are cleaned annually. The

trunk lines are also cleaned on a five-year cycle, though higher flow velocities tend to keep the main trunk line clean. There are select locations in the TOJ where sewer mains (red lines) are somewhat of a maintenance issue which require more frequent jetting, in some cases every three months.

3.5 Existing Sewer Flows

As noted previously, sewer flows conveyed and treated at the Jackson WWTP include not only customers within the Town limits but also Non TOJ Sewer Customers in Teton County. Wastewater influent flows were gathered from October 2016 through October 2019. Figure 5 indicates the flows over that period of time with the monthly peak flows over the last 3 years noted in Table 3.5.1.1. The high flows occur in June/July, then slowly drop until September when there is a steep drop through November, a sharp increase through January occurs then flows slowly lower until March with another slow down until May. With the exception of the high flows occurring in June, the flows pretty much directly correlate to tourist and second homeowner activity in the Town and County, except during winters where Flat Creek floods due to anchor ice formation and possibly infiltrates into the sewer system manholes. High visitor numbers occur in late June through middle of September, then tourist activity drops until the holiday season, with a slight increase during ski season through March. Visitor numbers again drop off until the end of May. There are a few anomalies that will be discussed later in this section.

Figure 5

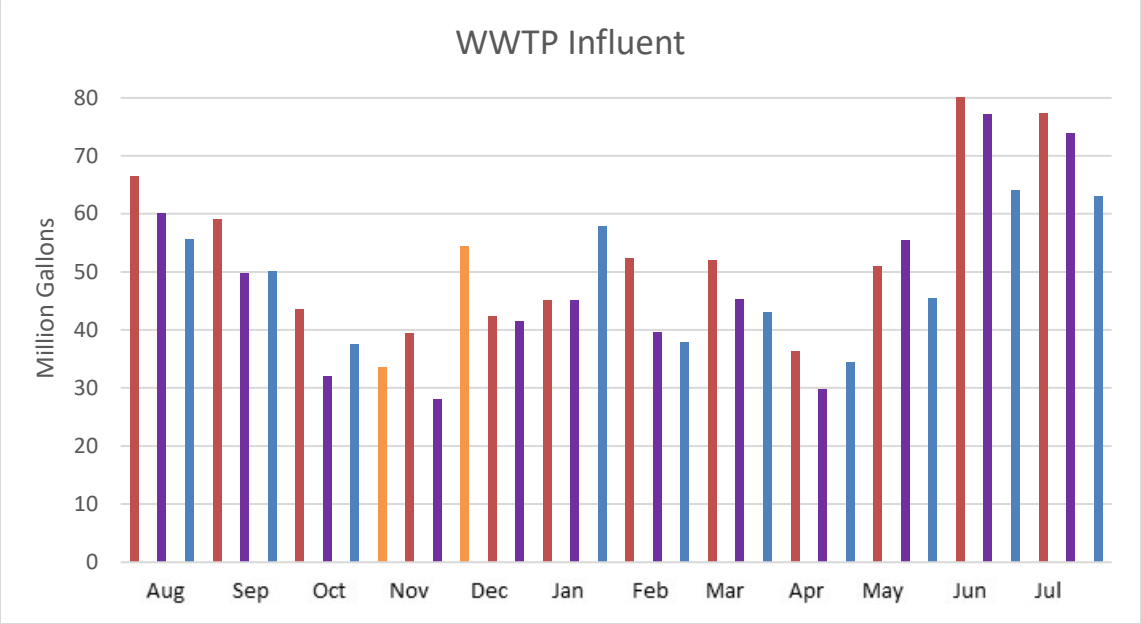


Table 3.5.1.1 Wastewater Influent Peak Monthly Flows Last 3 Years

Date	Flow (Million Gallons)	Average Daily Flow (MGPD)
June 2017	85.8	2.86
July 2017	77.3	2.49
June 2018	77.2	2.57

3.5.1 WWTP Influent

To compare the amount of flow attributed to TOJ customers vs. flows from Non TOJ customers, data acquired from the TOJ was analyzed for the three maximum monthly flows noted above. The TOJ has categorized flows from contributing districts based on monthly sewer billing data. The flows to the plant which have been quantified separately are Wilson Sewer District, Gros Ventre Utility, Munger School, Airport, Spring Creek, Melody Ranch, Three Creek, Classical Academy, and Rafter J. The total monthly flows for each Non TOJ user are quantified and billed in a different manner. The Wilson Sewer District flow is measured based on the total monthly flow pumped at the Stilson Lift Station. The Gros Ventre, Airport, and Spring Creek flow amounts are all based on the total flow pumped by the individual lift stations. The Airport flows are pumped into the Gros Ventre Utility system which gravity flows to the Gros Ventre Lift Station. Both the Airport and Gros Ventre systems flow to the Spring Gulch Lift Station which pumps directly into the TOJ system as indicated on Figure 4. The difference between what is pumped from the Airport and Gros Ventre Utility is attributed to the Spring Creek system. Melody Ranch flows are calculated using individual water meters at each residence. Note that due to the way TOJ bills Melody Ranch, it also includes the Adams Canyon Sewer System and the Valley View Sewer. Three Creek flows are based on individual water meters at each parcel. Lastly Rafter J flows are totalized from the 2 individual lift stations within the subdivision which discharge into the TOJ system. Note that Munger Mountain was not discharging into the system at these selected months. The current monthly percentage of effluent delivered to the WWTP from the Munger system is less than 1% and now also includes sewer from the WYDOT Facility. Totalized flows from Munger are based on flows discharged from the Munger Lift Station. The smaller individual Non TOJ users were included with the TOJ flow since this percentage is fairly small when comparing the total flow. For a comparison, the three maximum months noted in Table 3.5.1.1 were reviewed for all customers. Table 3.5.1.2 below shows the percentages of the total monthly flow attributed to each outlying customer for those three maximum months, with all units displayed in million gallons per month.

Table 3.5.1.2 Contribution to Monthly Influent Flow from Outlying Customers

Date	WWTP Influent Flow (MG)	Non TOJ Sewer Customer																Total Outlying Customer	
		Wilson Sewer District		Gros Ventre Utility		Munger School		Airport		Spring Creek		Melody Ranch		3 Creek		Rafter J			
		Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow
June 2017	85.8	3.45	4.47%	2.39	3.09%	0	0%	.48	0.62%	5.50	7.12%	2.32	3.00%	.79	1.02%	4.95	6.41%	19,.8	23.15%
July 2017	77.3	2.32	4.02%	3.02	5.22%	0	0%	.58	1.01%	2.95	5.11%	2.32	4.01%	.70	1.20%	5.09	8.80%	17.0	21.95%
June 2018	77.2	2.99	3.87%	1.60	2.07%	0	0%	.51	0.66%	6.29	8.14%	2.03	2.63%	.50	0.64%	4.62	5.98%	18.5	23.99%

Reviewing Table 3.5.1.2 it can be noted that during maximum use, the percentage of flow to the WWTP from out-of-town customers ranges from 21-24%.

During analysis of the WWTP influent it became apparent to NE that there are times of the year that significant inflow and or infiltration is occurring into the TOJ sewer system. While there are times during the year where isolated events greatly increase influent flows to the treatment plant. Those generally occur during rain storm events and winter periods of high temperatures when significant melting occurs or when frazzle ice flooding occurs on Flat Creek. These periods are short lived and last a day or two. Generally, stormwater runoff is entering the system through manholes within the sewer system. There are also times in which elevated influent flows are recorded at the WWTP which occur over a longer period of time. This is noticeable during June/July and September, flows during this period are generally higher than the high visitor period of July/August. When looking at the flows from out-of-town users it can be seen that flows from Wilson Sewer and Spring Creek are also elevated during these periods. This timing also correlates with flood irrigation practices on many of the lands within those collection systems. Flood irrigation is occurring during June/July, until producers begin haying and the irrigation is turned off or down. Then once hay season is complete, in late August, irrigators once again turn the irrigation back on and begin flood irrigating the fields. This flood irrigating inundates the tops of manholes and inflow occurs. Additionally, the ground water level is raised which increases the infiltration to the system via manhole structures.

Another Non TOJ user which sees higher flows than expected is Rafter J. Although there are some second homeowners within the subdivision, a majority of the subdivision is occupied throughout the summer, but when reviewing the influent flows, it can be seen that the highest flows are again June/July. This high flow corresponds to high ground water levels within the subdivision. It is NE's opinion that several crawl space sump pumps are currently connected to the sewer system which is elevating the influent during high ground water periods.

3.5.2 Breakdown of Town Influent

To determine a representative sewer influent contribution factors to the WWTP, water meter data was analyzed without irrigation for October 2018 through October 2019. The TOJ billing data was used to specify water use within the town. The TOJ codes meters into non-surcharge users and commercial with surcharge users, these codes are based on wastewater strength alone and not flow volume. Commercial users with extra surcharge rates are generally those that have higher effluent strengths, such as: hotels, restaurants, bars, breweries, car washes, hospitals, schools, and other commercial users. Non-surcharge users are residential and commercial users with typical effluent strengths. Many of the commercial with surcharge users are visitor based and flows vary during high visitor periods. Table 3.5.2.1 indicates the percentage of total influent flow to the WWTP from the TOJ which is attributed to the surcharge and non-surcharge users. It can be seen that during the high visitor months of June, July, and August a higher percentage of flows are experienced from the surcharge users. The analysis into visitor use included determining the percentage of overall flow which was attributed to lodging. The last 2 columns in the table indicate the total percentage of flow to the treatment plant from the lodging use. Note that this is included in the surcharge user category.

Table 3.5.2.1 Town Influent Breakdown

Date	Total Influent Flow (MG)	TOJ User					
		Commercial with surcharge		Non-surcharge Use		Lodging	
		Flow (MG)	% Total Flow	Flow (MG)	% Total Flow	Flow (MG)	% Total Flow
Oct 2018	31.2	17.0	53.18%	15.0	46.82%	13.4	42.07%
Nov 2018	28.0	11.3	40.20%	16.7	59.80%	8.2	29.26%
Dec 2018	41.5	12.9	31.22%	28.5	68.78%	9.7	23.44%
Jan 2019	57.8	17.3	30.00%	40.5	70.00%	13.5	23.42%
Feb 2019	37.8	14.7	38.73%	23.2	61.27%	11.6	30.54%
Mar 2019	43.1	15.5	35.89%	27.6	64.11%	12.0	27.91%
Apr 2019	34.4	13.0	37.78%	21.4	62.22%	9.5	27.55%
May 2019	45.5	15.6	34.26%	29.9	65.74%	11.8	25.88%
Jun 2019	64.1	23.9	37.34%	40.1	62.66%	19.3	30.22%
Jul 2019	63.0	26.3	41.65%	36.8	58.35%	21.7	34.42%
Aug 2019	55.7	28.1	50.40%	27.6	49.60%	23.3	41.91%
Sept 2019	50.1	22.9	45.65%	27.2	54.35%	18.9	37.77%
Oct 2019	37.6	17.2	45.72%	20.4	54.28%	14.1	37.42%

3.6 Geographic Information System

The TOJ Public Works Department has developed a GIS for the TOJ Sewer System based on known information and as built construction plan sets. This GIS data contains pipe sizes and types where known and the locations of manholes, lift stations, and services.

3.7 Sewer Model

At the kickoff of this capacity study, NE received the latest hydraulic sewer model of the TOJ system. The existing sewer model was created and updated using Bentley SewerCAD network analysis software. Existing water meter data for the months of January, February, and March was utilized to assume wastewater flows for each individual user. During these months it is assumed that most of the water metered returns to the sewer system making the water meter data useful for determining sewer flows. The flows were imported into the model much like the water model, on a parcel-by-parcel basis, allowing for an accurate spatially located demand on the system. During review of the existing model, it was determined that several manholes in the model did not have accurate invert data. The TOJ as an addition to this project contracted with NE to gather manhole rim and invert data of the manholes located on trunk lines to further improve the model accuracy. It was determined that the collection mains further up in the system were not as critical and minimum slopes could be entered into the model so that an analysis with the software could be accomplished. NE maintained an original model which specifically indicates which manholes have missing inverts and which sewer mains have incorrect slopes because of the missing data. A separate running model which contains the assumed pipeline slopes and inverts was then utilized to perform the analysis. This model will be discussed in detail further later in the evaluation.

3.8 Evaluation of Existing Sewer System

Evaluation of the sewer system included a site visit with TOJ Sewer Department personnel, discussions with personnel, review of existing conditions, updating the existing sewer model, and performing model run scenarios. The evaluation also included a site visit of the treatment plant and discussions with the plant operators. This included a design review of the existing WWTP performed by Nelson Engineering and Vista Engineering.

On November 5, 2019 a review of all visible sewer system components was completed with NE Staff and Sam Stephens with the TOJ Sewer Department. The site visit consisted of visual inspection of all the facilities, photographing, and completing an inventory log. The logs for each of the reviewed facilities are included in Appendix E.

In October of 2019 a review of the existing WWTP was completed by NE and Vista Engineering with Johnny Ziem, the Wastewater Division Manager and TOJ Assistant Public Works Director. The site visit consisted of a discussion with plant operators and review of the WWTP facility and current operations.

In addition to the site evaluations, discussions were held with Sam Stephens about the entire sewer collection system. Those discussions included methods of maintenance and operation along with system needs and deficiencies. From these discussions items of note were recorded and are included in the evaluation discussion below.

Along with the visual and operational review with the system, the existing sewer model was utilized to determine any shortcomings within the system based on existing development. The model runs included peak domestic flows to determine undersized facilities. The GIS was reviewed to determine the locations of dated clay sewer mains.

The result of this evaluation is a list summarized below of facilities which need repair/updating along with capacity shortcomings based on existing demand.

3.8.1 Model Results

The sewer model was developed using the Bentley SewerCAD 2019 modeling program. The spatial data of the Town of Jackson's sewer collection system was imported into the model via GIS data obtained from the Town of Jackson. This GIS data included all customer connections, manholes, conduits, and laterals within Town of Jackson limits. The GIS data did not include invert elevations for several manholes within the system, therefore invert elevations for these manholes were assumed values to produce a 0.5% slope towards the drainage outfall. To supplement the existing data, the TOJ commissioned NE to determine the manholes in the main trunk lines that had missing information, and survey the data to update the model. The model was improved to include this collected data.

The sewer base flows for the Town of Jackson were obtained from customer water meter data provided by the Town of Jackson. In order to most accurately represent sewer flows into the sewer collection system within the TOJ, it was assumed that water meter data from the winter months (January, February and March 2019) would be selected due to minimal water demand for irrigation during those months. Therefore, it is assumed that nearly 100% of the water flow as obtained from the meter data ultimately

returned to the sewer collection system as sewer base flows. The modeled sewer base flow per customer was determined from the average daily flow in gallons per minute (gpm) during the winter months with peaking factors calculated to determine average day in the peak month and peak hour during the peak month.

The TOJ provided monthly flow data from billing records for all TOJ and Non TOJ customers for each month in 2017-2019. Using the data from 2019, highest of the 3 years of which information was gathered, the total influent into the treatment plant for January, February, and March was used to get an average winter day flow. Then the average day flow during the maximum month was determined for the WWTP influent. Comparing the two resulted in a peaking factor of 1.33 times the average day winter month flow to get the average day flow in the maximum month. For modeling purposes, a peak hour flow during the peak month was calculated by using a textbook peaking factor of 3. The resulting peaking factor was 3.99 was utilized from the average monthly winter flow to determine peak hour flows. This peaking factor was applied to the average daily flows obtained from the Town of Jackson customer water meters during the winter months, and these multiplied flows were imported into the SewerCAD model as peak hourly flow during the peak month.

The sewer base flows discussed above include all customers within the Town of Jackson that have water meters. In addition, the SewerCAD model also considers the sewer flows received from several pump stations and associated force mains connected to the Town of Jackson sewer collection system from the Non TOJ sewer costumers. These pump stations were assigned sewer flows into the Town of Jackson sewer collection system based on the design flows of the pumps installed at each pump station.

To access capacity in the collection system the model was run with the peak hourly flows noted above. Any pipelines which exhibit a capacity of over 75% was noted for further review. Through this analysis there were a few locations throughout the TOJ where pipelines were over the threshold capacity. In review of these pipeline locations, it was noted that several had pipeline slopes of 0 or .1% which is highly unlikely. It was assumed that many of these locations need to have manhole inverts verified to determine issues actually exist. The areas exceeding the threshold are described below noted with the GIS manhole number:

Flat Creek Drive – A section of pipe on Flat Creek Drive between Hoback Sports and Cowboy Village (Manhole 6-285-03 to 6-280) indicated a pipe that was over capacity. This section of pipe is scheduled to be replaced in FY 2022 as noted in subsequent sections, an exhibit of this location is included later in this study.

Powderhorn Lane – The sewer main in Powderhorn Lane from Maple Way (Manhole 5-320) to W. Broadway (Manhole 5-360) indicates pipes which are over capacity. This has been known by the TOJ for some time. When the Spring Gulch Lift Station discharges into the system the pipelines are very full. There are two pipes within much of Powderhorn that accept the flow. This section of pipeline is scheduled to be replaced and upsized in FY 2026 as noted in subsequent sections, an exhibit of this location is included later in this study.

Broadway and Highway 22 – This sewer main is also exceeding capacity when the Spring Gulch Lift Station discharges (Manhole 5-400 to 5-370). Much of this pipeline is scheduled for replacement and up sizing in FY 2027. The inverts in the manholes are lacking in this location, it is likely that the pipe slopes are greater and therefore the capacity is greater than indicated in the model. An exhibit of this location is also included later in this study.

West Jackson – A short section of pipe on the interceptor just east of Highway 89 at the location where it crosses the highway (Manhole 5-190 to 5-200) indicates it is above pipe capacity. Reviewing the pipe capacities directly above and below this section indicate the pipes are only 30-40% capacity. It is assumed that invert data in this location is not accurate.

Cottonwood Park Area – The sewer main along High School Road from the connection with the TOJ WWTP interceptor (Manhole 9-040 to 8-020) indicated pipelines above capacity. This pipe travels west along High School Road and into the Cottonwood Subdivision. The pipeline is scheduled for replacement and upsizing FY 2027, an exhibit of this location is included later in this study.

The pipelines identified above in which capacity is a concern are all discussed in Section 3.8.5 below as identified in the TOJ's CIP plan. Exhibits showing the locations of the improvements are located in Appendix as discussed in that section.

NE recommends the TOJ perform an update to the Sewer GIS network, collecting missing data or rectifying data which does not seem to be accurate. With the update to the GIS network an update to the water model is also recommended. Inputting accurate pipe sizes and inverts would be beneficial in working with the model to estimate future system improvements.

3.8.2 Treatment Plant

The evaluation of the Jackson WWTP reviewed the current operating configuration of the lagoon system to confirm capacity. Figure 6 indicates the flow pattern of the WWTP. The following table lists ancillary facilities with their respective design capacity:

Table 3.8.2.1 Jackson WWTP Ancillary Facilities

COMPONENT	DESIGN CAPACITY (MGD)
Inverted Siphon	12.20
Mechanical Bar Screens	6.5
Raw Wastewater Pumps	6.5
Flow Splitter	6.5
Secondary Wastewater Pumps	6.5
Ultraviolet Disinfection System	6.5

Five years of WWTP process monitoring data was used to develop estimated kinetic values for treatment processes. Weekly data points were averaged to determine monthly values. Outlying data points were excluded from the data set. As an example, the following table lists Primary Cell 1 water temperatures

for December. The outlying data points, 10°C and 0.5°C, were removed from the data set. The mean value of the remaining values was 5.0°C.

Table 3.8.2.2 Primary Cell 1 Water Temperature

DATE	WATER TEMPERATURE (°C)
Dec 1, 2015	4.5
Dec 8, 2015	6.9
Dec 15, 2015	4.7
Dec 22, 2015	5.0
Dec 29, 2015	4.5
Dec 6, 2016	4.7
Dec 13, 2016	4.3
Dec 20, 2016	4.2
Dec 27, 2016	4.6
Dec 5, 2017	10
Dec 19, 2017	6.7
Dec 18, 2018	0.5
$\bar{x}$	5.0

PROJECT
NORTH

PRIMARY CELL 1
INFLUENT 24"ø

CELL CB2
EFFLUENT 36"ø

BAFFLE WALL

PRIMARY CELL 1
EFFLUENT 42"ø

SLUDGE MOUND
(TYP)

CELL 4A
INFLUENT 30"ø

GRID BEE
GF10000 (TYP)

CELL 4-SERIES
INTERCONNECT 30"ø (TYP)

CELL 4D
EFFLUENT 36"ø

PRIMARY CELL 2
INFLUENT 36"ø

AIRE-O_2 TRITON
AERATOR 50 HP
& 7.5 HP BLOWER (TYP)

CELL BOTTOM GRADE
BREAK 15 FT TO 17 FT

CELL 3A INFLUENT
42"ø

CELL 3A INFLUENT
30"ø

BAFFLE WALL

CELL 3B1 INFLUENT
36"ø

CELL 4B TO 4C
30"ø

CELL 5 INFLUENT
30"ø

LEGEND

GRID BEE GF1000

AIRE-O_2 TRITON

DESIGNED: SDJ CADD TECH. REVIEW: DATE: 01/31/2020	SUB SHEET NO. Fig. 6	TITLE OF SHEET JACKSON, WY WWTP LAGOONS FLOW PATTERN	DRAWING NO. PMIS/PKG NO. SHEET 1 OF 1

3.8.2.1 WY DEQ Design Criteria

3.8.2.1.1 Organic (BOD) Loading

As outlined in Wy DEQ Water Quality Rules & Regulations, Chapter XI, Section 18, lagoons can be designed and operated as facultative lagoon systems or aerated lagoon systems. Aerated systems can be completely mixed or partially mixed. The design loading of a facultative, non-aerated system's primary cells is limited to 40 lb BOD/acre-day at average design loading conditions.[1] Aerated lagoons are limited to an organic loading of less than 10 lb BOD/day-1,000 ft^3 for completely mixed systems. Mixing energy should be provided to meet 1/4-HP/1,000 ft^3 for mechanical mixing, or 10 cfm/1,000 ft^3 for compressed air mixing. Partially mixed systems are limited to 2 lb BOD/day-1,000 ft^3. In either case, aeration equipment should be sized to provide a minimum dissolved oxygen concentration of 2 mg O_2/L.

The Jackson WWTP has a water surface area of 33.5 Acres. At the facultative loading rate, the plant's capacity would be 1,340 lb BOD/day. At the design BOD concentration of 211 mg BOD/L, the flow would be 0.76 MGD. A completely mixed system might be sized based on the primary cells, with a volume of 18,775 kft^3, and corresponding design loading of 187,753 lb BOD/day. This would require sludge removal equipment, as a secondary clarifier, digestion basins, and pumping equipment to move the sludge. The basins would require a combination of aeration and mixing to keep the solids in suspension and maintain a dissolved oxygen concentration of 2 mg/L. The existing lagoon system was designed to be operated as a partially-mixed system, with a loading of less than 2 lb BOD/day-1,000 ft^3.

3.8.2.1.2 Hydraulic Loading (Detention Time)

Wy DEQ design criteria requires partially-mixed primary lagoons have a detention time of 7 days at design flow. It further requires the detention time of the secondary ponds bring the total system detention time to 30 days.

3.8.2.2 Jackson WWTP Process

The Jackson WWTP Lagoons consist of ten lagoons. Primary Cell 1, Primary Cell 2, Cell 3A, 3B1 & 3B2 are equipped with Aire-O_2 Triton mechanical aerators and Medora Grid Bee Model GF10000 hydraulic mixers. Cells 4A, 4B, 4C, 4D, and 5 are equipped with static tube aerators. A blower building located in the center of the Cell 4s supplies compressed air to the static tubes, see Figure 6. The lagoon system has been operated as partially-mixed aerated lagoons. The following table lists cell volume and aeration equipment:

[1] Water Quality Rules & Regulations Chapter XI, Section 18, Wyoming Department of Environmental Quality

Table 3.8.2.3 Jackson WWTP Lagoons

LAGOON	W.S. AREA	WATER DEPTH	NORMAL VOLUME	AERATION EQUIPMENT
	(Acres)	(ft)	(Acre-Ft)	
Primary Cell No. 1	7.98	16.5	108.14	7 – Mechanical Aerators (C1-A1 thru C1-A7)
				6 – Grid Bee Mixers (GB1 thru BG6)
Primary Cell No. 2	8.38	15.8	111.09	7 – Mech Aerators (C2-A1 thru C2-A8) 60 HP ea
				6 – Grid Bee Mixers (GB7 thru GB12)
Secondary Cell No. 3A	3.22	17	37.90	4 – Mech Aerators (C3-A1, A2, A3, A12) 40 HP ea
Secondary Cell No. 3B1	3.52	15	48.4	2 – Mech Aerator (C3-A4, A7) 40 HP each
				1 – Grid Bee Mixer (GB13)
Secondary Cell No. 3B2	2.54	13	37.97	2 – Mech Aerator (C3-A11, A8) 40 HP each
				1 – Grid Bee Mixer (BG14)
Secondary Cell No. 4A	1.93	10	18.65	Static Tube System
Secondary Cell No. 4B	1.77	12	20.38	Static Tube System
Secondary Cell No. 4C	2.22	13	27.79	Static Tube System
Secondary Cell No. 4D	1.95	11	20.67	Static Tube System
Secondary Cell No. 5	5.19	10	50.17	Static Tube System

3.8.2.3 Jackson WWTP Lagoon System Capacity Goals

Design Capacity goals were listed on drawing P0.2, Schematic Flow Diagram & Design Criteria, of the 1995 Drawing Set, Wastewater Treatment Facility Expansion & Modification Phase I. The Phase 1 Design Capacity was 5.0 MGD, with a design BOD concentration of 211 mg BOD/L. The Phase 1 organic loading to the primary cells would be 8,798 lb BOD/day or ±0.7 lb BOD/day-ft^3. The Phase 2 Design Capacity has been proposed as 6.5 MGD, with a design BOD concentration of 223 mg/L. The Phase 2 Design organic loading would be 12,061 lb BOD/day, or ±1.0 lb BOD/day-ft^3. This proposed loading falls within the Wy DEQ criteria. The next consideration would be detention time.

The following table lists estimated detention times (DT) for the Jackson WWTP lagoon system at proposed Phase 1 and Phase 2 flow rates.

Table 3.8.2.4 Detention Times at Proposed Phase 1 & Phase 2 Flow Rates

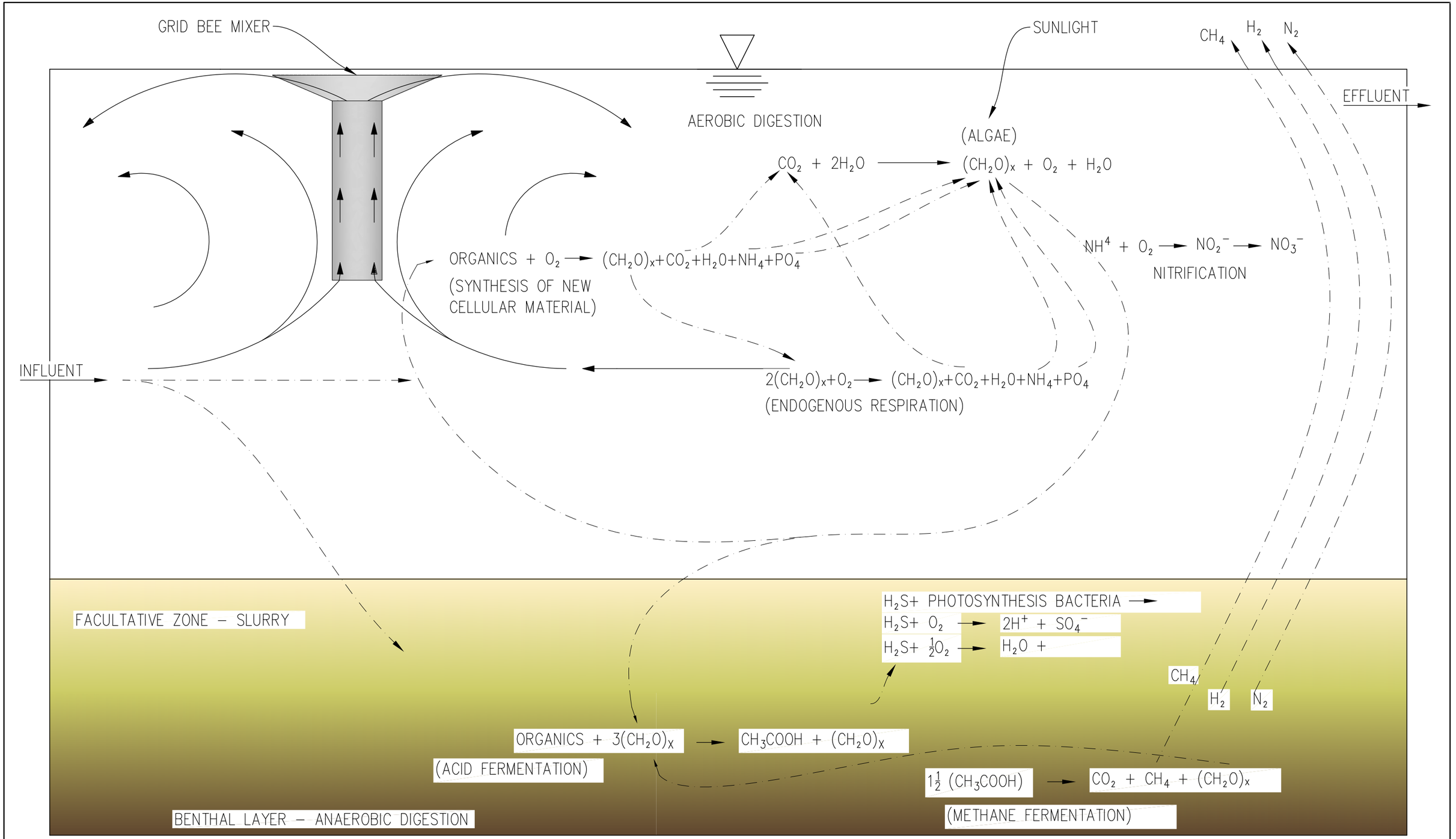
CELL	LAGOON VOLUME (MG)	DETENTION TIME @ 5 MGD (days)	DETENTION TIME @ 6.5 MGD (days)
PRIMARY			
Primary 1	35	14	10.8
Primary 2	36	14.4	11.1
Average Primary DT		14.2	10.95
SECONDARY			
Cell 3A	12	2.4	1.8
Cell 3B1	16	3.2	2.5
Cell 3B2	12	2.4	1.8
Cell 4A	6	1.2	0.9
Cell 4B	7	1.4	1.1
Cell 4C	9	1.8	1.4
Cell 4D	7	1.4	1.1
Secondary DT		13.8	10.6
POLISHING			
Cell 5	16	3.2	2.5
TOTAL		31.2	24

At Phase 1 design flow of 5.0 MGD, the primary cells detention time is estimated to be 14.2 days, which exceeds the Wy DEQ criteria of 7 days. The detention time through the secondary cells is estimated to be 13.8 days, bringing the system's total detention time to 31.2 days. Design conditions for a capacity of 5 MGD meet current Wy DEQ criteria.

At Phase 2 design flow of 6.5 MGD, the primary cells' detention times is estimated to be 10.95 days, which exceeds the Wy DEQ criteria of 7 days. The detention time through the secondary cells is estimated to be 10.6 days, bringing the system's total detention time to 24 days. Design conditions for a capacity of 6.5 MGD do not meet current Wy DEQ criteria.

3.8.2.4 Lagoon System Treatment Processes

Lagoon systems seem simple based on the earthen basins and lack of piping, pumps, and mechanical equipment installed to separate the hydraulic detention time and the solids detention time, see Figure 7. Empirical equations used to design lagoons have not changed over the years. However, complex inter-reactions occur between aerobic and anaerobic microorganisms. Successful design includes addressing limiting reactants for various processes and providing an environment that allows processes to remove organic matter from the wastewater with the lowest energy requirement. The following discussion addresses various processes, and their inter-relation.



A RATIONAL APPROACH TO THE DESIGN OF AERATED SEWAGE LAGOONS
SPECIAL REPORT 136, EDWARD POHL, 1970.

DESIGNED: SDJ CADD TECH. REVIEW: DATE: 01/31/2020	SUB SHEET NO. Fig. 7	TITLE OF SHEET JACKSON, WY WWTP LAGOONS LAGOON KINETICS	DRAWING NO. PMIS/PKG NO. SHEET 1 OF 1

3.8.2.5 Primary Lagoons Treatment

The primary lagoons (Primary Cell No. 1 and Primary Cell No. 2) have a combined volume of 71 million gallons (MG). Primary Cell No. 1 is approximately 16.5 ft deep. Primary Cell No. 2 is 15 ft deep in the West 2/3^{rds}, and 17 ft deep in the East 1/3rd. The Primary Cells remove BOD and Ammonia. The cells are operated as partially-mixed. Aeration and mixing equipment are sized to maintain a minimum dissolved oxygen concentration of 2 mg/L.

Influent BOD will be a combination of settleable, colloidal, and soluble waste. Wastewater is pumped from the Preliminary Treatment Building and is discharged into the bottom of the Primary Cells. A portion of settleable BOD will fall out of solution. Empirical data indicates a non-mixed facultative lagoon will remove approximately 40% of influent BOD through sedimentation. As a rule of thumb, it is assumed that 1/2, or 20%, of the influent BOD would be removed through sedimentation. These BOD solids are mixed into the sludge layer in the bottom of the cell and digested anaerobically.

3.8.2.5.1 BOD Removal

Influent BOD to be treated aerobically at Phase 1 conditions is estimated to be 0.8(8,798 lb BOD/day), or 7,038 lb BOD/day. Influent BOD to be treated aerobically at Phase 2 conditions is approximately 0.8(12,061 lb BOD/day), or 9,649 lb BOD/day. Biological treatment systems can be estimated by the following equation:

$$BOD + 1.5\ O_2 + N + P \xrightarrow{Bacteria} 0.5\ Bacteria + CO_2 + H_2O + Nondegradable\ Soluble\ Residue$$

Where BOD = Biochemical Oxygen Demand

O_2 = Oxygen

N = Nitrogen

P = Phosphorus

CO_2 = Carbon Dioxide

H_2O = Water

Heterotrophic bacteria that exist and thrive in natural systems can consume BOD when oxygen is present, and a small amount of nitrogen and phosphorus are available to support cell maintenance. In aerobic growth, energy is released from the conversion of organic carbon. The result is a considerable amount of energy available for synthesis (growing new bacteria). As noted in the previous equation, 0.5 lb sludge is produced for every lb BOD removed. A portion of the cells produced in the previous reaction are digested through endogenous respiration (bacteria eating bacteria), as estimated by the following equation:

$$Bacteria + 1.5\ O_2 \xrightarrow{Bacteria} CO_2 + H_2O + N + P + Nondegradable\ Soluble\ Residue$$

The new bacteria tend to settle out of suspension and fall into the bottom anaerobic layer of the lagoon. Anaerobic bacteria will digest the solids, as discussed under the Sludge section.

BOD removal is a function of removal rate and detention time. The removal rate is a function of water temperature. Microorganism mass under aeration is not a consideration in the lagoon BOD removal reaction, as the microorganism population is dilute, typically less than 100 mg/L VSS. The rate of BOD oxidation in the aerobic zone is a first order reaction, as listed in the following equation:

$$S_e = \frac{S_o}{\left[1 + (k_T)\left(\frac{t}{n}\right)\right]^n}$$

Where: S_e = Effluent BOD

S_o = Influent BOD

k_T = Temperature dependent rate constant

k_{20} = Rate Constant at 20°C = 2.5 d^{-1}

Θ = Temperature coefficient = 1.036

$k_T = k_{20}\,\Theta^{(T-20)}$

T = Water temperature

t = Detention Time, days

n = Number of equal sized cells in system

As the lagoon's water temperature drops, the rate of BOD conversion decreases. Temperature changes "k" as listed in the following equation:

$$\frac{k_1\ at\ T_1}{k_2\ at\ T_2} = \Theta^{T_1 - T_2} = 1.036^{T_1 - T_2}$$

Jackson WWTP lab data was used to calculate a k_{20} value for BOD removal. Included in the equation is the ratio of effluent and influent BOD. Operating data collected during 2015 through Nov. 2017, included BOD analysis without nitrification inhibitor. When seed (carbon source) was added to the effluent BOD sample bottles, the denitrification reaction was driven to an endpoint. The nitrate was included in the BOD measurement, resulting in higher BOD readings with an approximate 20% error.[2] In Nov. 2017, BOD testing was changed to carbonaceous biochemical oxygen demand (CBOD). A nitrification inhibitor was added to CBOD test bottles, preventing nitrate from forming. The following table lists estimated k_{20} values. The effluent BOD values from 2015 through Oct of 2017 were adjusted (reduced) by 20% correction for removing the nitrification demand measured by the BOD test. In the following table, the 2nd column estimated removal rates with the BOD values. The 3rd column estimated removal rates with the CBOD values. The 3rd column values matched published values for similar lagoon systems.

[2] "Study of Raw Wastewater BOD and CBOD Relationship Yields Surprising Results", Greg Farmer et. al., 2006.

Table 3.8.2.5 Estimated BOD Removal Rate

YEAR	CALCULATED K_{20} USING BOD DATA (d^{-1})	ESTIMATED AVERAGE K_{20} USING CBOD DATA (d^{-1})
2015	0.195	0.252
2016	0.162	0.211
2017	0.169	0.209
2018	0.203	0.203
2019	0.203	0.203
ESTIMATED	0.186	0.216

BOD removal was modeled through the lagoon system: Primary Cell 1 & Primary Cell 2, Cell 3A, Cell 3B1, Cell 3B2, and Cells 4A-D. Monthly temperature variation was estimated from averaging water temperature recorded in the Jackson WWTP data from 2015 through 2019. Water temperature decreases as water flows through the lagoon system. The following table lists water temperatures used in the model:

Table 3.8.2.6 Monthly Temperature Variation through Lagoon System

MONTH	CELL 1&2 TEMP (°C)	CELL 3A TEMP (°C)	CELL 3B1 TEMP (°C)	CELL 3B2 TEMP (°C)	CELL 4A-D TEMP (°C)
Jan	5	4.5	5	3.9	4.1
Feb	7	5.7	4.6	4.4	4
March	8	6.6	6.5	4.6	4
April	13	9.3	8.9	7.8	7.2
May	14	14.3	14	15	15.3
June	20	18.5	18.9	18.7	18.6
July	20	21.6	22.2	21.9	19.4
Aug	20	20.6	20.7	20.2	20
Sept	16	16.3	16.2	16.3	16
Oct	11	8.7	8.1	10.8	9
Nov	8	4.3	3.8	3.7	3
Dec	5	7.5	6.2	5	3

The lagoon system was modeled for constant daily flows at the maximum 30-day average flow rate, with consideration of changes in BOD removal rates over temperature variations that occur at the site. This approach was intended to estimate system performance at maximum flow conditions. Actual daily flow changes due to seasonal population variations related to visitor activity. Jackson has its highest flow months during the summer, and its next highest flow months associated with the December holiday

season and ski season. The following table lists estimated BOD removal at the Phase 1 design flow of 5.0 MGD:

Table 3.8.2.7 Estimated BOD Effluent Removal at Q=5.0 MGD

DESIGN FLOW RATE Q = 5.0 MGD					
MONTH	CELL 1&2 $S_{e1\&2}$ (mg/L)	CELL 3A S_{e3A} (mg/L)	CELL 3B1 S_{e3B1} (mg/L)	CELL 3B2 S_{e3B2} (mg/L)	CELL 4A-D S_{e4A-D} (mg/L)
Jan	80	63	46	36	22
Feb	76	59	42	32	19
March	74	57	40	31	18
April	66	50	34	24	13
May	64	46	30	21	11
June	56	38	24	16	8
July	55	36	22	15	7
Aug	55	37	22	16	7
Sept	60	42	27	19	9
Oct	68	51	35	25	14
Nov	75	59	42	32	19
Dec	80	61	45	36	22

Effluent BOD concentrations from Cell 4D were below the NPDES monthly average limit of 25 mg/L.

BOD removal was modeled at the Phase 2 design flow rate of 6.5 MGD. The water temperature variation was the same as used in the Q=5.0 MGD model run. Again, the assumption used was for constant daily flows at the maximum 30-day average flow rate. This approach was intended to estimate the BOD effluent concentrations at flow conditions greater than expected. The following table lists estimated BOD removal at the Phase 2 design flow of 6.5 MGD:

Table 3.8.2.8 Estimated BOD Removal at Q=6.5 MGD

DESIGN FLOW RATE Q = 6.5 MGD					
MONTH	CELL 1&2 $S_{e1\&2}$ (mg/L)	CELL 3A S_{e3A} (mg/L)	CELL 3B1 S_{e3B1} (mg/L)	CELL 3B2 S_{e3B2} (mg/L)	CELL 4A-D S_{e4A-D} (mg/L)
Jan	98	81	67	55	36
Feb	94	77	63	51	33
March	92	75	60	49	32
April	83	66	52	41	26
May	80	61	47	36	21
June	71	53	38	28	15
July	70	50	36	27	14
Aug	70	51	37	27	14
Sept	76	57	43	32	18
Oct	86	69	55	42	26
Nov	93	77	62	51	33
Dec	99	80	67	56	38

Model results indicated BOD effluent concentrations could exceed the 25 mg/L limit during cold months (Jan-April & Nov-Dec), but could meet the limit during warm months (May-Oct).

3.8.2.5.2 Nitrogen Removal

The Jackson WWTP discharge limit for ammonia was established by the Wy DEQ as part of the NPDES permit, last renewed in 2019. A wasteload allocation was used to calculate effluent ammonia limits entering the Snake River (Class 2AB receiving water). A mixing zone study, as outlined in Wy DEQ Water Quality Rules and Regulations, Chapter 1, Section 9, was conducted by the Jackson WWTP staff in 2012 and 2013. Results of the study showed the dilution of the Snake River at the plant's outfall provided a dilution in excess of 50:1. Based on guidance by EPA, Wy DEQ determined that a 100% dilution would pose insignificant environmental risks. Mixing zone requirements ensure that a minimal area of the water body is impacted by the discharge during mixing of the discharge and receiving water. Maximum allowable Ammonia effluent limits established in the 2019 NPDES permit are listed in the following table:

Table 3.8.2.9 Ammonia Limits

SEASON	EFFLUENT LIMIT (mg/L)
May - Sept	342
Oct - April	170

Ammonia can be toxic to fish and nitrate can have negative health effects in drinking water. The Jackson WWTP is operated to optimize nitrogen removal. Influent ammonia concentrations measured throughout the year were a fraction of the discharge ammonia limit. Another smaller source of ammonia in the Primary Cells is from anaerobic digestion. Nitrogen removal occurs naturally in waterways, including aerated-anaerobic lagoons. Ammonia and nitrate levels are monitored as part of the plant's process control program. The following discussion addresses nitrogen removal from the WWTP.

Nitrogen can be removed from a partially-mixed lagoon through ammonia volatilization, ammonia assimilation in algal biomass, and biological nitrification. All forms of nitrogen removal are dependent on pH, detention time, and temperature.

3.8.2.5.3 Ammonia Volatilization

EPA-funded research for ammonia removal from facultative (non-aerated) lagoon has determined ammonia stripping will be the controlling removal mechanism when the pH > 8, water temperature below approximately 15°C, and wind effects keeps the top water layer mixed.[3]

Based on plug flow through the lagoon, the first-order equation for volatilization is listed below:

$$N_e = N_o exp^{-k_T[t+60.6(pH-6.6)]}$$

Where: N_e = effluent total nitrogen, mg/L

N_o = influent total nitrogen, mg/L

k_T = temperature-dependent removal coefficient, $d^{-1} = k_{20}\Theta^{(T-20°C)}$

k_{20} = removal coefficient at 20°C, d^{-1} = 0.006

Θ = 1.04

T = water temperature, °C

t = Detention time, days

pH = 7.3exp[0.0005(Alk)]

Alk = influent alkalinity, mg/L

At water temperatures below 15°C, the kinetic rate of the dilute nitrifying microorganism population is too low to remove ammonia (there are not enough bacteria to consume ammonia at the slow removal rates caused by low temperature). The ammonia removal mechanism will likely be volatilization.

[3] Natural Wastewater Treatment Systems, Crites, Middlebrooks & Reed, 2006, pg 176.

3.8.2.5.4 Biological Nitrification

Lagoon systems can remove ammonia through biological nitrification. Ammonia (NH_3) is converted to nitrate (NO_3^-). This oxidation occurs under aerobic conditions in two steps with (NH_3) being converted first to nitrite (NO_2^-) and then to nitrate (NO_3^-). Nitrogen is oxidized by transferring electrons to molecular oxygen, as shown in the following equation:

$$NH_3 \text{ à } NO_2^- \text{ à } NO_3^-$$

Two distinct groups of bacteria are responsible for nitrification. These include ammonia-oxidizers, a group that includes *Nitrosomonas,* and the nitrite-oxidizers, and a group that includes *Nitrobacter*. Nitrifying bacteria use inorganic sources for their carbon. Thus, rather than using BOD (an organic source of carbon), nitrifiers use carbonates to derive their growth. If too much alkalinity is consumed (water's alkalinity concentration below 40 mg/L as $CaCO_3$), the pH of the lagoon system may drop to undesirable levels, negatively impacting nitrification. Nitrification is an aerobic process, with maximum nitrification rates occurring at DO concentrations of greater than 2 mg/L. The nitrification process consumes 4.57 mg of oxygen and 7.2 mg alkalinity for every 1.0 mg of ammonia-nitrogen converted to nitrate-nitrogen.

Nitrifying bacteria grow slow and have much lower yields as a function of substrate consumed, compared to heterotrophic bacteria that removes BOD. The maximum specific growth rate of nitrifying bacteria is 10 to 20 times less than the maximum specific growth rate of typical heterotrophic bacteria found in the lagoon system.

Lagoons are a flow through process. The solids retention time is the same as the hydraulic detention time. An activated sludge treatment system has a solids retention time in the range of 15 to 30 days, but a hydraulic detention time of 24 hours. The lagoon's short solids retention time makes it difficult to grow the autotrophic nitrifying microorganisms. As the growth rate, k_n, is temperature dependent, the wastewater flows through the lagoon before the nitrifying microorganisms have time to establish a population. At water temperatures of 20°C and higher, the nitrifying growth rate is high enough to grow the microorganisms at a rate that matched the hydraulic detention time.

3.8.2.5.5 Denitrification

Lagoon systems can remove nitrate through biological denitrification. The same heterotrophic microorganisms that consume BOD under aerobic conditions reduce Nitrate (NO_2) to nitrogen gas (N_2) in the absence of dissolved oxygen (anoxic conditions). The microorganisms use oxygen in the nitrate to metabolize organic carbon. The stoichiometric equation for denitrification using methanol as the carbon source is listed below:

$$6\,NO_3 + 5\,CH_3OH + H_2CO_3 \rightarrow 3\,N_2 + 8\,H_2O + 6\,HCO_3^-$$

The major limiting factors for denitrification are presence of oxygen, and lack of a carbon source. The following equation shows the effect of oxygen on the rate of denitrification:

$$q_D = q_{D-max}\left[\frac{K_o}{K_o - S_o}\right]$$

Where: q_D = Nitrate removal rate (g NO_3^-N/ g VSS-d)

q_{Dmax} = Maximum nitrate removal rate (g NO_3^-N/ g VSS-d)
K_o = Half-saturation constant for dissolved oxygen (mg/L) (0.10 to 0.25 mg/L)
S_o = Dissolved oxygen concentration (mg/L)

In lagoon cells with low BOD, denitrification can proceed by using endogenous respiration. The nitrate removal rate is very low. Under these conditions, carbon augmentation is required at an approximate rate of 2.5 to 3 mg/L carbon to 1 mg/L nitrate removed. Carbon source can be untreated wastewater, methanol, ethanol, acetate, molasses, or winery waste.

3.8.2.5.6 Primary Cells

Monthly ammonia removal rates for the Primary Cells were estimated from lab data for influent and effluent ammonia concentrations, water temperature, and flow rates. The path for ammonia removal during cold months is likely volatilization, as low water temperatures inhibit nitrifying bacteria. The maximum volatilization rate at 20°C is 0.0107.[4] Calculated removal rates were estimated at the water temperature, then back-calculated to a removal rate at 20°C, $k_{20°C}$. The values for January through April were below the maximum volatilization rate. During warm months, there are likely several paths for ammonia removal, including volatilization and biological nitrification.

[4] Natural Wastewater Treatment Systems, Crites, Middlebrooks, Reed, 2006.

Table 3.8.2.10 Primary Cells' Ammonia Removal Rates

Date	Temp	S_e/S_o	Flow	DT	k_{nT}	k_{20}
	(°C)		(MGD)	(days)	(d^{-1})	(d^{-1})
January	5	0.803	1.695	41.9	0.0052	0.0094
February	7	0.799	1.731	41.0	0.0055	0.0091
March	8	0.836	1.754	40.5	0.0044	0.0071
April	13	0.742	1.244	57.1	0.0052	0.0069
May	14	0.770	2.168	32.7	0.0080	0.0101
June	20	0.643	3.191	22.3	0.0198	0.0198
July	20	0.532	2.848	24.9	0.0253	0.0253
August	20	0.700	2.418	29.4	0.0121	0.0121
Sept	16	0.357	2.158	32.9	0.0313	0.0366
Oct	11	0.489	1.346	52.7	0.0136	0.0193
Nov	8	0.616	1.225	58.0	0.0084	0.0134
Dec	5	0.614	1.547	45.9	0.0106	0.0191

Although an estimated removal rate, k_{20}, greater than 0.0107 d^{-1} (volatilization removal rate) indicates biological nitrification occurs, there is no way to determine the relative fractions of nitrogen removal mechanisms.

As the water temperature raises from 14°C to the seasonal high of 21°C during June to August, the ammonia removal in the Primary Cells increases to approximately 40% to 50%. A portion of this removal could be volatilization, but biological nitrification controls. Denitrification occurs in the Primary Cells simultaneously. Anoxic zones have a dissolved oxygen concentration near zero, and heterotrophic microorganisms take oxygen from the nitrate. BOD provides a carbon source to drive the denitrification reaction. Nitrogen gas is released to the atmosphere. The Primary Cells' nitrate concentration during these warm months is ±1 mg/L.

As water temperature drops during the Fall and into the Winter months, ammonia removal in the Primary Cells continues, although the removal rate drops. Nitrate concentrations are below ±1 mg/L. The removal process is likely volatilization.

3.8.2.5.7 Secondary Cells

During the cold months of January through May, the secondary cells remove less than 10% of ammonia. The detention time is too low to allow volatilization. As the water temperature raises from 14°C to the seasonal high of 20°C, ammonia removal increases to a high of 50%. Denitrification slows to nearly zero, likely due to the lack of a carbon source. As water temperature drops during the Fall and into the Winter months, ammonia removal in the secondary cells decreases as nitrification stops and volatilization again controls.

3.8.2.5.8 Oxygen Supplied to Lagoons

The stoichiometric oxygen requirement is 1.5 lb O_2 per lb BOD removed. Therefore, the Phase 2 oxygen requirement (minimum) for the primary cells is 14,473 lb O_2 per day. Additional oxygen would be provided for variance in organic loading, oxygen for endogenous respiration (1.5 lb O_2 per lb bacteria digested), and oxygen for ammonia conversion (4.6 lb O_2 per lb Ammonia converted to nitrate).[5] The following equation estimates the oxygen required:

$$N = \frac{N_a}{\alpha\left[\frac{(C_{sw} - C_L)}{C_s}\right](1.025)^{(T_w-20)}}$$

Where N = Equivalent oxygen transfer to tapwater at standard conditions (kg/hr)

N_a = Oxygen required to treat the wastewater (kg/hr)

$\alpha = \frac{Oxygen\ transfer\ in\ wastewater}{Oxygen\ transfer\ in\ tapwater}$

$C_{sw} = \beta(C_{ss})P$ = Oxygen saturation value of wastewater (mg/L)

$\beta = \frac{Wastewater\ sanuration\ value}{Tapwater\ oxygen\ saturation\ value}$

C_{ss} = Tapwater oxygen saturation value at temperature T_w

P = Ratio of barometric pressure at lagoon site to barometric pressure at sea level

C_L = Minimum DO concentration to be maintained in wastewater

C_s = Oxygen saturation value of tapwater at 20°C and 1 atmosphere, 9.17 mg/L

T_w = Wastewater temperature (°C)

[5] Natural Wastewater Treatment Systems, Crites, Middlebrooks & Reed, 2006, pg 127.

$$N = \frac{870}{0.9\left[\frac{(6.62 - 2)}{9.17}\right](1.025)^{(21-20)}} = 1{,}872\ lb\ O_2/hr$$

3.8.2.5.9 Aire-O_2 Triton Aerators

The Aire-O_2 Triton Aerators provide approximately 2.8 lb O_2/BHP-hr at 32.5 kW. The TR50 Model was tested for clean water oxygen transfer in September, 2015.[6] Each aerator provides approximately 120 lb O_2/hr. Currently, 7 aerators are installed in Primary Cell 1, and 7 aerators are installed in Primary Cell 2, for an estimated oxygen capacity of 1,680 lb O_2/hr. Additional aerobic treatment is available from the 4 Triton aerators installed in Cell 3A, and the static tube system in Cells 4A through 5.

3.8.2.5.10 Medora Grid Bee Mixers

Additional aeration and mixing are provided by the Medora Grid Bee GF10000 mixers installed in Primary Cells 1 and 2, Cell 3B1 and 3B2. Refer to Figure 6 for the location of aeration and mixer equipment. Grid Bee mixers (U.S. Patent No. 7,285,208 B2, dated Oct 23, 2007) are low-horsepower (2 HP or less) mixers that circulate water from just below the level of the adjustable draft tube to a large horizontal pattern at the water surface. The Grid Bee mixers have been operated with the bottom of the draft tube set at 5 to 6 ft below the water surface. Water will become saturated with oxygen and fall back into solution. Soluble BOD and ammonia will be brought into contact with suspended bacteria. Solids will fall back into the bottom anaerobic layer. Based on research of partially-mixed lagoons, the pumping action mixes the lagoon's upper aerobic layer, and frees trapped ammonia and nitrogen gases to oxidize in the aerobic zone. No dissolved oxygen is discharged into the bottom anaerobic zone. The equivalent mixing energy for the GF 10000 is estimated by the following equation:

$$\frac{Q_{gpm}\ x\ Head_{ft}}{3960} = \frac{10{,}000\ gpm\ x\ 4\ ft}{3960} = 10\ HP$$

3.8.2.5.11 Energy Associated with Treatment Capacity

A lagoon system's aeration and mixing equipment have a large energy requirement and comprise the largest operation expense for a facility. Improvements in this type of equipment over the years has reduced the energy cost. Jackson WWTP has made upgrades to replace older, less-efficient equipment with the latest technology. In the original design, two Inca Grid headers provided diffused aeration and mixing to the top 4 ft of Primary Cell No. 1. Primary Cell No. 2 was fitted with static tube coarse-bubble aerators over the West, 15-ft deep portion. Cell No. 2 steps down to 17 ft deep in the last (East) portion of the cell and was unaerated. The operations intent was to provide redundant blowers. Aeration and mixing could be met with one blower for each system out of service. The blowers were single speed. The system operated with 180 HP running at all times. The following table lists blowers associated with the original system.

[6] Clean Water Oxygen Transfer Test, Aire-O_2 Triton TR Series Process Aerator/Mixer, Sun-Nan Hong, PhD, PE, 2015.

Table 3.8.2.11 1979 Project Blower Equipment

West Blower Building		East Blower Building	
EQUIPMENT	MOTOR SIZE	EQUIPMENT	MOTOR SIZE
Blower 1	100 HP	Blower 1	40 HP
Blower 2	100 HP	Blower 2	40 HP
Blower 3	40 HP		
Blower 4	40 HP		

Aeration equipment was upgraded during the 1998 Modification Project. Six 75-HP mechanical aerators were installed in Primary Cell No. 1 and eleven 100-HP mechanical aerators were installed in Primary Cell No. 2. The aerators were designed to aerate and mix shallow lagoons or provide an aerobic shallow layer to the top of the Primary Cells. These aerators could be operated independently, to better match the oxygen requirement. The design of the aerator was to violently mix the water to bring it in contact with the atmosphere. The aerators were operated continuously in an effort to keep the lagoon contents as mixed as possible. This traditional operations approach resulted in over-aeration. Running more aerators than required to provide process requirements did not improve treatment, but did waste energy, and therefore money.

More recently, the mechanical aerators have been upgraded to Aeration Industries Air-O_2 Triton 50-HP aspirating mechanical aerators fitted with a 7.5-HP regenerative blower. This type of aerator draws ambient air into the mixer and sends small-sized bubbles into the mixing zone. The aerator transfers more oxygen into the water while using less energy. In addition to the Triton aerators, mixers have been installed. Medora Grid Bee GF1000 hydraulic mixers provide an equivalent of 10 HP of mixing with a single-phase 120 VAC motor. Dissolved Oxygen sensors are installed in the cells and send real-time dissolved oxygen (DO) concentration data to the plant's SCADA system. The number of aerators operated at one time are adjusted based on the DO concentration in the lagoon. The operational setpoint varies between 1.0 and 2.0 mg/L O_2.

3.8.2.6 Sludge Production

Sludge is an unavoidable function of wastewater treatment. The partially-mixed lagoon system is able to convert BOD and Ammonia aerobically, then digest the sludge anaerobically. Sludge buildup in the lagoons occurs at a low annual rate.

3.8.2.6.1 Aerobic Sludge Production

Partially-mixed lagoon systems remove BOD and ammonia from wastewater through aerobic microorganisms (cells) consuming organic matter. The products of the reaction are carbon dioxide (CO_2), ammonia (NH_3), end products, and new cells. The amount of new cells produced per amount of BOD removed is called sludge yield, and ranges from 0.37 to 0.5 lb cells per lb BOD removed. A portion of the cells will be digested by cells through endogenous respiration, at an approximate rate of 0.06 d^{-1}. Nitrification uses aerobic, autotrophic cells to convert ammonia to nitrate. The nitrifier cells use CO_2 for energy, and have an associated sludge yield of less than 0.1 d^{-1} (0.1 lb cells per lb ammonia removed). The sludge collected in the bottom of the lagoon will contain volatile suspended solids (VSS) and non-volatile suspended solids. The volatile fraction will be used to consume organic matter. The non-volatile fraction will take up space in the bottom of the lagoon, reducing the available detention time.

3.8.2.6.2 Anaerobic Sludge Digestion

Partially-mixed lagoons digest sludge by letting the solids fall out of suspension and settle into an anaerobic sludge layer in the bottom of the lagoon. Microorganisms breakdown the solids, and ultimately convert the BOD to methane gas. The net production is approximately 5 ft^3 methane per 1 lb of BOD digested.

Anaerobic digestion is a two-stage, interrelated process: Acid formation and methane production. Refer to Figure 7, "Lagoon Kinetics", for an illustration of the inter-relationships of anaerobic digestion. During the acid phase, facultative anaerobic bacteria breakdown complex organic compounds (carbohydrates, fats, and proteins) to simple organic compounds (short-chain volatile organic acids). The following equation represents anaerobic decomposition of carbohydrate to bacteria with formation of organic acids:

$$5(CH_2O)_x \xrightarrow{bacteria} (CH_2O)_x + 2CH_3COOH + Energy$$

Acid formers are not sensitive to pH and sulfides, often plentiful in the water, and not the rate-limiting step in anaerobic sludge digestion. The VOAs, alcohols, and other organic compounds can be used by aerobic microorganisms, resulting in BOD reduction. Bicarbonate buffer present in solution neutralizes the acid formed in the previous reaction:

$$2CH_3COOH + 2NH_4HCO_3 \xrightarrow{bacteria} 2CH_3COONH_4 + 2H_2O + 2CO_2$$

During the growth of methane bacteria, ammonia acetate is decomposed to methane and regeneration of bicarbonate buffer:

$$2CH_3COONH_4 + 2H_2O \xrightarrow{bacteria} 2CH_4 + 2NH_4HCO_3$$

Methane-producing bacteria are sensitive to pH, detergents, changes in alkalinity, ammonia nitrogen concentrations, temperature, and sulfides. Methane bacteria are autotrophic, and have a slow growth rate. Anaerobic digestion has a sludge yield in the range of 0.14 d^{-1}. Methane fermentation decreases below 12°C and stops at temperatures 4°C and below. Solids will be stored during the Winter and digested during the Summer. Anaerobic digestion will exert a BOD load on the zone immediately above. Oxidized anaerobic products diffuse up through the sludge into the aerobic zone.[7] Over time, solids will build up. Empirical data indicates lagoon systems located in cold climates require sludge removal at least once during the life of the lagoon system.[8]

3.8.2.6.3 Sludge in the Jackson WWTP

A bathymetric survey of Primary Cell 1, Primary Cell 2, and Cell 3A was conducted in 2017 and again in 2019.[9] The survey method included use of a high resolution HyDrone remote-controlled vehicle (RCV) and Hydrolite-TM Echosounder. The interface between the top of the anoxic zone slurry and the water

[7] Theory & Practice of Biological Wastewater Treatment, Kriton Curi & W. Wesley Eckenfelder, Jr., 1980, page 52.
[8] Natural Wastewater Treatment Systems, Crites, Middlebrooks & Reed, 2006, pg 440.
[9] "Jackson WWTP Sludge Depths 2019", Keller & Associates, Idaho Falls, ID, 2019.

was recorded over the entire lagoon surface. The survey does not measure the location of the interface between the bottom of the anoxic zone slurry and the anaerobic sludge bottom layer.

The results recorded a net increase in sludge volume of 3.9% in each of the two primary lagoons, and a net decrease of 0.8% in Cell 3A, over the 2-year period. An annual sludge volume increase of 2% ± 2% is expected. The survey indicated several locations where mounds had formed. Primary Cell 1 appeared to have a mound near the West end of the center baffle. Primary Cell 2 appeared to have a mound in the Northeast corner. Cell 3A appeared to have a mound starting at the Northwest corner and extending to the South edge. Refer to Figure 6, "WWTP Lagoons Flow Pattern", for information on current aeration/mixing equipment installed, and flow patterns through the lagoons. The following discussion outlines flow patterns through the cells, and preliminary areas that require further investigation related to sludge deposition.

Primary Cell 1 was constructed as part of the "Wastewater Treatment Plant Phase II" project in 1980.[10] A 24-inch diameter reinforced concrete pipe (RCP) connects the Preliminary Treatment Building's pump station to the cell's inlet pad. A center baffle was installed to direct flow in a counter-clockwise pattern starting at the Northeast corner. Aeration and partial mixing were provided by 2 Inca Grids, one at the West end and the other at the East end. Some water flowed from the level-control structure at the Southeast bump-out, through a 30-inch pipe to the Northwest corner of Cell 3A. Some water will be kept in the flow path and cycle through the lagoon a second time. As part of a 1998 upgrade project, the Inca Grid aeration system was replaced with six mechanical aerators installed along the flow path. This equipment maintained the flow pattern, but provided large-bubble oxygen transfer and "egg-beater" patterned mixing. This type of aerator was rather inefficient compared to equipment available today. The current configuration of aeration/mixing equipment in Cell 1 is 7 Air-O_2 Triton 50-HP aspirating aerators with 7.5 blowers located around the perimeter of the lagoon to maintain the counter-clockwise flow pattern. A Medora Grid Bee GF10000 mixer is installed between each Triton aerator. The west end of the baffle appears to be shielding the flow, forming a quiescent spot where solids can fall out of suspension.

Primary Cell 2 was constructed as part of the "Wastewater Treatment Plant Phase II" project in 1980. The western 2/3 of the lagoon was fitted with static tube aerators. The eastern 1/3 of the lagoon was not mixed or aerated, to allow solids to fall out of suspension. Influent is pumped from the Preliminary Treatment Building's pump station to the cell's inlet pad. The line is a 30-inch RCP between the wet well and the Cell No. 1 Level Control Structure. The line is 36-inch diameter RCP between the control structure and the cell's inlet pad, at the West end of the cell. Flow makes a single pass through the cell. As part of a 1998 upgrade project, the static tube aerator matrix was replaced with eight mechanical aerators. These aerators were oriented to push flow to the East. Effluent flows through a 42-inch RCP located at the East end of Cell 2 to Cell 3A. The current configuration of aeration/mixing equipment in Cell 2 is 7 Air-O2 Triton 50-HP aspirating aerators with 7.5-HP blowers located around the perimeter of the lagoon. Five Medora Grid Bee GF10000 mixers are installed along the centerline of the lagoon. A Medora Grid Bee GF10000 mixer is located in the Northeast corner of the lagoon. There appears to be a quiescent spot at the Northeast corner of the lagoon where solids can fall out of suspension.

Cell 3A was constructed as part of the "Wastewater Treatment Plant Phase II" project in 1980. Water flows from Primary Cell 1 through a 30-inch RCP at the Northwest corner. Water flow from Primary Cell 2 through a 42-inch RCP near the Southwest corner. Effluent flows out of the lagoon at the Northeast

[10] "Wastewater Treatment Plant Phase II", ARIX Project Number 79-5-CIV-0140, 1979.

corner, through a 30-inch RCP. The cell was designed as a quiescent pond, without aeration/mixing equipment. As part of the 1995 Upgrade project, a baffle curtain running from the Cell's North side to the South side was installed to divide the quiescent cell into 2 sections. The current configuration includes four Triton aspirating aerators with blowers to keep the cell aerated and partially mixed. It appears the baffle shields the wastewater flow from the aerators and allows solids to fall out of suspension on the West side of the lagoon. There appears to be another area of sludge build-up at the Southeast corner of the lagoon.

Volatile Solids sampling is planned to be conducted in the Spring, after the ice clears off the lagoons. Samples will be collected from the mounds, and around the inlet structures. Based on these test results, it is recommended a remediation plan be implemented that include partial solids removal and relocating aeration/mixing equipment to change flow patterns

3.8.2.7 Treatment Plant Capacity Evaluation

From the discussion in this section, it is demonstrated that the WWTP is able to meet the current WYDEQ discharge permit requirements in the summer and winter for the design plant flow of 5.0 MGD, which is the permitted maximum treatment daily volume. This analysis indicated that the WWTP would be able to meet the discharge requirements for a summer maximum daily volume of 6.5 million gallons with minimal improvements to the plant and operations. The discharge permit would have to be amended through WYDEQ to address the additional daily volume.

3.8.3 Lift Stations

The TOJ lift stations are well maintained and in relatively good shape. Some of the lift stations are quite dated and in need of upgrading and/or replacement. It is recommended that the TOJ connect all of the lift stations to the SCADA System. Although several have dialers which alert operators to faults, connecting the lift stations to the SCADA will allow operators to perform real time observations to the lift stations and assess any fault conditions remotely before requiring an operator visit to the site to ascertain the causes of faults. At this time the TOJ has included a SCADA upgrade to the lift stations in FY 2021 of the CIP plan, to be discussed in subsequent sections. To review if the pumps are sized appropriately run times of each of the pumps was acquired from the TOJ during the high flow months of June and July of 2019. WYDEQ requires that lift station pumps, if run intermittently, start no more than once every 10 minutes.

The Spring Gulch Lift Station is the newest of the seven. This lift station was constructed in 2018. Due to the recent construction, there are no improvements recommended for this lift station. Additionally, this is the only lift station which is connected to the TOJ SCADA System. The pumps in the lift station are operated with VFD's which results in high run times. For the month of June, the pumps combined for 467 hours and in July 469 hours. These pumps are set to run somewhat continuous and maintain a level in the wet well. The pumps are able to convey the existing flow because the sewage levels can be maintained in the wet well.

The Berger Lane and Martin Lane lift stations are both quite dated. Due to limited flows to these wet wells, the pumps see limited run time. During July of 2019 the Martin Lane pumps ran for a total of 14 hours and Berger Lane pumps ran 1.4 hours. For the Martin Lane pumps this results in run times of 28

minutes per day. Berger Lane pumps flow 3 minutes per day. Both of these lift stations cycle much less than once every 10 minutes. From TOJ records the force mains are indicated as 4" PVC, with the pumps supplying 200 gpm there is adequate pipeline velocities of 2.5 feet per second. Due to age the pumps, wiring, and controls need replacement within the next 5 years. In discussions with operators these components are scheduled for replacement in the Summer of 2020. The concrete vaults and wet wells appear to be serviceable and do not need to be replaced. Neither of these lift stations have emergency generators. Per WYDEQ, a lift station needs an emergency generator if it serves more than 50 residences. These facilities serve less than the 50 residences. Installing new pumps, electrical components, and controls will extend the life of the facilities out in the distant future.

The Three Creek Lift Stations are both in good condition but are 14-15 years old and require some maintenance. In discussions with operators, both lift stations are going to have pumps and controls replaced in the Summer of 2020. Total July 2019 pump run times in Three Creek A pumps is 31.3 hours and Three Creek B is 4 hours. These run times result in Three Creek A pumps running 63 minutes per day and Three Creek B pumps running 8 minutes per day. Both of these stations cycle greater than once every 10 minutes. Three Creek A flows 320 gpm into a 6-inch HDPE force main. These flows exceed the minimum 2.5 feet per section velocity requirement in the force main. Existing flow capacities for both lift stations are adequate. In addition to the new pumps and controls there are some additional items needing addressed at each location. The Three Creek A Lift Station has a dewatering pump in the dry well which has failed and needs to be replaced. Also, as with the other lift stations, connecting to the SCADA would be beneficial. There is a flow meter at the lift station which should be connected to the SCADA so that flows can be totalized remotely. Three Creek B receives very little flow, it like the Martin and Berger Lane Lift Stations does not require an emergency generator. It is recommended that the dialer at a minimum be repaired or connected to the SCADA as the other lift stations.

Evaluation of both of the Cottonwood Lift Stations revealed that they are also in good condition. The Cottonwood Park pumps ran for 44 hours in July of 2019. This resulted in run times of approximately 88 minutes per day. The Cottonwood Flat pumps ran 16 hours in July 2019 or 32 minutes per day. Both of these lift stations cycle less than one time per every 10 minutes. The Cottonwood Flat lift station flows 100 gpm into a 4-inch HDPE force main resulting in velocities above 2.5 feet per section. The Cottonwood Park lift station flows 400 gpm into a 6-inch force main, also resulting in velocities above 2.5 feet per section. The pumps are adequately sized for the lift stations. Both sites have had pumps, electric, and controls replaced in 2019. There are emergency generators at both locations. Again, the only recommendation in these pump stations would be to connect to the SCADA system to monitor at a remote location.

3.8.4 Collection System

The TOJ has been working through replacing old and dated sewer mains since the 80's. Although many of the mains have been lined or replaced, there are still several locations through Town where clay pipes still exist. The known locations of these mains have been identified by the TOJ and marked for replacement in the 10 year CIP project listing. Table 3.8.5.1 below indicates the identified CIP Sewer Plan through fiscal year 2030. In addition to the identified clay pipelines, there are also known locations in the collection system that capacity and maintenance concerns exist. Several of these required improvements

are noted in the CIP plan. The TOJ has also identified sewer mains which are in locations that make it difficult to maintain or areas of high ground water. There are also known locations in the collection system where pipe capacities are exceeded and pipe upsizing may be required. As noted in previous sections, the hydraulic modeling of the sewer system did not reveal any additional deficiencies in the sewer system.

3.8.5 Sewer System Deficiencies

Based on the review of the existing sewer system, review of WWTP design, performing hydraulic analysis of the collection system, and discussion with operators and the TOJ Public Works department, several upgrades to the sewer system are recommended. Several of these have been previously identified and marked for future funding the TOJ's 10 year CIP plan. Other additional recommendations have been identified from this existing capacity study.

3.8.5.1 Existing CIP Sewer Projects

The TOJ provided NE with a list of CIP sewer improvement projects which have been forecasted through Fiscal Year 2030. Several of these projects are being proposed to be completed with the TOJ Complete Streets Program. As with the water, the TOJ has determined that in conjunction with surface improvements to streets and sidewalks, it is a good practice to improve buried utilities. Several of the proposed projects are to replace existing clay sewer mains. Note that several lift stations are planned for pump and control improvements during summer of 2020. These projects are not included in the list below. Those pump stations are the Martin Lane and Berger Lane. A list of the CIP projects is noted in Table 3.8.5.1 along with the fiscal year being proposed and a brief description of the project need. Also, for project understanding, Appendix F contains exhibits for the proposed projects.

Table 3.8.5.1 TOJ 10 Year Sewer CIP Plan

Appendix F Exhibit	Project	Description	Purpose/Goal	FY
1	West Cache Creek Dr/Alley	Replace 1440' of clay sewer main with 8" PVC or HDPE sewer main	Replace undersize clay sewer main.	2021
	SCADA Lift Stations	Connect the remaining 6 (of 7) lift stations to mainframe SCADA system	Complete LS SCADA access will assist Collections Team in operation and maintenance	2021
2	WWTP Wetland Upgrade	Increase size and detention time of current wetland system located on Game and Fish Property	Achieve improved water quality while creating wildlife habitat, where wetlands additionally treat and recycle wastewater	2021
	Save the Block Sewer (Cache Tube)	Replace 260’ of sewer main in the alley	Replace a sewer main into the TOJ right of way that currently crosses private property.	2021
3	Rancher St	Replace 350' of clay sewer main with appropriately sized PVC or HDPE sewer main on Rancher St	Project coincides with Complete Street Project and replaces undersized old clay pipeline.	2022
4	Flat Creek Sewer	Replace 270' of sewer in the Flat Creek Dr corridor from Snow King to Karns.	Project coincides with Complete Street Project and also removes much of the sewer main in Karns Meadow.	2022
5	Gill Ave & Alley	Abandon 1162' of sewer line and connecting current laterals into existing sewer line to the south (on Gill Ave) and replace old 8" clay sewer line with appropriately size PVC or HDPE in the alleyway to the north	Replace undersize clay sewer main.	2022
6	Gregory Lane Sewer Improvements	Replace 3510' of clay sewer main with appropriately sized PVC or HDPE sewer main in Gregory Ln from High School Rd to Hwy 89, including Dusty Acres	Replace undersize clay sewer main.	2023
7	Vine St	Replace 246' of 8" PVC sewer pipe with appropriately sized PVC or HDPE sewer main on Vine St	Project coincides with Complete Street Project and replaces undersized old clay pipeline.	2024
9	Hillside Townhomes	Replacing 2130' of old clay sewer pipe with appropriately sized PVC or HDPE sewer main on Snow King Ave	Project in conjunction with redesign of Snow King Ave/Scott Ln intersection and replaces undersized old clay sewer main.	2024
	WWTP Backup Blower	Add additional blower at the treatment plant	Provide a backup blower at the treatment plant to eliminate a possible emergency situation.	2024
8	Snow King & Maple Way	Replace 2000' of old clay sewer pipe with appropriately sized PVC or HDPE sewer main on Snow King Ave	Project in conjunction with redesign of Snow King Ave/Scott Ln intersection and replaces undersized old sewer main.	2025
	Flat Creek Sewer North	Replace 1300' of sewer in the Flat Creek Dr corridor from Karns to Broadway.	Project coincides with Complete Street Project and also removes much of the sewer main in Karns Meadow.	2026

Table 3.8.5.1 TOJ 10 Year Sewer CIP Plan (Continued)

Appendix F Exhibit	Project	Description	Purpose/Goal	FY
	West Karns	Replace 1200' of sewer in the Karns from Flat Creek to the alley along the east side of the Fairgrounds	Project coincides with Complete Street Project and replaces undersized old clay pipeline.	2026
11	East Broadway Sewer	Replace 570' of 8" clay sewer main with appropriately sized PVC or HDPE sewer main on E Broadway Ave	Project coincides with Complete Street Project and replaces undersized old clay pipeline.	2027
10	Halpin Sewer Improvements	Replace 955' of clay sewer main with appropriately sized PVC or HDPE sewer main from Hwy 89 to Shelby Ln (1080 S Hwy 89)	Replace undersize clay sewer main.	2027
12	Les Jones Alley	Replace 810' of sewer main with higher capacity PVC sewer main	Replace undersize clay sewer main.	2027
13	Powderhorn Ln Phase 1	Replace 1500' of sewer main with appropriately sized PVC or HDPE sewer main on Powderhorn Ln north of Maple Way	Replace undersize clay sewer main.	2028
14	Powderhorn Ln Phase 2	Replace 1500' of sewer main with appropriately sized PVC or HDPE sewer main on Powderhorn Ln south of Maple Way	Replace undersize clay sewer main.	2028
15	Upper Cache Creek Phase 1	Replace 1660' of sewer line with PVC	Project coincides with Complete Street Project and replaces undersized old clay pipeline.	2029
16	Cottonwood/High School Road	Replace 1650' of 15" sewer main with appropriately sized, higher capacity PVC or HDPE sewer main	Replace undersize clay sewer main.	2029
17	Broadway Hwy 22 to Animal Hospital	Replace 600' of 8" PVC sewer main with 12" PVC sewer main within WYDOT ROW from the lateral crossing W Broadway from Powderhorn Ln, west to Hwy 22 and improvements completed in 2017	Replace undersize clay sewer main.	2029
18	Upper Cache Creek Phase 2	Replace 880' of aging 8' clay sewer line with 8" PVC or HDPE	Replace undersize clay sewer main.	2030
19	Barron's Line	Replace 150' of clay sewer line with 8" PVC or HDPE, line may need to be lined due to its location under existing bldgs	Replace undersize clay sewer main.	2030
20	Wapiti & Absaroka Red Line	Replace 360' of 8" PVC sewer line with 8" PVC or HDPE	Replace undersize clay sewer main.	2030
	Crabtree Lane	Crabtree Lane Sewer Replacement	Project coincides with Complete Street Project and replaces undersized old clay pipeline.	2031
21	Meadowlark Lane	Replace 630' of 8" sewer pipe with appropriately sized PVC or HDPE sewer main on Meadowlark Ln	Move existing sewer line into roadway for easier maintenance	2031

3.8.5.2 Additional Recommended Sewer Projects

Review of the sewer system did not identify any additional improvements required in the TOJ system other than those already noted in the CIP list and replacement of the pumps and controls for the Berger and Martin Lane Lift Stations. NE does recommend an update of the GIS System and Sewer Model. This will require additional field work to identify pipe sizes, types, and inverts in locations where information is lacking or nonexistent.

Per the discussion of infiltration and inflow in Section 3.5.1, NE recommends the TOJ address infiltration from the Wilson Sewer District and Spring Creek users. Also, NE is recommending the TOJ address inflow from the Rafter J Sewer System. Table 3.8.5.2 identifies the additional sewer system recommendations from the discussion.

Table 3.8.5.2 NE Sewer System Improvements Recommendations

Appendix F Exhibit	Project	Description	Purpose/Goal
	Sewer GIS Update	Perform field work to gather missing data from the Sewer GIS data, including pipe types, sizes and inverts.	Assist the TOJ in assessing the existing conditions of the system and evaluate what is buried in the ground.
	Sewer Model Update	Perform an update to the model including all missing information in the existing model.	Update the model with all current pipe types, sizes and inverts as many are missing in the model.
	Inflow Review	Address current flood irrigation inflow with outlying districts.	Reduce inflow during June/July and September from out-of-town users.
	Rafter J Inflow	Address inflow in Rafter J with the subdivision.	Address high flows into the sewer system during high ground water periods.

4 Introduction

Nelson Engineering (NE) completed this Future Water and Sewer Capacity Analysis for the Town of Jackson (TOJ) in conjunction with the Existing Water and Sewer Capacity Analysis. This analysis allows the TOJ to plan future needs in both the water and sewer systems as the buildout potential of the TOJ and Teton County continues to be realized.

4.1 General Description

This analysis includes working with the TOJ and Teton County (TC) Planning Departments and current land development regulations (LDRs) to predict future buildout projections. Existing water and sewer use by various uses in the areas currently served by the TOJ water and sewer system was used to extrapolate out the future demands.

These future water and sewer projections were then modeled in the existing water and sewer system configurations to evaluate future capacity needs within the systems.

4.2 Analysis Objectives

The objectives of this study are to determine overall demands on both the water and sewer systems. With the future demands projected, the capacity requirements of the system were analyzed. The water and sewer demands will be calculated based on the LDR's for both the TOJ and areas outside the TOJ. Existing facilities will be evaluated along with potential future contract service areas. The analysis will result in recommendations given to the TOJ to allow future planning of the systems.

5 Future Use Projections

Below is a description of the methodology used to project water demand and sewer volumes (flows) at buildout of the current zoning, which includes base zoning and density bonus incentives capped by the Comprehensive Plan. At recent growth rates, current zoning will accommodate about 60 years of growth, meaning this is a 2080 water demand and sewer flow projection. In reality, growth rates will be affected by market scarcity as the community approaches regulatory buildout. The Jackson/Teton County Comprehensive Plan currently includes a growth cap. For the purpose of this study that means that the overall community sewer flow is fixed. The source of the flow can move around with land use decisions, but additional flow cannot be added. Additional flows from behavior changes are not anticipated by this study. The assumptions made regarding location of development are for infrastructure modelling purposes and are not a guarantee of service to any location.

Water Demands and sewer flows were projected for the entire County regardless of whether the Town of Jackson provides water and sewer service to the property, however only those properties to which the Town is currently committed to provide water and sewer service were used in capacity projections. The contracted service area can grow independent of current zoning, without affecting any of the methodology described below. However, if zoning changes within the current contracted service area, water demands and sewer flow projections may need to be updated.

The three steps in the buildout flow projection were:

1. Determine August (peak water) and winter (sewer) flow by land use.
2. Project land use at buildout.
3. Apply the flow-by-land-use model to the projected buildout.

5.1 Determine August (Peak Water Flow) and Winter (Sewer Flow) by Land Use

5.1.1 Land Use Data

In 2012, the Town and County inventoried the land use of every building in Teton County as of January 1, 2012 as part of the 2013 Employee Generation Nexus Study. The base data used was the Teton County Assessor's record of improvements, which quantifies a floor area and use for almost all buildings in Teton County. Town and County Planning staff verified the Teton County Assessor's records against Planning Department records. Planning staff parsed multiuse buildings into land use categories and supplemented the Assessor's records with Planning records for tax-exempt parcels and parcels for which tax calculation is independent of the floor area of improvements on the site.

In 2017, Planning staff used building permit and use permit data from 2012 through 2016 to update the inventory to January 1, 2017 as part of the development of the Teton County Traffic Model. The building permit and use permit data used is compiled annually to track community growth; however, the January 1, 2017 inventory is the most recent compilation of that data to create a land use map.

The land uses tracked by the Town and County are:

- Agriculture
- Outdoor Recreation
- Detached Single Family Dwelling
- Attached Single Family Dwelling
- Apartment
- Accessory Residential Unit
- Mobile Home
- Restaurant/Bar
- Lodging
- Office
- Retail/Service
- Industrial
- Institutional

5.1.2 Flow Data

The Town provided flow data for fiscal years 2017-2019 as well as the first half of fiscal year 2020. Flow data was spatially identified by service address. The service addresses were matched to the public GIS point file of street addresses, which was downloaded from the Teton County GIS website on December 9, 2019. Once matched to an address point, each flow was associated with a PIDN for all TOJ water and sewer users.

5.1.3 Matching the Land Use Data to the Flow Data

Land use and flow data were matched by PIDN. On condominium or townhouse sites with common area, all condos and townhome lots were consolidated with the common area to create a single PIDN. Where multiple buildings exist on a single PIDN, the land use for each building was summed by type to determine the land use for the PIDN. For example, a PIDN with 3 buildings: a 5,000 square feet (sf) office building and 2 – 800 sf detached rental units, appears the same as a PIDN with a 6,600 sf mixed use building that has 5,000 sf of office and 2 apartments adding up to 1,600 sf. Similarly, where multiple meters exist on a single PIDN the flows were summed by flow type (domestic or irrigation) to determine the flow for the PIDN. There were 2,266 PIDN records that had flow and land use data.

5.1.4 Determining Average Flows by Land Use

Once flows were matched to land uses, the data was analyzed using a variety of methods in order to determine the best model for estimating flow from land use data. Each model outcome was back-tested against the actual August and winter 2017 flows. The 2017 flows were utilized to match the Town and County land use data's date. The average error and mean squared error (MSE) produced by each model was used to compare the models. Average error is the average of the differences between modeled and actual flow for each PIDN. MSE is the average of the squares of the differences between modeled and actual flow for each PIDN. Because the system components being modeled (e.g. water tanks, main lines, treatment plant) aggregate flows from multiple properties, lower average error (aggregate accuracy) was valued over individual property accuracy (described by MSE). That said, none of the models produced an anomalous MSE relative to its average error.

Average error (not MSE) is reported in the table below. A negative average error means that the model underestimated actual flow. A model with an error closer to zero (positive or negative) is more accurate. The average error tabulated is in gallons per PIDN for the month of August 2017. The table includes the average error for all parcels, as well as the average error for multi-use versus single-use parcels.

Table 5.1.4 Model Average Error

Average Error between August 2017 Parcel Flow Estimated by Model and Actual (gallons)			
Model	***All Parcels***	***Multi-Use***	***Single-Use***
Average flow for individual use from parcel with only that use by floor area	-4,483	4,102	-5,948
Average flow for individual use from parcel with only that use by unit for residential and lodging	-3,210	11,357	-5,696
Regression for individual use with no constant by floor area	-2,718	6,296	-4,257
Regression for individual use with no constant of by units for residential and lodging	-5,869	10,833	-8,720
Regression for individual use with constant by floor area	-983	7,983	-2,513
Regression for individual use with constant by units for residential and lodging	-1,030	14,343	-3,653
Regression with constant by floor area, with uses grouped as single-family (DSFD, ARU), multi-family (ASFD, Apt., MH), lodging, restaurant/bar, retail/service/office, industrial, and institutional	-867	4,863	-1,845

The best estimator of actual flows (highlighted in the table) is a linear regression that incorporates a constant and treats groups of like land uses as independent variables. Regression analysis allows for the incorporation of a per parcel constant so that the independent effect of each square foot of land use is more accurately described. The model that groups like uses to average out anomalies, without over-grouping to negate the real differences in water usage was the most accurate. Grouping like uses results in significantly lower average error, while also reducing the number of use mix assumptions required in estimating buildout. Across all models, the best estimates rely on floor area rather than unit count to predict residential and lodging water flow.

The average error of -867 gallons per parcel is a 1.4% error – average August 2017 flow per parcel was 61,477 gallons. The same model was the best estimator of winter flows. In Section 5.3 the water model was further refined to address irrigation irregularities.

5.2 Projected Land Use at Buildout

5.2.1 Parcel Size and Zoning

What can be built on a parcel is a function of the parcel's size and its zoning. Because the best model from Section 5.1 relies on floor area, the most important part of the zoning allowance is the allowed floor area. The gross site area of each parcel as of December 9, 2019 was multiplied by the maximum Floor Area Ratio (FAR) for the zoning district of the parcel to determine the maximum floor area on the parcel. It was assumed that every parcel would develop or redevelop to its maximum FAR as if there were no existing uses. Condominium and Townhouse plats were flattened to look at the site as a single parcel. Parcels with split zoning were essentially treated as two parcels for the purpose of this estimate because that is how the allowed development on such parcels is calculated.

The FARs used for each Town zone are tabulated below. The MHP and P FARs were reverse calculated so that the result was little to no increase in floor area in those zones. In the NL-1, NL-2, and R zones a 10,000-sf limit per parcel was applied to a maximum density calculation in addition to applying the FAR to smaller parcels that cannot be subdivided. Where detached single-family subdivision is allowed, the regression constant was multiplied by the allowed lot density to account for subdivision. The P/SP FAR was estimated so that the total amount of institutional floor area at buildout matches the current ratios of institutional use and other uses. The allowed floor area in the Snow King Master Plan was taken from the Master Plan.

Table 5.2.1.1 Town of Jackson Zoning FAR

Zoning	FAR	Zoning	FAR	Zoning	FAR	Zoning	FAR
TS	1.83	CR-3	0.4	NL-5	0.4	PUD-UR	0.65
TS/LO	1.83	OR	0.46	NL-4	0.4	PUD-NH-1	0.65
UC/LO	1.3	BP	0.41	NL-3	0.45	PUD-NM-2	0.4
DC/LO	1.3	PR-SK	n/a	NL-2	0.4	PUD-NL-5	0.4
CR-1	0.65	MHP	0.1	NL-1	0.4	PUD-NL-3	0.4
CR-1/LO	0.8	NH-1	0.4	R	0.007	PUD-NL-2	0.4
CR-2	0.46	NM-2	0.4	P	0.02		
CR-2/LO	0.8	NM-1	0.5	P/SP	0.18		

In County zones with a straightforward FAR, the same methodology was used. The MHP, P, and P/SP FARs were also determined using the same methodology used for Town. For County zones with other equations to calculate allowed floor area, those equations were used. A full tabulation of the calculations used is below. The BC allows either the FAR or a 20% expansion of the floor area that existed in 1994. The allowance used was determined by Teton County during the 2016 Rural Zoning Update. Resort allowances reflect each resort's master plan. In addition to the allowed floor area calculation, a maximum floor area of 10,000 sf per lot was applied in the NC, R3, PUD-NC, and PUD-R3 zones. Similarly, a maximum floor area of 15,000 sf was applied in the R2 and PUD-R2 zones. Also, a 10,000 sf minimum was applied in the R1, R2, PUD-R1, and PUD-R2 zones. In the AR, NC, R, R1, R2, R3, and S a density was used to calculate subdivision potential to avoid inappropriate application of caps on floor area. Where detached single-family subdivision is allowed, the regression constant was multiplied by the allowed lot density to account for subdivision. Finally, conservation easement limitations were applied to conserved lands based on limitations applied by Teton County during the 2016 Rural Zoning Update.

Table 5.2.1.2 Teton County Zoning FAR

Zoning	FAR	Zoning	FAR	Density
AC	0.35	NC < 0.5 acres	Base Site Area (sf) * 0.124 + 1,895 sf	1 DU / 3 ac
AR	0.38	NC 0.5 acres +	Base Site Area (sf) *0.32 + 3,900 sf	1 DU / 3 ac
WC	0.35	S	0.35	1 DU / 12,000 sf
OP	0.3	R	0.007	1 DU / 35 ac
BP	0.6	R1	0.007	1 DU / 35 ac
P	existing	R2	(Gross Site Area (ac) – 10) * 100 + 10,000 sf	1 DU / 35 ac
P/SP	0.07	R3	Gross Site Area (sf) *0.32 + 3,900 sf	1 DU / 35 ac
BC	site specific	PUD-AH	existing	n/a
MHP	existing	PUD-NC		PUD
PR-GT	master plan	PUD-R1		PUD
PR-SR	master plan	PUD-R2		PUD
PR-TG	master plan	PUD-R3		PUD
PR-TV1	master plan			
PR-TV2	master plan			

5.2.2 Use Mix

Once the allowed floor area was calculated it had to be split into the uses allowed by the zone. This was done by applying the existing use mix to the allowed floor area. While there are some trends indicating that use mix is changing, the grouping of uses in the flow model mitigates the impacts of those trends so that current use mix can serve as a reasonable estimate of future use mix. In zones where a nonconforming use represented a significant current percentage of the floor area in that zone, the future percentage of the nonconforming use was discounted to represent that new use of that type will not be added.

5.2.3 Town Workforce Bonus Floor Area

The Town also allows bonus floor area to be built for residential use if 1/3 of the additional floor area is deed restricted to be occupied by the workforce. The amount of the bonus is calculated by figuring out the floor area that could be built on a site if only setbacks and height restrictions were applied, then subtracting out the base floor area allowance. Parking and design elements also have to be accounted for in estimating the bonus FAR. Below are the bonus FARs used in the calculation.

Table 5.2.3.1 Workforce Bonus FAR

Estimated Bonus Floor Area Allowed by Zone as Bonus FAR									
Zone	DC/LO	CR-1	CR1/LO	CR-2	CR2/LO	CR-3	OR	NH-1	NM-2
FAR	0.67	1.13	0.98	1.24	0.9	0.82	0.75	0.63	0.63

Bonus FAR is on top of the base FAR allowance and is assumed to be 100% multifamily. However, there is a cap on the amount of bonus FAR that can be built, which is equal to the number of units eliminated from elsewhere in the Town or County by downzoning or conservation. Town estimates that about 1,800 units are available for use by the bonus. The total floor area allowed by the bonus FAR would allow for about 12,020 units (assuming a 1,200-sf unit size). Therefore, the bonus floor area assigned to each parcel was only 15% (1,800/12,020) of the actual bonus calculated. In practice, some parcels will use the bonus and others will not. By discounting all parcels, the model essentially assumes that the location of the bonus units will be proportional to the location of the bonus floor area potential. The percentage of the total bonus floor area in each zone is tabulated below.

Table 5.2.3.2 Bonus Floor Area

Percentage of Bonus Floor Area in Each Zone									
Zone	DC/LO	CR-1	CR1/LO	CR-2	CR2/LO	CR-3	OR	NH-1	NM-2
FAR	7%	1%	4%	5%	9%	41%	5%	13%	13%

5.2.4 County CN-PRD

The county also has a bonus tool that is not accounted for in the base zoning calculation. The Complete Neighborhood – Planned Residential Development (CN-PRD) tool allows for bonus units and floor area in areas of existing infrastructure in exchange for conservation of rural areas of the County. The Town and County have assumed and "reserved" 570 units for the CN-PRD. A "unit" is a single family attached or detached residence. In reality, there is no regulatory limit on the CN-PRD, but there is a regulatory cap on the Town bonus related to the community buildout cap. If more CN-PRD units are built, less bonus units will be available in Town.

To mitigate any impact from the uncertainty of where the bonus units will be built, all 570 units were allocated to Northern South Park and assumed to be connected to Town water and sewer. By assuming all Town and County bonus units will be served by Town water and sewer the only effect future land use decisions can have on this study will be to reduce demand on Town water supply and the sewer treatment

plant. ***Whether units are built in Northern South Park, Midtown, Fairgrounds, or other specific location has little impact on the overall water and sewer system, because the overall number of bonus units is capped.*** If the units are built in Teton Village, the Aspens, or another area of the County not served by the Town, demand on Town infrastructure will decrease because those units will not be built in Town.

5.3 Apply the Flow by Land Use Model to Projected Buildout

5.3.1 Apply Flow

The regression model developed in Section 5.1 was applied to the land uses projected in Section 5.2 to determine estimated maximum August water flows and winter sewer flows at buildout.

5.3.2 Compare Projected Buildout Flows to Current Flows

To test the model's logic at a basic level, buildout flows were compared to existing flows with the expectation that most flows would be greater at buildout than they are today. The comparison found a number of parcels with less flow at buildout than today. In some cases, it was because a particular parcel is just a large user for the use category. It is expected that some of those outliers will exist.

In many August cases the low projected flow relative to current flow was the result of irrigation. Relatively few properties are heavily irrigated, but those that are use a lot of water. The result is a slight over estimation of flow on the non-irrigated properties in the use category and a drastic underestimation of the few irrigated properties. In the case of underdeveloped parcels whose irrigation would be replaced by domestic use at buildout, projecting a reduction in flow is logical. For example, an auto oriented office building in Midtown that is mostly surface parking and landscaping might be allowed 8 times more floor area than it has today, but such a development would actually cut the water use on the property to between a third and a half of what it is today because irrigation would be replaced by domestic use.

However, in the case of outdoor recreation or park use the irrigation should be expected to continue and the future flow can be expected to stay at current levels rather than drop. For such parcels an adjustment to the model is needed. To adjust, the regression analysis was rerun with irrigation flows removed, then the existing irrigation flow was added back in after flow was estimated based on development potential. The assumption made is that irrigation flows on outdoor recreation parcels will remain relatively flat over time. In some cases, this required identifying irrigation flows classified as domestic flows in the Town's records. Because the assumption is that irrigation is relatively flat over time, (knowing it will vary from year to year with the weather) the irrigation flow added back in was the average August irrigation flow for 2016-2019. This irrigation adjustment primarily applied to park parcels. It was also applied to single family parcels in 3-Creek, which have much higher irrigation use than the rest of Town.

With the irrigation adjustment applied, the average errors and mean squared errors improve. This is partly a function of manipulating the error statistics by including actual data rather than purely modeled estimates. However, it is also a function of improving the slight over estimations on the non-irrigated parcels.

Table 5.3.1 Adjusted Model Average Error

Average Error between August 2017 Parcel Flow Estimated by Model and Actual (gallons)			
Model	All Parcels	Multi-Use	Single-Use
Model without irrigation adjustment	-867	4,863	-1,845
Model with irrigation adjustment	-864	3,334	-1,580

With the irrigation adjustment made to the August model – it is not needed for the winter model – the final regression outputs for August and winter are tabulated below. Regression coefficients are in gallons per month per square foot. To utilize the regression coefficients to estimate the flow of a future development, estimate the land use for each parcel in the development, then sum the constant and the products of the coefficients and floor area for each land use by parcel, then sum the estimated flow for each parcel to get the overall development estimate.

Table 5.3.2 Regression Outputs by Land Use Group, August

Regression Statistics	
Multiple R	0.601491
R Square	0.361791
Adjusted R Square	0.359813
Standard Error	145660.2
Observations	2266

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	7	2.72E+13	3.88E+12	182.8612	6.5E-215
Residual	2258	4.79E+13	2.12E+10		
Total	2265	7.51E+13			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Constant	9016.822	4642.159	1.942377	0.052216	-86.5218	18120.17
Detached Single-Family	5.280187	1.531655	3.447375	0.000576	2.27659	8.283785
Multi-Family	8.705951	0.325689	26.73089	5.3E-137	8.06727	9.344631
Lodging	11.42839	0.604646	18.90096	4.35E-74	10.24267	12.61411
Restaurant/Bar	15.87341	3.591005	4.420325	1.03E-05	8.831394	22.91542
Retail/Service/Office	5.471762	0.702226	7.79202	9.98E-15	4.094685	6.848838
Industrial	2.324423	1.111727	2.090822	0.036656	0.14431	4.504535
Institutional	4.445364	0.370359	12.00286	3.21E-32	3.719085	5.171643

Table 5.3.3 Regression Outputs by Land Use Group, Winter

Regression Statistics	
Multiple R	0.706856
R Square	0.499646
Adjusted R Square	0.498095
Standard Error	46897.7
Observations	2266

ANOVA	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	7	4.96E+12	7.08E+11	322.1147	0
Residual	2258	4.97E+12	2.2E+09		
Total	2265	9.93E+12			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Constant	3883.772	1494.62	2.598502	0.009424	952.8001	6814.743
Detached Single-Family	0.451403	0.493141	0.915363	0.360099	-0.51565	1.418461
Multi-Family	3.029616	0.104861	28.89176	1.8E-156	2.823982	3.235249
Lodging	5.698151	0.194676	29.26997	6.1E-160	5.316389	6.079913
Restaurant/Bar	4.735448	1.156183	4.095759	4.36E-05	2.468155	7.002741
Retail/Service/Office	1.527233	0.226093	6.754877	1.81E-11	1.08386	1.970605
Industrial	1.649739	0.357939	4.609	4.27E-06	0.947816	2.351663
Institutional	2.562083	0.119243	21.48622	2.49E-93	2.328245	2.79592

5.3.3 Uncertainty in the Projection

The methodology described above includes a number of assumptions and averages that introduce uncertainty into the projection of future flows. The uncertainty does not mean that the projection cannot be used to better plan for the future, but the assumptions used to develop the model should be tracked in order to determine when the projections should be updated. If actual trends in land use, irrigation, or domestic flow by land use deviate from projections, the projected water and sewer infrastructure needs should also be updated.

With additional data some of the uncertainty in the model could be reduced.

- Regressing the flows by land use over multiple years will reduce the uncertainty in that aspect of the model. This requires a year-by-year inventory of parcel-by-parcel land use.
- Using the land use as of the month of the flow data in the regression will reduce the uncertainty in that aspect of the model. (By comparison the model uses January 2017 land use and August 2017 flows.)

- Better separation of domestic and irrigation flow data will allow for them to be treated as separate variables and reduce uncertainty in that aspect of the model. It would also allow for a test of whether lot size is a better predictor of irrigation flow than building floor area. This is likely to be especially beneficial for detached single family units and outdoor recreation uses.
- There is almost no historical data, due to recency of adoption, on where the bonus units allowed by the Town will be built. The projection that those units will be built at the general ratio of where they are allowed is a starting place for the model, but can be improved.

6 Buildout Water System Capacity

Using the methodology described in Section 5 above, the existing water system was analyzed utilizing the buildout projected flows. The existing water system and served boundaries are indicated in Figure 8. The system serves not only the TOJ but also the 3 Creek Subdivision, Saddle Butte Subdivision, Jackson Hole Classical Academy, and the Mountain Academy of Teton Science School (TSS). Components of the water system were analyzed with recommendations noted such that the TOJ can perform basic water system master planning efforts.

6.1 Future Water Demands

The future water demands were projected for the TOJ and also the areas outside the TOJ which are currently served by the TOJ water system. Also included in this future demand is the Northern South Park Suburban Zoning and CN-PRD zoning. Using the methodology noted in Section 5 above, water demands were projected for Zones 1, 2, 3A, and 3B of the TOJ Water System along with Saddle Butte, Teton Science School, and 3 Creek.

Table 6.1 below indicates the existing maximum month (August 2019) flows in gallons/month, the maximum day flow in gallons per day (GPD) within August 2019, and a calculated peak hour flow for each of the locations noted above. Section 5.5.1 of the existing capacity study discusses the development of the peaking factors to get from average day in the maximum month to maximum day (1.10) and peak hour (1.5). Using the projected flows discussed derived in Section 5 for each of the areas, maximum day and peak hour demands were calculated with the same peaking factors utilized to generate comparable data. The maximum day flows for each zone and total overall use are compared in Figure 9. As can be seen from the data the calculated maximum monthly demand in the water system increases approximately 64%. The three areas served water outside the TOJ were noted separately in the table as well. These outside TOJ area water demands are included in the overall calculations for the zones with Saddle Butte being included in Zone 2, and Science School and 3 Creek in Zone 3B.

Table 6.1 Buildout Projected Water Demands

	Existing Flows			Buildout Flows		
Zone	Average Max Month (Million Gal/month)	Max Day Factor 1.10 (MGD)	Peak Hour Factor 1.5 (GPM)	Average Max Month (Million Gal/month)	Max Day Factor 1.10 (MGD)	Peak Hour Factor 1.5 (GPM)
Zone 1	30.7	1.09	1,136	44.3	1.57	1,637
Zone 2	59.5	2.11	2,199	114.0	4.04	4,213
Zone 3A	20.0	0.71	739	30.9	1.10	1,144
Zone 3B*	48.6	1.72	1,795	72.0	2.56	2,663
Total Demands	158.8	5.63	5,869	261.3	9.27	9,657
3 Creek	11.4	0.41	423	15.5	0.55	574
Saddle Butte	1.5	0.05	55	2.3	0.08	83
Science school	0.3	0.01	11	0.6	0.02	23

- Zone 3B includes projected flows from the Norther South Park Suburban and CN-PRD zoning.

MOUNTAIN ACADEMY OF TSS

HIGHWAY 22

SADDLE BUTTE

HIGHWAY 89

ELK REFUGE TANK

VIRGINIAN TANK

BROADWAY AVE

TOWN OF JACKSON

SNOW KING ESTATES TANK

THREE CREEK RANCH

CLASSICAL ACADEMY

HIGHWAY 89

RAFTER J

LEGEND

EXISTING TOJ WATER SYSTEM SERVICE AREA

EXISTING CONTRACT WATER SYSTEM SERVICE AREA

N

E

0 1500 3000

DATE	6/14/2021	REV.
SURVEYED	GIS	
ENGINEERED	BJG	
DRAWN	BJG	
CHECKED		
APPROVED		

NELSON ENGINEERING
P.O. BOX 1599, JACKSON WYOMING (307) 733-2087

DRAWING TITLE
EXISTING WATER SYSTEM SERVICE AREA

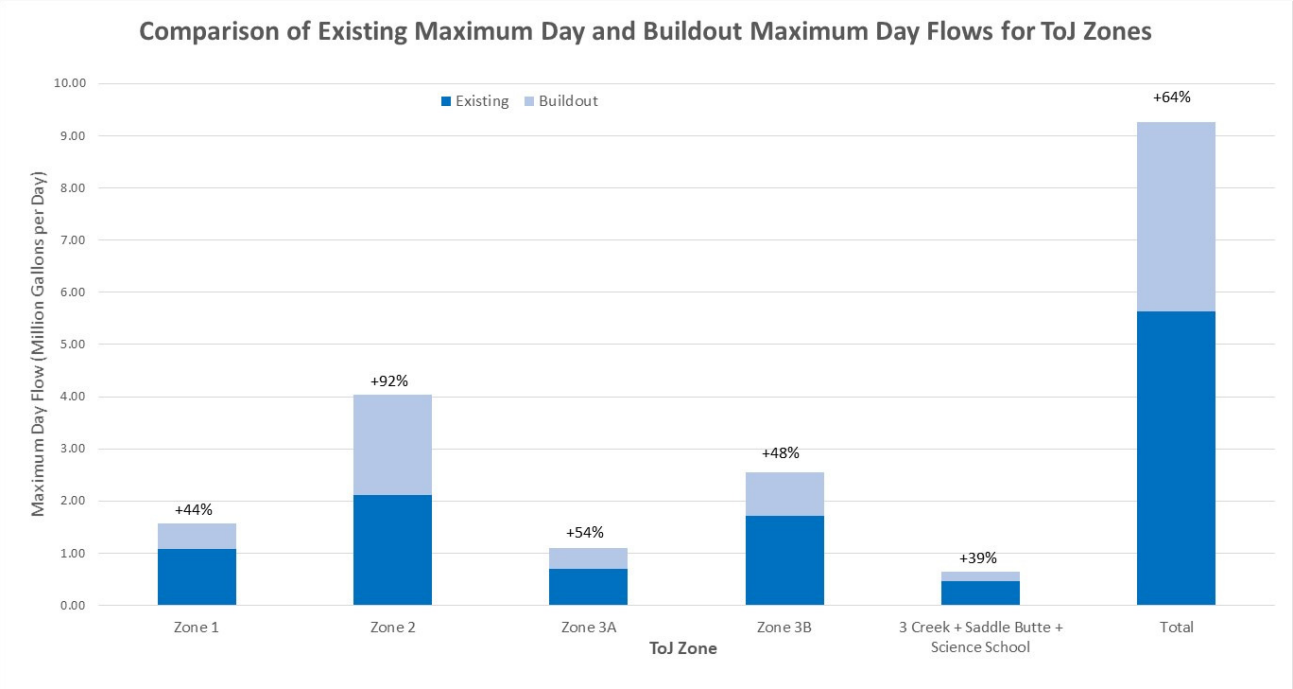
JOB TITLE
TOWN OF JACKSON WATER & SEWER
COMPREHENSIVE CAPACITY STUDY
JACKSON, WYOMING

DRAWING NO
FIGURE 8

JOB NO
19-336-01

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - CivilV4 Drawings\Civil\Water Service Area Mapping (Existing Water Boundary Fig 8) - Jun 14 2021 04:55:55 pm PLOTTED BY: green DWG TO PDF.pc3

Figure 9 Buildout Water Use Comparison



6.2 Future Water System Analysis

The projected water demands were utilized to analyze the existing water system to determine long range recommendations for the water system to supply the increased flows. As with the existing water capacity analysis, the TOJ water model was utilized to determine hydraulic deficiencies within the system. In addition to analyzing the existing water system components, potential future contract service areas outside of the TOJ were identified.

6.3 Hydraulic Modeling

The existing water model, which was updated in the existing capacity analysis, was utilized to determine system deficiencies (pipe capacity) with the projected flows populated into the model. Section 5.9.1 of the Existing System Capacity Analysis discussed running the water model with the base demands along with a series of fire demands. This same process was used to analyze the future buildout system. The future demands were populated into the model and a representative fire flow was assumed for the analysis. To be conservative the current requirements by the Insurance Services Office (ISO) were used, it is assumed that in the future increasing numbers of structures will be constructed with fire sprinkler systems, resulting in a lower fire flow requirement. Fire flows are based on the square footage of the largest buildings in Town, proximity to other buildings, type of construction, and presence of a sprinkler system. Utilizing the formula established by the ISO and considering the existing unsprinkled buildings, a fire flow of 3000 gpm was used through the model analysis as with the existing capacity. The locations chosen for review throughout the TOJ were where larger structures currently exist. Table 6.3 below describes the fire flow locations along with the total fire flows modeled. Since fire flows were assumed at fire hydrants, the flows were split to two different nodes. In the analysis, any pipes in which velocities exceed 10 ft/s and nodes in which pressures drop below the DEQ minimum 35 psi or normal working

pressures and 20 psi for fire flow pressures were noted for review. Results of the model runs were used to evaluate several system components, discussed in subsequent sections.

Table 6.3 Model Fire Flow Locations

Location of Fire Flow	Model Junction	Modeled Fire Flow (gpm)	Notes
Hwy 22 & Coyote Canyon Rd FF	J-600	3000	Teton Science School
Whitehouse Dr & Josephine Loop FF	J-286	1500	Cottonwood Flats
	J-330	1500	
Blair Pl Loop FF	J-329	3000	Blair Apartments
Corner Creek Ln & Lilac Ln FF	J-230	3000	Cottonwood Subdivision
South Park Loop Rd & Middle School Rd FF	J-241	1500	Colter Middle School
	J-242	1500	
High School Rd & Gregory Ln & Middle School Rd FF	J-209	1500	Jackson Hole Public High School
	J-210	1500	
High School Rd & S HWY 89 FF	J-283	1500	Smiths
	J-301	1500	
Gregory Ln & Martin Ln FF	J-207	3000	Bison Lumber
W Broadway & HWY 22 FF and Buffalo Way & Alpine Ln	J-187	1500	Albertsons
	J-262	1500	
Meadowlark Ln & Powderhorn Ln FF	J-191	1500	Creekside Village
	J-192	1500	
Maple Way & Powderhorn Ln FF	J-181	1500	"New" Post Office
	J-182	1500	
W Broadway & Budge Dr FF	J-318	3000	Sidewinders
W Broadway & Virginian Ln FF	J-170	2500	Virginian Hotel
	J-376	2500	
570 Broadway FF	J-392	3000	Shell Gas Station
Clissold St & W Simpson Ave FF	J-123	3000	Cowboy Village Resort
Flat Creek Dr & W Karns Ave FF	J-134	1500	Fairgrounds
	J-270	1500	
W Broadway & Millward St FF	J-86	3000	Bin 22
Millward St & W Gill Ave FF	J-149	3000	White Buffalo
N Cache St & Mercill Ave FF	J-154	3000	Lexington Hotel
N King St & E Gill Ave and N King St & E Deloney Ave FF	J-143	1500	Teton County Recreation Center
	J-140	1500	
Center St & E Broadway Ave FF	J-95	3000	SE Corner of Jackson Square
S Cache St & E Simpson Ave FF	J-83	3000	Center for the Arts
S Cache St & E Kelly Ave FF	J-81	3000	First Baptist Church
S Gros Ventre St & E Simpson Ave FF	J-71	3000	Jackson Lumber
Snow King Loop & Snow King Loop FF	J-5	1500	Snow King Resort
	J-341	1500	
Snow King Loop & E Snow King Ave FF	J-76	1500	Snow King Resort
	J-312	1500	
Redmond St & E Broadway Ave FF	J-25	3000	St. John's Hospital
Upper Cache Creek Dr & Cache Creek Dr FF	J-38	3000	Burns Ferrin Subdivision Trailer
Rancher St & E Simpson Ave FF	J-19	3000	Condominiums, Apartments, Townhomes and Single Family Residential Houses

6.4 Future System Capacity Improvements

As with the existing capacity analysis, the projected demands on the water system were used to assess the capacity of the existing system. The components which were reviewed included the wells, tanks, booster stations, and distribution system. From this analysis, improvements to the system to be addressed in future master planning of the water system were identified.

6.4.1 Wells

In the existing capacity analysis, it was determined that Wells #1, #2, #3, and #5 were adequately sized for Zones 1, 2, and 3A. Also noted in that analysis was that the improvements to Well #7 in the summer of 2020 improved the supply but that due to well drawdown in Well #7 when operating Wells #6 and #8, an additional well (Well #9) is still needed to maintain the current level of service in Zone 3B.

For this future analysis the existing wells were reviewed for adequacy with the increase in the future buildout flows. To evaluate if the wells are adequately sized, per WYDEQ, pumping shall provide the maximum daily flow, gallons per day (GPD) with the largest pump out of service. Reviewing the system this would mean that Wells #1, #2, and #3 can supply Zone 1 the maximum daily flow with Well #2 out of service. Since Well #5 feeds Zone 2 and 3A but Wells #1, #2, and #3 can flow into those zones, the analysis of the Midtown area of the TOJ needs to review Wells #1, #2, and #3 supplying the maximum daily flow to Zones 1, 2, and 3A. Lastly, wells #6, #7 and #8 and the proposed Well #9 will feed Zone 3B, assuming #6 or #8 produce the maximum flow with one being out of service, assuming Well #7 produces 800 gpm (as discussed in the Existing Capacity Study) and an assumed flow for a future Well #9 of 1000 gpm. Table 6.4.1 below indicates the maximum day flow in each of the zones along with the capacity of the wells with the largest out of service. Also, a deficiency volume was noted for the locations in which wells will not be adequately sized in the future. As can be seen in the table, Wells #1, #2, and #3 are adequately sized to meet the future flows in Zone 1. Supply into Zone 2 is not adequate if Well #5 is out of service. An additional supply of 1025 gallons per minute (GPM) will be required in the area of Zone 1 or 2 to supplement this increased demand.

The aquifers in which the wells are located, Snake River for Wells #6-#8, Flat Creek Alluvial Fan for Wells #1-#5, have abundant capacity. To address freezing and flooding of Flat Creek the TOJ has installed thaw wells which discharge water directly into the creek in an attempt to warm the water, hence reducing ice buildup. The TOJ and the Flat Creek Watershed Improvement District (FCWID) are in the planning process to construct additional thaw wells. Because of the abundance of supply within the aquifers, there is no concern that the current and additional thaw wells will have any effect on the TOJ drinking wells.

Table 6.4.1 Water System Supply Review

Zone	August Buildout MDD (MGD)	Well Capacity with Largest Well out of Service (MGD)	Supply Surplus / (Deficiency) (MGD)	Minimum Well Supply Increase (GPM)	Comments
1	1.57	3.17	1.60	Adequately Sized	Supply is from Wells #1 & #3 with #2 being the largest out of service.
1, 2 & 3A	6.79	5.33	-1.47	1,025	Supply from wells #1, #2, #3 and #5, with #5 being the largest out of service.
3b	3.13	4.61	1.48	Adequately Sized	Supply from Wells #6, #7, and Proposed #9 with #8 out of service. (Assume 1000 GPM for Well #9)

6.4.2 Tanks

In the existing capacity analysis, it was determined that the Elk Refuge, Snow King Estates, and Virginian Tanks, specifically called out on Figure 8, were adequately sized for the existing water demands. It was also determined that an additional storage tank was recommended for Zone 3B of the water system. The study commissioned for the TOJ recommend a 2-million-gallon storage tank to be constructed in Zone 3B, assuming no new Well #9, to provide storage in the zone. The size of this tank will vary depending on the production from the future Well #9. To review the future water demand and water storage the Wyoming Department of Environmental Quality (WDEQ) requirements listed below were utilized.

The existing storage volume of the tanks was evaluated for adequacy.

WDEQ design criteria for Finished Water Storage is provided in CH. 12, Sec. 13, (a), (i) of the Water Quality Rules and Regulation (WQRRs). Design standards are stated as follows:

> *(C) Water systems serving in excess of 500,000 gallons on the design average daily demand shall provide clearwell and system storage capacity equal to 25 percent of the design maximum daily demand, plus added fire storage based on recommendations established by the State Fire Marshall or local fire agency.*
>
> *(D) Storage need not be provided in a well supply system where a minimum of two wells are provided and the maximum hour demand or fire demand, whichever is greater, can be supplied with the largest well out of service.*

Existing demands are in excess of 500,000 gpd, which falls under DEQ minimum design standard (C), above.

Flow Equalization Storage: Required equalization storage is typically 15% to 25% of maximum day demand, however, in Jackson, 6% is recommended since the system has multiple wells with the aquifer providing clear water storage.

Emergency Reserve Storage: Emergency reserve storage was considered to be 25% of maximum day demand because of the multiple wells and standby generators. This recommendation is also consistent with WDEQ minimum design standards for systems with demands in excess of 500,000 gpd. Without generators for well pumps, emergency storage should equal 100% of max. day, or 7-8 days at average day domestic demand (winter demand).

Fire Storage: Fire supply for the TOJ is assumed to be 3,000 gpm for 3 hours (540,000 gallons), based on previous ISO discussion.

As established in Section 6.1, the maximum buildout month demand (August) for each zone is noted in Table 6.4.2 below. This table assumes the proposed Zone 3 Tank has been constructed prior to buildout. Tank storage is indicated as million gallons (MG). The Virginian Tank and the Snow King Estates Tanks indicate volume shortage at buildout. These tanks should be reviewed in the future but it should be noted that if the Proposed Zone 3 tank were constructed along with Proposed Well #9, Zone 3 could be reconfigured to include both Zones 3A and 3B which would lessen the demand on the Virginian Tank, eliminating the possible future deficiency in volume. Both these tanks should be reassessed as development occurs.

Table 6.4.2 Buildout Water Storage

Zone	Tank	Tank Size (MG)	August Future Buildout MDD (MGD)	Flow Equalization Storage (gal)	Emergency Reserve Storage (gal)	Fire Storage (gal)	Tank Min. Storage (Mgal)
1	Elk Refuge	1.3	1.57	0.09	0.39	0.54	1.03
2 & 3A	Virginian	2.0	5.05	0.30	1.26	0.54	2.10
SK	Snow King Estates	0.12	0.18	0.01	0.04	0.09	0.14
3B	Proposed Zone 3 Tank	2.0	3.13	0.19	0.78	0.54	1.51

6.4.3 Booster Stations

From the existing capacity analysis replacing both the Snow King Estates Booster Station and the Spruce Drive Booster Station are recommended in the near 10-20 years. Both of these boosters are a bit older and have some capacity limitations. The Broadway Booster is relatively new with adequate existing capacity. To address future flows the peak hour demand for each service area was reviewed and compared to existing pumping capacity. The Snow King Estates Booster is the only station that does not satisfy future demands.

Table 6.4.3 Booster Station Flow Requirements

Booster Station	August Future Buildout Total Demands (gal/month)	August Future Buildout ADD (GPD)	August Future Buildout Peak Hour (GPM)	Existing Booster Flow Rates (GPM)
Snow King Estates	4,954,147	175,792	183	70
Spruce Drive	3,465,850	122,982	128	480
Broadway	9,196,733	326,336	340	610

6.4.4 Distribution

An analysis of the distribution system using the future buildout flows and fire flows was performed with the hydraulic model. Many of the pipelines with capacity deficiencies were noted in the existing analysis and not repeated in this review. In the analysis it was assumed that those issues raised in the existing analysis will be addressed prior to a buildout situation therefore they were adjusted in the model to eliminate any affects they may have on the buildout model runs. To determine buildout issues the same system standards were maintained, working pressures remaining above 35 psi, fire flows above 20 psi, and pipeline velocities below 10 ft/s. Since the fire flows generally govern the sizing of pipelines there were very few locations on the distribution system which indicate capacity limitations at the future buildout demands. The fire flows still govern and the domestic demand does not increase peak flows drastically. Three locations of note are: (1) the transmission mains between Wells #1, #2, & -#3 will need to be upsized if in the future more than two wells are required to run simultaneously. At this time the mains between the well houses can accommodate only 2 wells running at the same time. (2) The construction of an additional crossing of Highway 89 in the Zone 3B area. Currently there is one crossing and as flows increase this pipe will need to be upsized but looping the system with an additional crossing would be more beneficial. (3) On the Town Square the 8-inch main in North Cache Street from East Broadway to East Deloney, and the 8-inch main in East Deloney from North Cache to Willow Street will need to be upsized.

6.5 Future Water System Conclusions/Recommendations

The existing capacity analysis determined several improvements to the water system which will accommodate the expected increased future demands on the system as buildout is achieved. The most important items of note are the construction of the storage tank in Zone 3 (Zone 3B Tank) and constructing Well #9 within Zone 3. The table below indicates improvements to the water system that are recommended in addition to those identified in the existing capacity analysis. These modifications will be required to maintain system integrity and capacity as demands increase. Based on the results of this study, the future capacity requirements of the water system can be met with a few improvements to the system which are noted.

Table 6.5 Water Masterplan Recommendations

Project	Description	Purpose/Goal
Additional Well Supply Zone #2	Provide an additional water source into Zone #2	Supplement Well #5 supply
Zone 3 Water Supply	Construction of Well #9	Provide additional supply into Zone #3
Zone 3 Storage Tank	Provide a maximum 2 million gallon storage tank in Zone 3	Provide storage in a zone currently with no storage.
Review Snow King Estates Tank	As buildout occurs the Snow King Estates Tank volume needs to be reviewed to address increase in size if needed.	Increase storage in the service area as development increases near projection
Snow King Estates Booster	Increase capacity of the booster station.	Provide flows above the projected buildout flows.
Replace Transmission Main Wells #1-#3	Replace the transmission mains between Well Houses #1, #2, and #3.	As demands increase, multiple pumps will be required to supply demands, the velocities in the pipelines increase over 10 ft/s. Upsizing will lower the velocities.
Additional Connection Under Highway 89	Provide an additional crossing of Highway 89 in Zone 3.	Provide a looped system and lowers the velocity in the existing main which crosses the highway.
Town Square Main Upsizing	Replace water main in North Cache from East Broadway to Deloney, and in Deloney from North Cache to Willow Street	Upsizing the existing 8-inch mains will lower velocities in the pipeline below 10 ft/s

The Scope of this project specifically addressed that the improvements noted here along with the current TOJ 10-year CIP projects consider environment factors including climate, wetlands, endangered species, and geological considerations. When reviewing the improvements noted here along with the current 10-year CIP, the factors that will most likely be addressed are impacts from climate and geological factors. The climate consideration is a much broader discussion. Climate effects on the water system will most likely be in water use for irrigation. Prolonged droughts will likely result in increased water use. To address this the TOJ may have to consider implementing irrigation restrictions. The projects indicated will likely have little consideration when looking at climate condition. The geological factor is a large factor in construction of the Zone 3B Tank. Construction of a large water tank in mountainous terrain will require significant review to address landslide and earthquake considerations prior to construction. These factors will have to be taken into account in the design and construction of the tank. Endangered species will likely not be a factor in most of the proposed improvements due to the locations being in developed areas, with the exception of the Zone 3B Tank. Through the planning process this will have to be addressed with the Forest Service as the location of the tank is proposed at this time on Bridger Teton Nation Forest Property. Lastly, wetland factors can likely be avoided as there are limited locations within the TOJ where wetlands exist, occurring mostly along Flat Creek and at the Wastewater Treatment Plant.

6.5.1 Future Water Quality Regulations or standards that may require changes

The Wyoming DEQ Water Quality Division (WQD), pursuant to the authority vested in it by Wyoming Statute (W.S.) § 35-11-302, proposes to revise Water Quality Rules and Regulations Chapter 12, Design and Construction Standards for Public Water Supplies. The Wyoming Environmental Quality Council (EQC) will consider proposed revisions to the Wyoming Department of Environmental Quality (WDEQ) Water Quality Rules and Regulations at a public hearing to be held on May of 2021. It does not appear that the revised rules will affect the TOJ existing or proposed water infrastructure.

The EPA, that promulgates the drinking water quality rules and regulations for Wyoming does not appear to be proposing any new drinking water standards that would affect the TOJ water supply, storage and distribution system. However, it is likely that with a new administration and new science that new rules and regulations will be promulgated. The current TOJ water supply is high quality ground water and it is not anticipated that new rules would affect the Towns water system.

6.5.2 Identify additional data needed to complete the study

At this time there is no additional information required to complete the study. The existing capacity analysis discussed the need for calibration of the hydraulic model.

6.5.3 Future Expansion of the Existing Contract Water Service Area

As development continues to occur through Teton County, the TOJ will have to consider each individual request from applicants to connect to the TOJ water system. The TOJ should carefully consider each application in regards to location of the proposed expansion, proximity to existing facilities, and overall water demand that will be required. As additional users are added to the water system that are not currently in the existing contract service area, the TOJ will need to review how this affects the overall total capacity of the system and the ability to meet all the buildout demands of the existing contracted service area.

7 Buildout Sewer System Capacity

As with the water system capacity, the buildout sewer system capacity analysis used the same methodology described in Section 5 above, the existing sewer system was reviewed using the buildout projected flows. The existing contracted sewer system service area is indicated in Figure 10. As was noted in the existing capacity analysis, the TOJ WWTP serves not only the TOJ sewer collection system but also several satellite districts and subdivisions throughout Teton County. The wastewater flows predicted from water usage in Section 5 above included not only the TOJ but also Teton County to address the satellite districts. The outlying areas include the Wilson Sewer District, Gros Ventre Utilities, Munger Mountain School, Airport, Spring Creek, Melody Ranch, 3 Creek, Jackson Hole Classical Academy, Rafter J, Mountain Academy at Teton Science School, Valley View, South Park Service Center, and Adams Canyon Sewer, as well as some individual lots. Just as with the water system, components of the sewer system were analyzed with recommendations noted such that the TOJ can perform some basic sewer system master planning efforts for future buildout demands.

7.1 Future Sewer Demands

The future sewer demands were projected for the TOJ and contracted satellite districts (service areas) which are currently served by portions of the TOJ collection system and the Wastewater Treatment Plant (WWTP). Using the methodology noted in Section 5 above, sewer demands were projected for the TOJ, Wilson Sewer, Airport, Spring Creek, Gros Ventre Utilities, Melody Ranch, Rafter J, Munger Mountain, Three Creek, Jackson Hole Classical Academy, Northern South Park Suburban zoning, and the county CN-PRD units. In addition, an "All other flow" grouping was included to account for the difference in metered flow and flow observed at the treatment plant. Table 7.1 indicates the existing average flows and the projected buildout sewer flows. As described previously in Section 5.2.4, the TOJ and Teton County have reserved 570 units for the CN-PRD zoning. Also as noted, these units may be located in a different location in the future but the number will still not be greater than 570 units. As a worst-case scenario on the TOJ system, it was assumed that all of these will be connected to TOJ water and sewer. These flows are indicated in the table under CN-PRD. Also note that because of the billing codes within the TOJ structure, the Adams Canyon and Valley View service areas are included under the Melody Ranch billing code and hence included in that area in the table.

The TOJ provided flow data from billing records for each month in 2017-2019 for the existing capacity analysis. From this data, the average day flow during the months of January, February, and March was calculated for the TOJ and each satellite district. Average day flow for the 2019 winter months is indicated in Table 7.1 labeled as Average Day, Winter Month noted as gallons per day (GPD). The TOJ provided flow summation was then reviewed and the highest monthly flow in each area was identified, with all but the Airport being in July or August of 2019. The Airport high flow occurred in June 2019. Table 7.1 indicates the average day flow for each area during the peak month as Average Day, Peak Month (GPD). One anomaly was the Spring Creek total flow. Because known infiltration exists due to flood irrigation, as discussed in the existing capacity analysis, to determine peaking factors that are relative, 100,000 gallons (.1 Million Gallons per Day (MGD)) of inflow was subtracted from the average daily flow to determine a more realistic wastewater flow. The estimate of .1 MGD per day was calculated by looking at daily flows during the summer when haying operations are occurring and irrigators have limited the amount of flood

irrigation. When comparing summer days, it can be estimated at approximately .1 MGD difference. Using the average day flow during the peak month and the average day flow during the winter month a peaking factor was calculated for each of the areas. The Melody Ranch/Adams Canyon/Valley View area has an assumed peaking factor of 1.3 to match many of the other areas in Teton County. In the TOJ sewer billing process these areas are billed for monthly use in January, February, and March, and then an average flow between those months is used for the other nine months of the year. With this billing protocol, those areas do not have a known maximum month of use, therefore a peaking factor cannot be calculated. The Northern South Park Suburban Zone and CN-PRD units is an assumed future buildout discussion so there are no existing flows at this time.

To determine a factor to estimate peak daily flows in the winter and summer, the maximum daily flow into the treatment plant for the three winter months (Jan, Feb, March) and the maximum month in the summer were reviewed and compared with the average daily flow. First the peak daily flow in the winter for each area was calculated. Data from 2019 was obtained from the TOJ and used to determine the peaking factors. From the TOJ records, the maximum daily flow into the treatment plant was 1.87 MGD in February 2019. The total influent flow into the plant in February of 2019 was 47.06 MG resulting in an average daily flow of 1.68 MGD. Using these results, a peaking factor of 1.12 can be assumed to determine maximum winter daily flow from average winter daily flow. Using the same thought process, a peaking factor to calculate maximum daily flow in the maximum month was calculated from the average daily flow in the peak month. The maximum monthly inflow into the plant occurred in July 2019 at 79 MG with a maximum daily flow of 3.07 MGD. The average daily flow was calculated at 2.55 MGD. Resulting in a peaking factor of 1.2 from average daily flow in the maximum month to peak flow in the maximum month. All existing flows for each of the areas are indicated in Table 7.1 along with system totals presented in MGD.

Table 7.1 Future Buildout Sewer Flows

	Existing					Buildout				
Contract Service Area	**Average Day, Winter Month (GPD)**	**Average Day, Peak Month (GPD)**	**Peak Factor (PF)- Average Day, Peak Month**	**Peak Day, Winter Month (PF = 1.12) (GPD)**	**Peak Day, Peak Month (PF = 1.20) (GPD)**	**Average Day, Winter Month (GPD)**	**Average Day, Peak Month (GPD)**	**Peak Factor (PF) - Average Day, Peak Month**	**Peak Day, Winter Month (PF = 1.12) (GPD)**	**Peak Day, Peak Month (PF = 1.20) (GPD)**
TOJ	1,302,667	1,693,468	1.30	1,458,987	2,032,162	2,345,365	3,048,975	1.30	2,626,809	3,658,770
Wilson Sewer	58,803	75,556	1.28	65,859	90,667	165,380	212,498	1.28	185,225	254,997
Airport [6]	12,520	16,587	1.32	14,022	19,905	32,000	42,397	1.32	35,840	50,876
Spring Creek [4]	43,028	67,393	1.57	48,191	80,871	73,814	115,612	1.57	82,672	138,735
Gros Ventre District	42,830	54,726	1.28	47,969	65,671	87,304	111,553	1.28	97,781	133,864
Melody Ranch [1,5]	71,693	93,200	1.30	80,296	111,840	258,974	336,666	1.30	290,051	403,999
Rafter J	56,449	98,537	1.75	63,222	118,244	120,177	209,781	1.75	134,593	251,737
Munger Mountain / WYDOT	17,669	23,558	1.33	19,789	28,270	22,086	29,448	1.33	24,736	35,337
Three Creek	17,270	25,757	1.49	19,342	30,908	37,863	56,471	1.49	42,407	67,765
Other Flow [2,7]	248,461	339,939	1.37	278,276	407,927	322,999	465,097	1.37	361,759	558,117
NSPS Zoning and CN-PRD Units [3,8]	-	-	-	-	-	124,734	162,155	1.30	139,702	194,585
TOTAL (MGD)	**1.87**	**2.49**		**2.10**	**2.99**	**3.59**	**4.79**		**4.02**	**5.75**

[1] Melody Ranch Contract Service Area includes Valley View, South Park Service Center, and Adams Canyon Sewer

[2] All Other Flow was calculated from the difference between all monthly meter readings combined and the total monthly influent flow to the WWTP

[3] Accounts for the future development of 570 units within vacant land of northern South Park

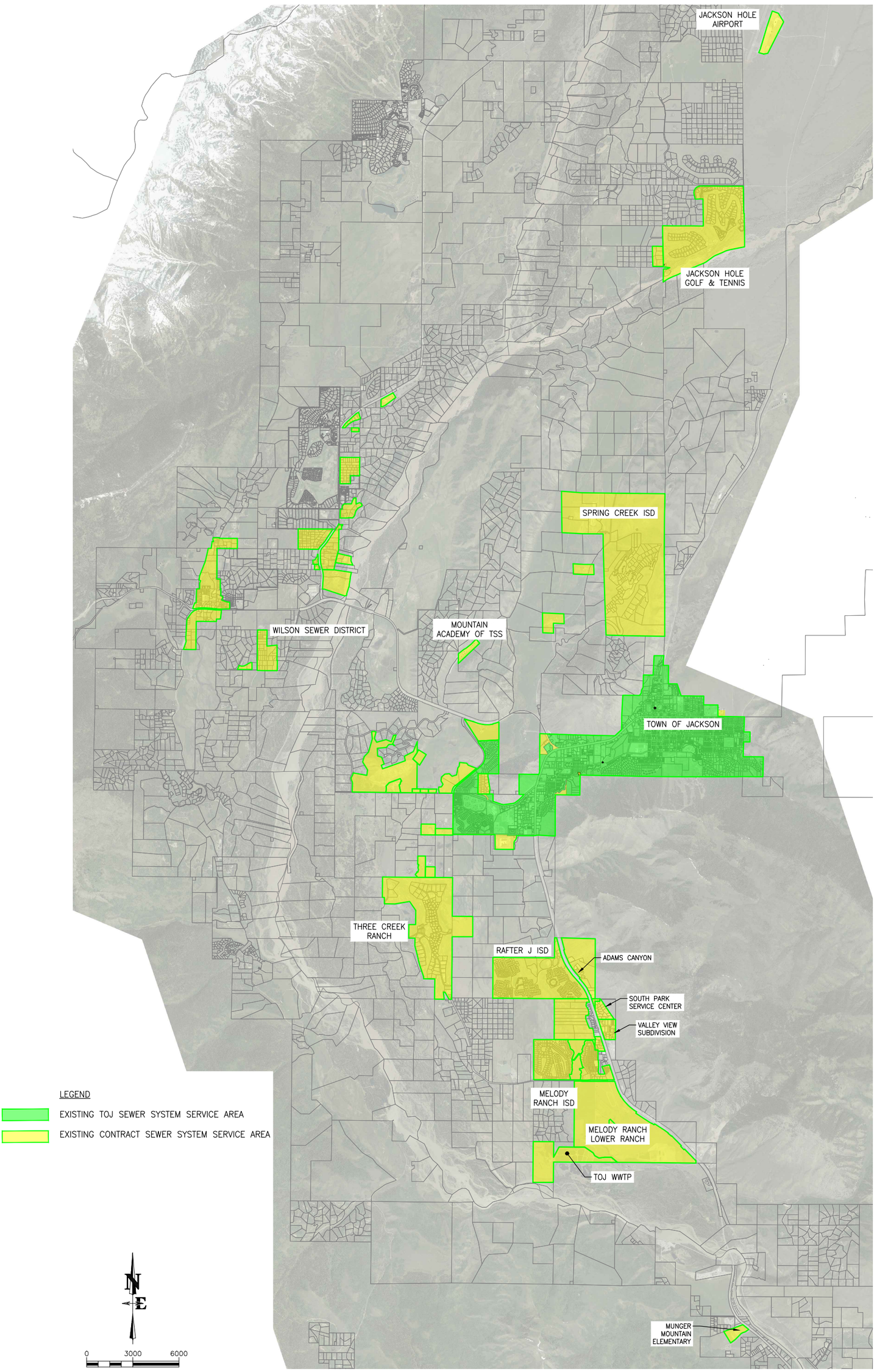
[4] The Average Day in the Peak Month for Spring Creek assumed 100,000 GPD in inflow from flood irrigation removed from metered flow

[5] Assumed 1.3 Peaking Factor used for Melody Ranch due to billing structure

[6] Airport buildout flows were obtained by previous reports prepared by the Airport

[7] All Other Flow buildout average day winter month was assumed 30% higher than existing

[8] Assumed peaking factor of 1.3 was used from Average Day Winter to Average Day Peak Month



DRAWING NO: FIGURE 10	JOB TITLE: TOWN OF JACKSON WATER & SEWER COMPREHENSIVE CAPACITY STUDY JACKSON, WYOMING	DRAWING TITLE: EXISTING SEWER SYSTEM SERVICE AREA	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE: 6/14/2021	REV.
JOB NO: 19-336-01				SURVEYED: GIS	
				ENGINEERED: BJG	
				DRAWN: BJG	
				CHECKED:	
				APPROVED:	

The projected winter buildout flows were calculated using Section 5 methods and placed spatially into the existing sewer model. District and contracted service areas were placed into the model matching those areas in Figure 10. The total flows were then summed up within each of the identified contract service areas. Note that the airport buildout flows were gathered from previous studies performed by the airport. The summed average winter day flows for each contracted service area are indicated in Table 7.1, under Average Day Winter Month (GPD). One exception to this philosophy was the Munger Mountain/WYDOT/Weed & Pest (W&P) area. This is a relatively small area encompassing two users, with a possible third future connection of W&P. The regression model indicated little to no increase in use would be expected. Knowing that is not likely, a simple assumption that the area is at 75% of capacity, resulting in a 25% increase to buildout was used to project flows. Due to the fact that the "All Other Flow" grouping is not a metered number, a simple 30% increase was assumed to determine the buildout average day flow. The same peaking factors calculated for the existing flows were again used for the future Buildout flows. The peaking factor for the Northern South Park Suburban Zoning and CN-PRD units was estimated at 1.3 as this is close to many of the peaking factors in the study. From the table the calculated peak flow at buildout is estimated at 5.75 MGD to the WWTP.

Comparisons between existing peak flows and future peak flows for each contracted service area for both summer and winter projections are indicated in Figures 11 and 12. The percent increase for each area is also indicated on the Figures. The overall projected flow increase is 92% for the peak buildout daily flow.

Figure 11 Summer Buildout Sewer Flow Comparison

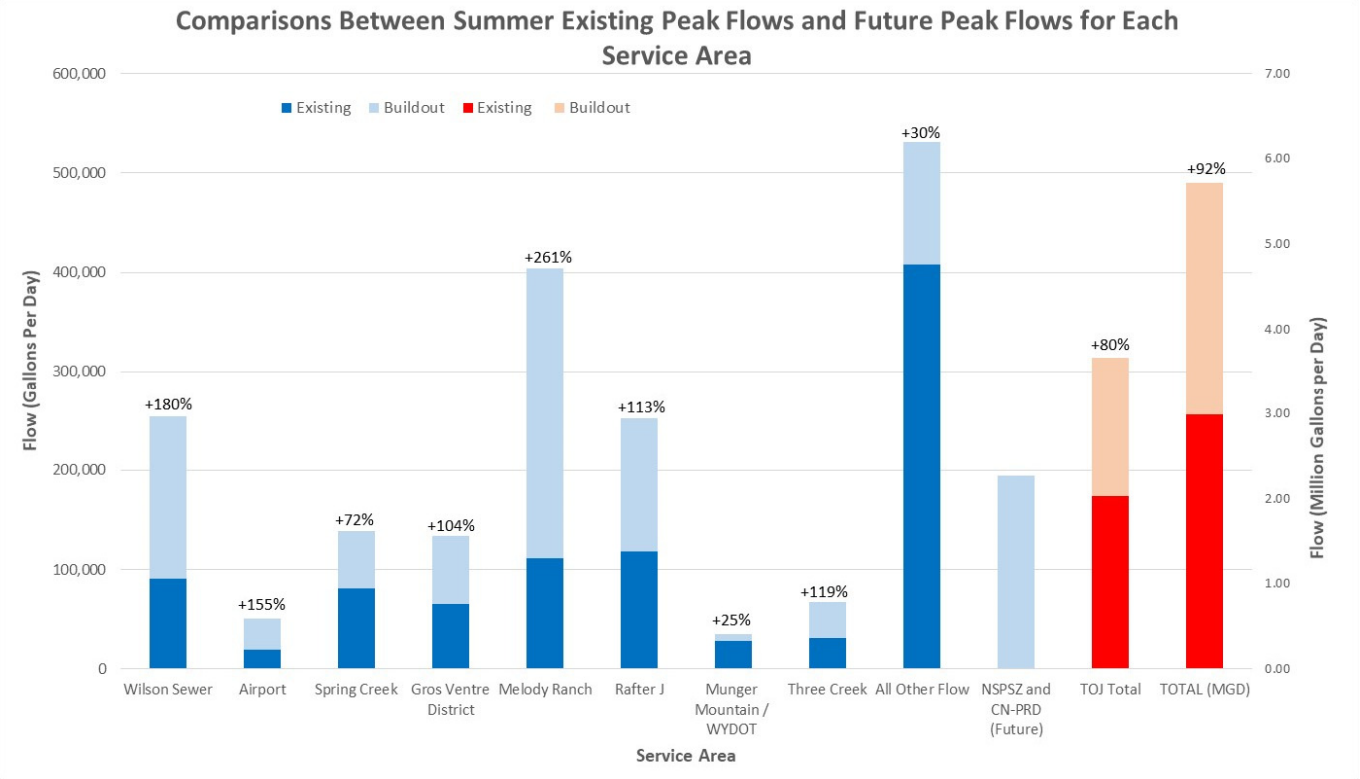
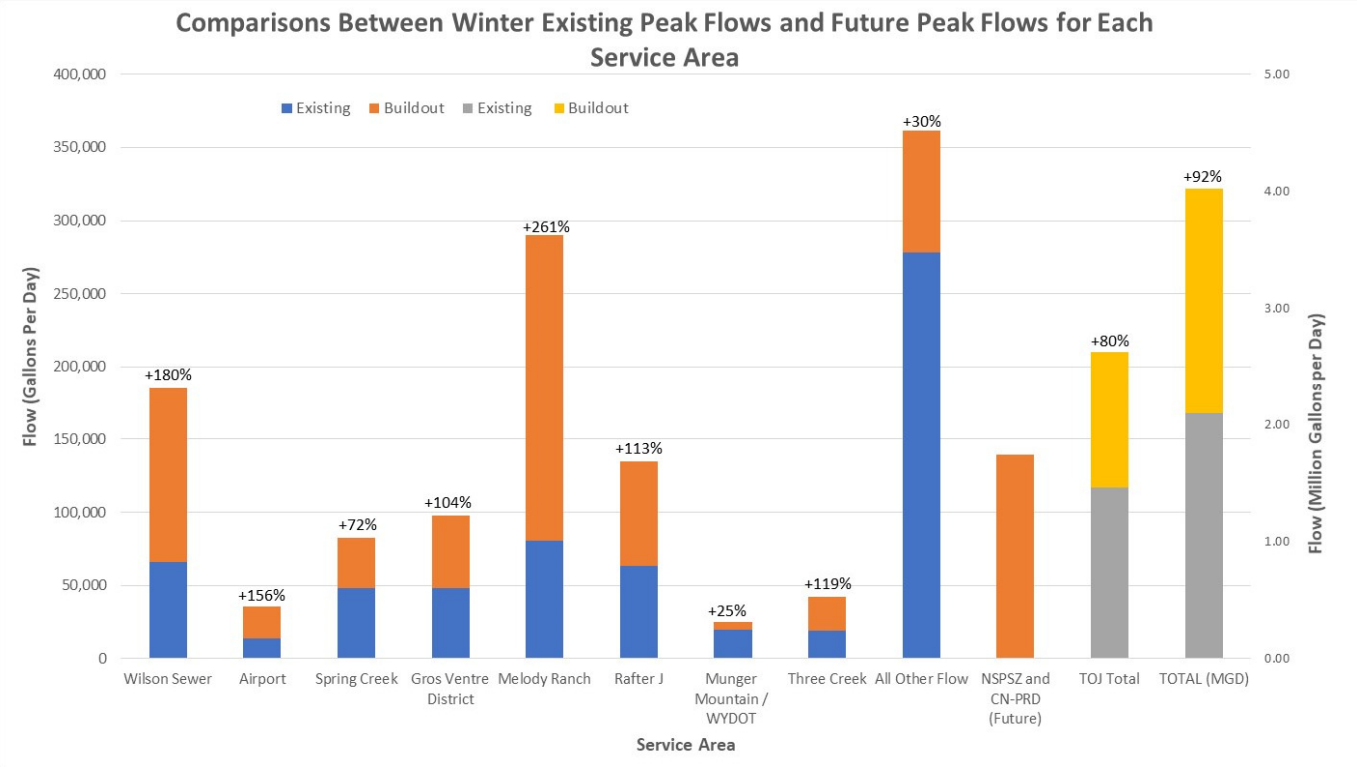


Figure 12 Winter Buildout Sewer Flow Comparison



7.2 Future Sewer System Analysis

The projected future sewer flows were utilized to analyze the existing sewer system to determine long range recommendations for the system to address the increased flows. As with the existing sewer capacity analysis, the TOJ sewer model was utilized to determine capacity deficiencies within the sewer system. In addition to analyzing the existing sewer system components, potential future expanded contracted service areas outside of the TOJ were identified.

7.3 Sewer Modeling

The existing sewer model, which was updated in the existing capacity analysis, was utilized to determine system deficiencies with the projected future buildout flows. Section 6.8.1 of the existing system capacity analysis discussed using the TOJ sewer model and assumptions that had to be made with data missing from the sewer manhole inputs. The model was utilized in the same manner as the existing system capacity analysis. The projected flows were populated into the model spatially correct through the GIS component. To ascertain locations in which capacity issues exist within the collection system, peak hour flows must be projected into the model. As with the existing capacity analysis the model was populated with average daily flow in the winter months, then a 1.33 peaking factor (as determined in Table 7.1) was placed on the base flow to project the buildout average summer day flow. To determine a peak hourly flow a standard peaking factor of 3.0 was added to the average summer day flows allowing for an estimated peak hour buildout flow. To address the lift station contributions, a worst-case situation was modeled, assuming all lift stations are operating at the same time at full pumping capacity. This included not only the TOJ lift Stations but also required determining contributing lift stations from contracted

service areas, outside the TOJ maximum pumping capacity. Section 7.4.2 notes the flow inputs for the model from the lift stations. The collection system was analyzed and noted where any pipelines exceeded 75% volume capacity.

7.4 Future System Capacity Improvements

As with the existing capacity analysis, the projected future demands on the sewer system were used to assess the capacity of the existing system. The components which were reviewed included the collection system, lift stations, and wastewater treatment plant. From this analysis improvements to the system were noted to be addressed in future master planning of the TOJ sewer system.

7.4.1 Collection System

Using the hydraulic model in the same way as the existing capacity analysis, using future buildout flows with assumed peaking factors, allowed for an analysis of the collection system. Many of the pipelines with capacity deficiencies were noted in the existing analysis in Section 6.8 of this report. The capacity issues noted in the existing capacity analysis are not addressed in this future buildout flow scenario and are assumed to be addressed prior to this buildout scenario. To determine buildout issues the same requirements were maintained, pipelines with capacities exceeding 75% were identified.

From the analysis the following interceptor mains will require upsizing to convey the projected flows:

- 8-inch main in Glenwood Street from Perry Street to Mercill Avenue
- Much of the 20-inch main in the Karns Meadow
- Segments of the 24-inch main in Elk Run Lane and along Flat Creek
- Segments of the 18-inch main in High School Road towards Cottonwood

In reviewing the trunk collection line from the TOJ (High School Rd to the WWTP), the buildout capacity of the 30-inch interceptor ranges depending on slopes from 50-60% full capacity north of Rafter J and between 60-65% capacity south of Melody Ranch.

7.4.2 Lift Stations

As with the existing capacity analysis the lift stations were reviewed to determine if capacity is adequate when subjected to the future buildout flows. The maximum pump flow rates for each pump station were reviewed with the projected future flow. Per WYDEQ requirements, the lift station pumps were checked to see that starting more than once every 10 minutes would occur.

Utilizing the existing design pump rate of the pump stations and the buildout flow projections the existing TOJ lift stations were evaluated for adequacy. Assuming a worst case cycle every 10 minutes, pumps cycling more than 144 times per day or running more than 720 minutes in a day would be exceeding the requirements. Table 7.4.2 below indicates not only the TOJ lift stations but also the lift stations in contributing contracted service areas. The reason for including the contributing contracted service area lift stations is to determine if the existing pump discharge will need to be increased near future buildout. The contributing flows from these non TOJ lift stations is currently modeled as a fixed constant flow to

recreate a worst-case scenario as discussed previously. If the non TOJ lift station flow rate needs to increase this would have needed to be indicated in the model to identify collection system issues. The buildout average day was projected as described in Section 7.1 with the Average Day Peak Month calculated from the peaking factors indicated in Table 7.1. Peak Day in the Peak Month flow used the same 1.2 peaking factor. From which a total assumed daily run time was calculated. As can be seen in the table all the lift stations have flow rates which are compatible with buildout flows and the existing flow rates can be used within the sewer model with the exception of the Rafter J lift station. This flow will need to be increased to 400 gpm to address the future buildout flow. To account for this difference a 400 gpm flow was inputted into the model for the Rafter J sewer contribution. Note that only the west portion of Melody Ranch is distributed into the collection system via a lift station.

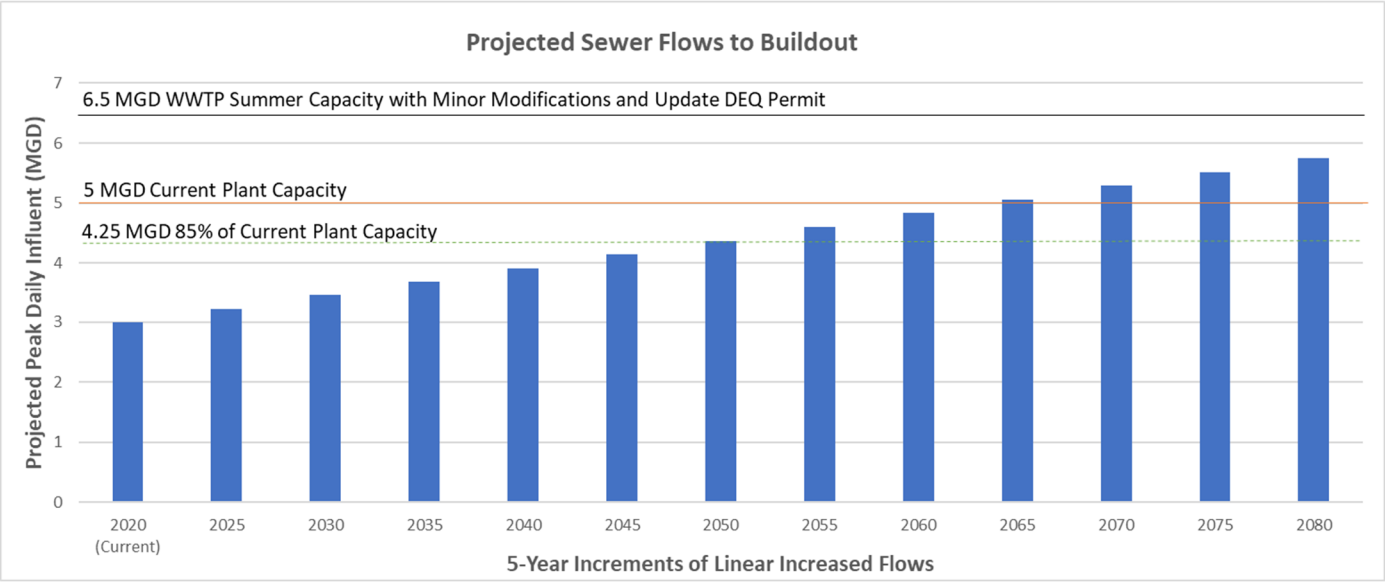
Table 7.4.2 Future Buildout Lift Station Review

Lift Station	Design Pump Rate (GPM)	Buildout Average Day Winter Month (GPD)	Buildout Average Day Peak Month (GPD)	Peak Day, Peak Month (GPD)	Total Daily Run Time (Min.)
Berger Lane	200	6,886	8,952	10,742	54
Martin Lane	200	10,153	13,199	15,839	79
Spring Creek	736	193,118	269,562	323,475	440
Three Creek A	320	37,863	56,471	67,765	212
Three Creek B	165	2,036	3,034	3,640	22
Cottonwood Flat	100	17,346	22,550	27,060	271
Cottonwood Park	400	87,857	114,214	137,057	343
Outside TOJ					
Wilson	540	165,380	212,498	254,997	472
Rafter J	200	120177	209,781	251,737	1,259
Munger Mountain	286	22,806	30,332	36,398	127
Melody Ranch West	160	44,329	57,628	69,153	432

7.4.3 Wastewater Treatment Plant (WWTP)

As discussed in the existing capacity analysis, the TOJ WWTP has a permitted capacity of 5.0 MGD averaged over a month, with the ability to increase the discharge permit to 6.5 MGD averaged over a month in the summer with minor modifications and a revised WYDEQ permit. As indicated in Table 7.1, the average daily flow in the winter is projected at 3.59 MGD and 4.79 MGD in the summer. Although these projections are lower than the plant capacities, general operational procedure is to begin the planning process for increased capacity when 85% of the existing capacity is met. Figure 13 assumes a linear growth pattern to buildout over 60 years. In reviewing Figure 13, the graph indicates that in 30 years the threshold will be reached to begin to plan for future treatment needs and expansion. Note that this existing contract service area is indicated in Figure 10. Also assuming a liner growth projects the plant capacity being met in 45-50 years. Note that if contracted service areas are expanded from those reviewed in this study, the threshold for planning future treatment needs will be expedited and require addressing expansion sooner than assumed. There are a few alternatives which may be investigated for increasing the capacity of the wastewater treatment plant. The existing lagoons could be expanded but this is restrictive as there may not be enough suitable land on the TOJ property. A mechanical wastewater treatment plant could be constructed, like an oxidation ditch or some newer improved technology. Lastly additional wastewater plants could be built in Teton County to service wastewater generators outside the TOJ. The current Teton County Wastewater Master Plan Study, which is underway currently, should consider possible (additional) future wastewater plants with the county.

Figure 13 Project Future Sewer Flows Over Time



7.5 Future Sewer System Conclusions/Recommendations

Many of the recommendations for the sewer system which will accommodate the increased capacity needs were identified in the existing capacity analysis. The table below indicates changes that will be required in the sewer system as future buildout flows are experienced. What needs to be taken into account is the 60-year projection on these flows. The useful life of many, if not most of the sewer system components will be met before that time. In order for the system to meet the anticipated future demands the following improvements are required.

Table 7.5 NE Sewer Masterplan Recommendations

Project	Description	Purpose/Goal
Wastewater Treatment Plant Increase Capacity	Increase capacity at the WWTP to address buildout flows.	At a point when capacity reaches 85% of the design capacity, planning for increasing capacity should begin.
Glenwood Sewer	Increase capacity of the sewer main	Replace the 8-inch main with a larger 12-in, in Glenwood from Perry to Mercill.
Karns Meadow Sewer	Increase capacity of the sewer main in Karns meadow.	Replace the existing main with a larger to increase capacity. Recommend relocating the sewer main out of the meadow and wetland into a street like Snow King Ave.
Elk Run Lane Sewer	Increase capacity of the 24-inch interceptor	Replace the existing 24-inch main with a larger to increase capacity along Flat Creek. Sections of pipe include MH 2-050 to MH 2-040, MH 2-050 to MH 2-040, and MH 2-070 to MH 2-060.
Cottonwood Sewer	Increase capacity of the 18-inch interceptor	Replace much of the 18-inch sewer main in High School Road from the interceptor going to the treatment plant west to Cottonwood Park, from MH 8-100 to MH 8-000.

The Scope of this study specifically addressed that the improvements noted here along with the current TOJ CIP projects consider environment factors including climate, wetlands, endangered species, and geological consideration. The proposed improvements are located in proximity to existing facilities. Environmental factors really do not affect the recommendations with the exception of some pipe lines crossing Flat Creek and expansion/construction of a new WWTP facility. The construction or modifications of the WWTP will likely require an environmental review process which will address many factors.

7.5.1 Future Sewer Regulations or Standards that may require changes

In 1972, Congress enacted the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA). The purpose of the CWA is to promote the restoration and/or maintenance of the chemical, physical, and biological integrity of our nation's surface waters and to support (1) the protection and propagation of fish, shellfish, and wildlife and (2) recreation in and on the water. WDEQ's Water Quality Division (WQD) administers the CWA in Wyoming.

The Wyoming Department of Environmental Quality (WDEQ) prepared the 2020 Integrated 305(b) and 303(d) Report (IR) to provide a summary of water quality conditions in the State of Wyoming. This report fulfills the Clean Water Act (CWA) requirements of Section 305(b), 303(d), and 314(a)(1).

The Wyoming DEQ has not conducted a Snake River Basin Probabilistic Rotating Basin Survey (PRBS) which uses a randomly selected subsample of a population (streams and rivers), similar to a census, in order to make inferences about characteristics of the population as a whole. The Snake Basin - PRBS is scheduled for 2021. According to Wyoming's 2020 Integrated 305(b) and 303(d) Report of the total 11,241 miles of perennial, intermittent, and ephemeral streams and 52,084 acres of lakes/ponds and reservoirs in the Snake River Basin, assessments resulting in use support determinations have been completed on 1 percent of the streams. No lakes have been assessed in the Snake River Basin.

Many of the other river basins in Wyoming that have had full assessment have resulted in Total Maximum Daily Load (TMDL) limitations.

Wyoming's 2020 Integrated 305(b) and 303(d) Report states that emerging surface water quality issues are harmful cyanobacterial blooms (HCBs) which are dense concentrations of photosynthetic cyanobacteria that pose serious health risks to people, pets, and livestock. People and animals are exposed to HCBs through contact, ingestion, and inhalation of water containing cyanobacteria and the cyanotoxins and irritants they produce. Health effects include skin and mucous membrane irritation, as well as damage to the liver, kidney, and central nervous system. In extreme cases, cyanotoxin poisoning may lead to wildlife, pet or livestock death within minutes of exposure. Other consequences of HCBs include drinking water treatment costs, loss of crop agriculture, tourism losses due to decreased recreational revenue, waterfront real-estate losses, and hypoxia events that lead to fish kills. Many factors contribute to the formation of HCBs (e.g., sunlight, wind, flow); however, nutrient pollution and temperature seem to be the primary drivers. In Wyoming, HCBs generally occur in the late summer and early fall when lake and reservoir water levels stabilize, temperatures warm, nutrients are assimilated and primary production increases. Blooms may occur in some lakes or reservoirs following turnover when cooler water is brought toward the surface and nutrients are released from bottom sediments.

The results of the Wyoming DEQ's Snake River Basin survey and the concern with HCBs may result in new TMDLs and discharge permit limits for nutrients being discharged from the Jackson WWTP such as nitrogen and phosphorus however, at this time, Nelson Engineering is noting that there is no indication that the Jackson WWTP discharge is creating issues with the water quality in the Snake River and that that all designated uses are supported and no use is threatened, the existing facility is operating well within the discharge permit.

7.5.2 Identify additional data needed to complete the study

At this time there is no additional information required to complete the capacity study. The existing capacity analysis discussed the need for collection of data from many manholes and pipelines in the system to update the GIS and sewer models.

7.5.3 Future Expansion of the Existing Contract Sewer Service Area

Just as with the possible expansion of the existing contract water service area, as development continues to occur through Teton County, the TOJ will have to consider each individual request from applicants to connect to the TOJ sewer system. This includes consideration of the capacity of the collection system and the WWTP. The TOJ should carefully consider each application in regards to location of the proposed expansion, proximity to existing facilities, and overall wastewater demand that will be required. As additional users are added to the sewer system that are not currently in the existing contract service area, the TOJ will need to review how this affects the overall total capacity of the system and the ability to meet all the buildout demands of the existing service.

APPENDIX A

Water System Inventory Logs

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / _____

Description Well #1

Location Elk Refuge

Pump Size 1385 gpm with 150 HP motor

Condition Operable / Inoperable / Unknown Poor / Fair / Good

Pump Station is in very good shape. Chlorination and Poly Phosphate injected at site.

Building Stick Built

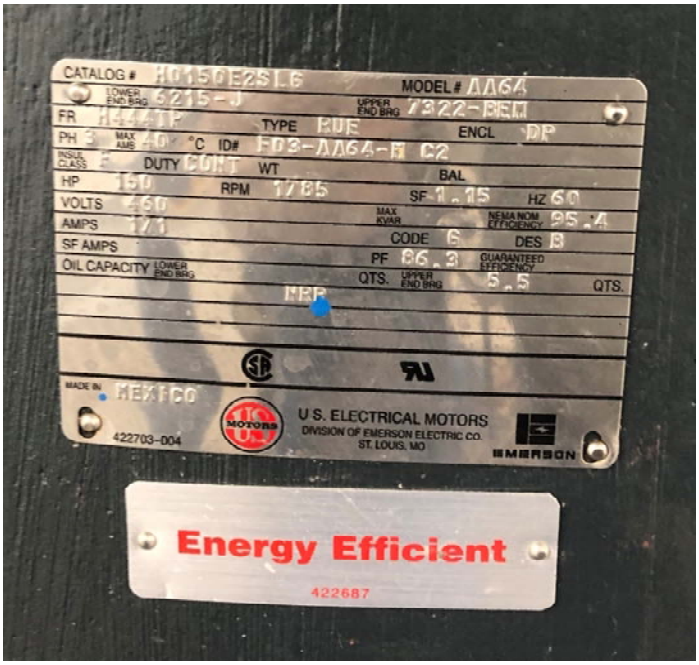
Needed Repairs Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years

Building is old but in very good shape. According to operators only change needed is upsized main size to

increase flow capacity. No generator at this pump station but uses the generator at Well #2 building.

Photo Notes: Pictures in file

Sketch / Additional Notes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UPPER END BRG 7322-BEM
FR H444TP
TYPE RUE
ENCL DP
PH 3
MAX AMB 40 °C
ID# F03-AA64-H C2
INSUL CLASS F
DUTY CONT
WT
BAL
HP 150
RPM 1785
SF 1.15
HZ 60
VOLTS 460
MAX KVAR
NEMA NOM EFFICIENCY 95.4
AMPS 171
CODE G
DES B
SF AMPS
PF 86.3
GUARANTEED EFFICIENCY
OIL CAPACITY LOWER END BRG
QTS.
UPPER END BRG 5.5
QTS.
MADE IN MEXICO
422703-004
U.S. ELECTRICAL MOTORS
DIVISION OF EMERSON ELECTRIC CO.
ST. LOUIS, MO
EMERSON
Energy Efficient
422687

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / _____
Description	**Well #2**
Location	Elk Refuge
Pump Size	1450 gpm with 150 HP motor
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
Pump Station is in very good shape. Chlorination and Poly Phosphate injected at site.	
Diesel generator which is operated 1x per week for 30 mins.	
Building	Stick Built
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Building is old but in very good shape. According to operators only change needed is upsized main size to	
increase flow capacity.	
Photo Notes: Pictures in file	

Sketch / Additional Notes


WESTERN
SAFETY


CATERPILLAR
CAT
MARCA REGISTRADA, REGD., MARQUE DÉPOSÉE
CATERPILLAR, CAT AND ARE TRADEMARKS OF CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U.S.A.
MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING LETTERS PATENT

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / _____

Description Well #3

Location Elk Refuge

Pump Size 750 gpm with 100 HP motor

Condition Operable / Inoperable / Unknown Poor / Fair / Good

Pump Station is in very good shape. Chlorination and Poly Phosphate injected at site.

No generator.

Building Stick Built

Needed Repairs Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years

Building is old but in very good shape. According to operators only change needed is upsized main size to

increase flow capacity.

Photo Notes: Pictures in file

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / _____

Description Well #5

Location Karns Meadow

Pump Size 1250 gpm with 200 HP motor

Condition Operable / Inoperable / Unknown Poor / Fair / Good

Pump Station is in very good shape. Chlorination and Poly Phosphate injected at site.

Diesel generator which is operated 1x per week for 30 mins.

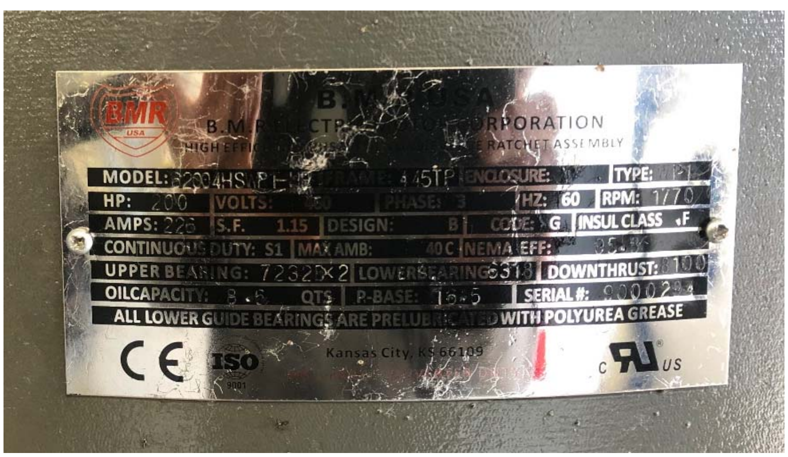
Building Stick Built

Needed Repairs Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years

Building is old but in very good shape. No modifications or changes needed.

Photo Notes: Pictures in file

Sketch / Additional Notes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MAX AMB: 40C
NEMA EFF:
UPPER BEARING: 7232D×2
LOWER BEARING
DOWNTHRUST:
OILCAPACITY: QTS
P-BASE:
SERIAL #:
ALL LOWER GUIDE BEARINGS ARE PRELUBRICATED WITH POLYUREA GREASE
CE
ISO
9001
Kansas City, KS 66109
c US

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / _____

Description Wells #6, #7, and #8

Location Ely Springs Road

Pump Size #7 - 900 gpm, #6 and #8 - 1200 gpm

Condition Operable / Inoperable / Unknown Poor / Fair / Good

Pump Station is in very good shape. Chlorination and Poly Phosphate injected at site.

Diesel generator which is operated 1x per week for 30 mins.

Building Stick Built

Needed Repairs Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years

Building is old but in very good shape. No modifications or changes needed. Changes needed are that

well #7 has a crooked casing and the pump has to be smaller than the other 2 to fit. In summer it deadheads.

Photo Notes: Pictures in file

Sketch / Additional Notes

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Professional Engineers & Land Surveyors
• JACKSON, WY • BUFFALO, WY •

Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /Tank
Description: Elk Refuge Tank	
Location	Elk Refuge
Date Built	2012
Size	1,300,000 Gallon Cast in Place Concrete
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Recently constructed, very good shape, no leaks visible.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Tank Access Lid
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	Cleaned in 2018 and inside showed no issues.
Photo Notes: Photos taken	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / Tank
Description: Virginian PRV	
Location	Snow King Estates, Right near Lot 36
Date Built	2012
Size	120,000 Gallon — Cast in Place Concrete
Condition	Operable / Inoperable / Unknown — Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Recently constructed, very good shape, no leaks visible.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Tank Access Lid
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	Cleaned in 2018 and inside showed no issues.
Photo Notes: Photos taken	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / Booster Station
Description: Snow King Estates Booster Station	
Location	Snow King Drive and Upper Redmond
Pump Size	2-10 HP and 50 HP fire pump — Flow Range: 70-440 gpm
Operation	Range High: 158 Low: 158 Units:_____
Condition	Operable / Inoperable / Unknown — Poor / Fair / Good
Pump station is in good shape but dated.	
Structure	Stick built in very good condition.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Pumps to Snow King Tank. Pump station piping is undersized. Pipes need to be upsized to provide the	
proper amount of flow. No generator.	
Photo Notes	

Sketch / Additional Notes


GENERAL ELECTRIC


MARATHON

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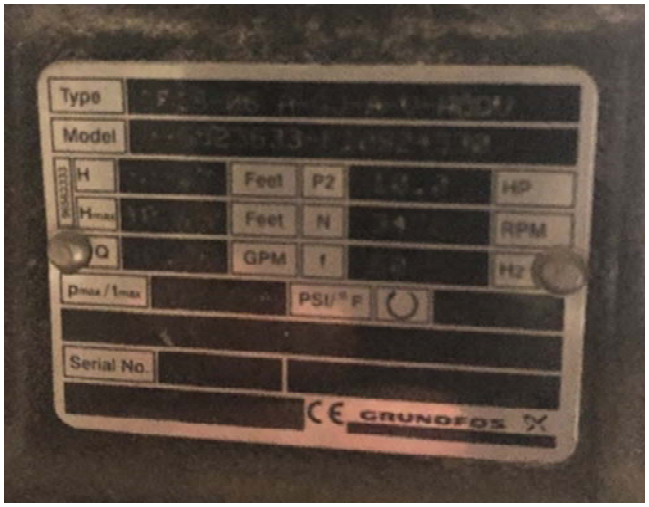
Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / Booster Station
Description: Spruce Drive/Aspen Highlands Pump Station	
Location	Spruce Drive
Pump Size	10 HP, 2-20 HP, 2-50 HP Flow Range: 0-1900 gpm
Operation	Range High: 142 Low: 113 Units:_____
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
Pump Station is in very good condition. Was constructed in 2006 before the Pine Glades development.	
Feeds several different pressure zones up in the area.	
Structure	Stick built in very good condition.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Pumps come on sequential based on discharge pressure. As pressure decreases the flow increases.	
Photo Notes	

Sketch / Additional Notes


DSGAC-7598011
CUMMINS POWER GENERATION


Type
Model
H
Feet
P2
HP
Feet
N
RPM
Q
GPM
f
Hz
PSI/°F
Serial No.
GRUNDFOS

NELSON ENGINEERING since 1964
Professional Engineers & Land Surveyors
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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/04/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant / Booster Station
Description: Broadway Booster Station	
Location	Broadway, across from Virginian Motel
Pump Size	5 HP, 2-10 HP, 3-40 HP Flow Range: 0-2500 gpm
Operation	Range High: 130 Low: 112 Units:
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
Pump Station is in very good condition was built in 2016.	
Structure	Stick built in very good condition.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Pumps come on sequential based on discharge pressure. All pumps are on drives.	
Photo Notes	

Sketch / Additional Notes



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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Broadway PRV and Pressure Sustaining Valve	
Location	Broadway and No Name Street
Date Built	2003
Model	Manufacturer: Cla Valve — Size: 2"&6" PRV, 4" Pressure Sustaining
Operation	Range High: 108 psi Low: 41 psi — Typically Open / Closed
Condition	Operable / Inoperable / Unknown — Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Vault and components look in good condition. Some water in the vault.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Large Vault with 2 access lids.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	Pressure sustaining valve was used in 2016 when new tank was built.
Photo Notes: Photos of interior taken.	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Clark Street PRV	
Location	Kelly and Clark Street
Date Built	Unknown
Model	Manufacturer: Cla Valve Size: 4"
Operation	Range High: 93 psi Low: 43 psi Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Vault and components look in good condition. Some water in the vault.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	MH with a MH lid
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	Valve is checked 2 times a year.
Photo Notes: Photos of interior taken.	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Karns Hillside PRV	
Location	Karns Subdivision Upper Rodeo Drive
Date Built	2010
Model	Manufacturer: Cla Valve Size: 2" and 6"
Operation	Range High: 96 psi Low: 78 psi Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Valve was leaking and could not see as vault was full of water.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	MH with a cover and collar in street
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Valve and piping were not visible but likely in good condition from age. TOJ repairs and inspects PRVs	
several times a year.	
Photo Notes: No photo because of water in vault.	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Karns Meadow PRV	
Location	Karns Meadow Drive and Snow King Ave
Date Built	unknown
Model	Manufacturer: Cla Valve Size: 2 1/2" and 6"
Operation	Range High: 92 psi Low: 58 psi Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Valve and Vault in good condition
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Large valve vault with MH lid.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	No repairs needed.
Photo Notes: Photos of interior taken.	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Pine Glades PRV	
Location	End of Pine Drive
Date Built	2009
Model	Manufacturer: Cla Valve Size: 2" and 6"
Operation	Range High: 67 psi Low: 35 psi Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Valve and Vault in good condition
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Vault with a MH lid
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Photo Notes: Photos of interior taken.	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Snow King Estates PRV	
Location	Snow King Court and Upper Snow King Drive
Date Built	2019
Model	Manufacturer: Cla Valve Size: 1-1/2"
Operation	Range High: Unknown Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Brand new, did not access
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	MH with a MH lid
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	Brand new, did not access
Photo Notes: No photos taken.	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Upper Cache Creek PRV	
Location	Enoch Ferrin Circle intersection
Date Built	unknown
Model	Manufacturer: Cla Valve Size:4"
Operation	Range High: 106 psi Low: 41 psi Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Valve and Vault in decent condition, some water in vault.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Large valve vault with MH lid.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
	No repairs needed.
Photo Notes: Photos of interior taken.	

Sketch / Additional Notes

NELSON ENGINEERING since 1964
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Town of Jackson Asset Evaluation
Water System Inventory

Date 11/4/2019 **Observer** MB

Feature	Valve / Curb Stop / Air Vac / Well / Pump / PRV / Bleeder / Hydrant /PRV Valve
Description: Virginian PRV	
Location	Front yard of the Virginian Motel near highway
Date Built	2016
Model	Manufacturer: Cla Valve Size: 2" and 8"
Operation	Range High: 85 psi Low: 45 psi Typically Open / Closed
Condition	Operable / Inoperable / Unknown Poor / Fair / Good
	Cracked / Leaky / Water Damage / Buried / Corrosion / Unable to Determine / Other:
	Valve and vault are basically new.
Access	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Large Vault with 2 access lids.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Photo Notes: Photos of interior taken.	

Sketch / Additional Notes

APPENDIX B

Well Water Rights

Permit No. U. W. 1385

Form UW3 PIONEER PRINTING & STATIONERY CO.

APPLICATION FOR PERMIT TO APPROPRIATE

UNDERGROUND WATERS IN THE STATE OF WYOMING

(Under Chapter 169, Session Laws of Wyoming, 1957)

WATER DIVISION NO. 4 (16) UNDERGROUND WATER DISTRICT TETON COUNTY

I, Albert L. Nelson of Rock Springs

County of Sweetwater, State of Wyoming,

being duly sworn according to law, upon my oath say:

1. The name of the applicant Town of Jackson. ~~Wyoming.~~ 108 South King St.

2. The postoffice address of the applicant % Town Clerk, Jackson, Wyoming. 83001

3. The use to which the water is to be applied is Municipal.
(State whether for irrigation, municipal, railway, industrial, etc.)

4. The name of the proposed well is Jackson Water Well No. 1
(Designate by name and number)

5. The well is to be located in the S E ¼ S E ¼ of Section
(Designate Subdivision)

27, T. 41 N., R. 116 W., of the 6th P.M., Wyoming,

on land owned by U.S. Government - Federal Elk Refuge

6. The type of the proposed well is Drilled.
(Drilled, Dug, Driven, or Jetted)

7. The estimated depth of the well is to be 200 feet.

8. The approximate depth to the water table below land surface is 50 feet.

9. The diameter of well at top is to be 16 inches, and at bottom 16 inches.

10. The kind of casing used, if any, is to be ~~Cast Iron~~ Steel.

11. Type of pump, if any, Vertical Turbine.
(Centrifugal, turbine, rotary, plunger)

Capacity of Pump ~~1000~~ 950 Adjudicated Amt. Gal. per min.

12. Type of power Electric Motor.
(Electric motor, steam or gasoline engine, etc.)

Horsepower of engine or motor 100 Horsepower.

13. Construction of well will begin within one year from date of approval of this application.

14. Completion of the construction and completion of the application of water to the beneficial uses stated in this application will be made within two years from date of approval of this application.

PERMIT NO. U.W. 1385 PAGE NO. 33

15. Estimated yield of water from proposed well ~~1000~~ 950 (Adj. Amt.) gallons per minute.

16. Estimated cost of well and pumping equipment 12,800 Dollars.

17. If for irrigation, the land proposed to be irrigated should be described in the following tabulation.

(Give irrigable acreage in each legal subdivision and designate ownership of land. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or Permit Number, the source of supply and the name of the ditch or other well.)

If not used for irrigation, state type, method and place of use.

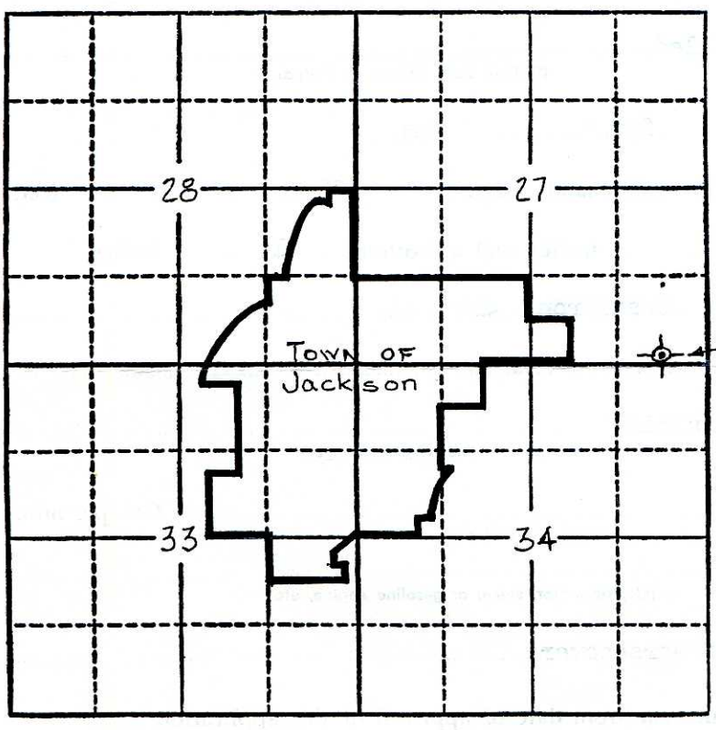
U.W. 1385

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
41 N.	116W.	27											X	X			X		
41 N.	116 W.	28													X		X	X	
41 N	116 W	32	X	X	X	X							sec 33		X	X	X	X	
41 N.	116 W.	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41 N.	116 W.	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			POINTS OF USE IN ABOVE MARKED AREAS TOGETHER WITH ANY OTHER																
			AREAS WHICH MAY BE SERVICED BY THE MUNICIPAL SYSTEM IN																
			THE FUTURE.																
40N	116W	5						X-4	X										
40N	116W	6	X-1		X	X				X									(Amended per BU Map)
			LANDS AT POINT OF DIVERSION OWNED BY U.S. GOV.																

TOTAL NUMBER OF ACRES TO BE IRRIGATED.....

Locate well and acreage to be irrigated as accurately as possible on the following plat:
If use is for purposes other than irrigation, show, in addition to well location, the point of use.

R. 116 W. R. 116 W.



See Map to Accompany B.U.

T. 41 N.

Jackson Water Well No. 1.

T. 41 N.

R. 116 W. R. 116 W.

Scale: 2" = 1 Mile

REMARKS: Jackson Water Well No. 1 is N. 83°-43' W., a distance of 762 feet from the S.E. Cor. of Sec. 27, T. 41 N., R. 116 W., 6 P.M., Teton County Wyoming.

(Signed) Albert E. Nelson

THE STATE OF WYOMING
COUNTY OF Sweetwater } SS.

I hereby certify that the foregoing application was signed in my presence and sworn to before me by Albert E. Nelson this 10 day of December, 1964.

E. L. Mahaffey
Notary Public

My Commission Expires 2-11, 1965

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } SS.

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

The right to be acquired under this permit shall not include the right to have the water level or artesian pressure at the point of diversion maintained at any level higher than that required for maximum beneficial use of available water in the source of supply.

If the well is a flowing artesian well it shall be so equipped that the flow may be shut off when not in use. Provision shall also be made for a threaded tap to which a pressure gage may be attached for determining shut-in pressure when desired.

This permit is granted subject to the condition that it shall not interfere with prior valid and existing rights to the use of the waters of said underground source, and use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957.

Construction of proposed work shall begin within one year from the date of approval.

The time for completing the work and completing the application of water to beneficial use shall terminate on December 31, 1966.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 24th day of December, A. D. 1964.

Floyd A. Bishop
Floyd A. Bishop, State Engineer.

PERMIT NO. U.W. 1385

Permit No. U. W. 1385

Temp. Filing No. U. W. 2-2-194

APPLICATION FOR PERMIT TO APPROPRIATE UNDERGROUND WATERS IN THE STATE OF WYOMING

Water Division No. 4

Underground Water District TETON COUNTY

Applicant Town of Jackson

% Town Clerk

Address Jackson, Wyoming

Name and Number of Well Jackson Water Well No. I

Use Proposed Municipal

THE STATE OF WYOMING }
STATE ENGINEER'S OFFICE } SS.

This instrument was received and filed for record on the 18th day of December, A. D. 1964, at 9:00 o'clock A. M.

Floyd A. Bishop, State Engineer.

Recorded in Book 6 of Underground Water Permits, on Page 33.

Form UW3

NOTICE

This application must be accompanied by a filing fee of two dollars.

Section 7, Chapter 169, Session Laws of Wyoming, 1957, provides in part: "Any person who after March 1, 1958, intends to acquire the right to beneficial use of any underground water in the State of Wyoming, except for those purposes specifically exempted by provisions, of Section 2 shall, before commencing construction of any well or performing any work in connection with said construction or proposed appropriation or any manner utilizing said water for beneficial purposes, file with the State Engineer an application for a permit to make such appropriation and shall not proceed with any of such construction or work until a permit is granted by the State Engineer, provided, that whenever any well constructed for any other purpose shall be found to be suitable for the withdrawal of underground water, such application shall be filed before said water is utilized for beneficial use."*********

Final proof may be submitted in accordance with the provisions of Sections 7 and 12, Chapter 169, Session Laws of Wyoming, 1957, after which Certificate of Appropriation will be issued by the State Board of Control.

PERMIT NO. U. W. 1385

PERMIT STATUS

Priority Date December 18, 1964 Approval Date December 24, 1964

March 26, 1965 - Notice of commencement of work on December 25, 1964, received
March 26, 1965 - Notice of completion on January 30, 1965, received
March 26, 1965 - Notice of completion of beneficial use on January 30, 1965, received

June 21, 1982--Proof of beneficial use on January 30, 1965 received in affidavit form. (Long Form)

MICRO-FILMED JUL 21 '82

CERT. REC. U.W. 9, P. 43
PROOF NO. U.W. 3249, AC. —
G.P.M. 950 IRR. ___ STK. ___ DOM. ___ ~~MISC.~~ MUN. ✓
MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

MICRO FILMED JUN 22 1994

April 8, 1996 - This permit has been enlarged by Permit No. U.W. 104232 for additional use and points of use only. There is no physical enlargement of this well.

MICRO FILMED JAN 21 1997

January 30, 2002 - This permit been enlarged by Permit No. U.W. 142426 for additional yield only. There is no physical enlargement of this well.

MICRO FILMED JUN 14 2002

SCANNED AUG 30 2011

NOTE: "DO NOT FOLD THIS FORM. — ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH WATERPROOF INK WILL BE ACCEPTED."

Form UW4-A

STATEMENT OF COMPLETION OR ABANDONMENT OF PERMIT NO. U. W. 1385

UNDERGROUND WATERS

UNDER CHAPTER 169, SESSION LAWS OF WYOMING, 1957

WATER DIVISION NO. 4 (16) **UNDERGROUND WATER DISTRICT** Teton County

I, Albert L. Nelson of Jackson, County of Teton, State of Wyoming, being duly sworn according to law, upon my oath say:

1. The name of the permittee or present owner Town of Jackson, Wyoming

2. The postoffice address of the permittee or present owner 108 South King St. Jackson, Wyoming 83001

3. The name of the well is Jackson Water Well No.1 (Designate by name and number)

4. Description of well: Location N.84° 35' W. 796 feet from the S.E. corner of Section 27 T. 41 N., R. 116 W., and is in the SE ¼ S.E. ¼ of Section 27 T. 41 N., R. 116 W.; the type of well is: Drilled (X), Dug ( ), Driven ( ), Jetted ( ), Other

CASING RECORD

Diameter Inches	Lbs. Per Foot	DEPTH Top	DEPTH Bottom	PERFORATIONS From	PERFORATIONS To
28		ground	12'	None	
20		12'	160'	N.R.	

CEMENTING RECORD

DEPTH IN FEET From	DEPTH IN FEET To	No. Sacks Cement	Method Used
ground	12'	N.R.	NR.

Total depth of well 201 feet, depth to static water level in well 54'6" feet.

FLOWING ARTESIAN WELLS ONLY: Is well equipped with gate valve? Yes ( ) No ( ).

Name and address of driller Andrew Well Drilling, Idaho Falls, Idaho

Date of commencement of well 25 Dec. 64
Date of completion of well 30 Jan. 65

5. If well under this permit is to be abandoned, please state reasons for abandonment. (If well has been abandoned, it will not be necessary to complete the balance of this form, except for log of well, Item 14, and signature before a Notary Public).
Not Applicable

6. Description of pump: Make Layne & Bowler Pump Co.; type Vertical Turbine (Centrifugal, turbine, rotary, plunger); rated capacity of pump 1000 gal. per minute.

7. Description of power plant: Method of operation Electric Motor (Electric motor, steam or gasoline engine, etc.); Horsepower of engine or motor 100.

8. Give date pump and power plant were installed and works completed 13 Feb, 19 65.

9. Record of Pumping Test (to be supplied by person or firm making test). Name and address of person making test. Well test report as supplied by Andrew Well Drilling enclosed
date of test 27, 28, & 29 Jan. 65; depth to water before test, 54'6" feet, and immediately afterward 57'8" feet; Length of test, 48 hours; average discharge, 1100-950 (Adj. Amt.) gal. per minute.

Permit No. U.W. 1385 Page No. 33

U.W. 1385

10. Actual cost of well and pumping equipment 13,000 Dollars.

11. If well is for irrigation purposes, and acreage to be served by well differs from lands described in permit, please re-describe lands in space below:
not applicable

12. Depth at which main zone of water was encountered is 50 feet to 160 feet, and the water bearing formation is Gravel, Silt, Cobbles and Boulders
(Sand, gravel, shale, clay, limestone, sandstone, etc.)

13. If other water zones were found, give depth to each:
Not Applicable feet to feet.
feet to feet.

14. LOG OF WELL. (If additional space is needed attach extra sheet).

TYPE OF MATERIAL ENCOUNTERED (Give color and tell whether hard or soft)	DEPTH IN FEET From	To	Thickness in feet	REMARKS (Especially information as to water found)
1. Top Soil	0	2	2	
2. Gravel Clay	2	5	3	
3. Gravel Silt, Cobbles	5	44	39	
4. Gravel, Silt	44	62	18	Some water
5. Gravel, Silt and Cobbles	62	88	26	Good water bearing strata
6. Gravel, Silt	88	114	26	Not too good water bearing strat
7. Silt (brown)	114	116	2	Poor water bearing strata.
8. Gravel Silt and Cobbles	116	134	18	Good water bearing qualities
9. Silt (brown)	134	152	18	Poor water bearing qualities
10. Brown Silt and Boulders	152	155	3	Poor water bearing qualities
11. Brown Silt and Boulders and Cobbles	155	158	3	Poor water bearing qualities
12. Limestone (hard)	158	160	2	No water
13. Limestone Crackes	160	165	5	No water
14. Limestone	165	170	5	No water
15. Limestone, Brocken	170	200	30	No water

REMARKS: This well has been completed, extension of the existing facilities of the town have been completed, and the water has been put to beneficial use.
For well test report See Misc. Notices, Permit No. U.W. 1385

(Signed) Albert L. Nelson

THE STATE OF WYOMING,
County of Sweetwater } ss.

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by Albert L. Nelson this 25 day of Mar, 1965

My Commission Expires 9-20, 1966 Nancy Joan Gasparetti
Notary Public.

Date of Receipt: March 26, 1965.

George L. Christopulos
State Engineer
George L. Christopulos,
Deputy State Engineer

Form U.W. 8

RECEIVED JUN 21 1982 STATE ENGINEER Cheyenne, Wyo

MICRO FILMED JUN 14 2002

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

MICRO FILMED JUL 21 '82

SCANNED AUG 30 2011

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT Teton County

STATEMENT OF CLAIM

DATE OF PRIORITY Dec 18, 1964

PERMIT NO. U.W. 1385

WELL REGISTRATION

LOCATION SE ¼ SE ¼ of Section 27

NAME OF WELL Jackson Water Well No. 1

T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address 108 South King St. P.O. Box 1687, Jackson, Wy Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used Jan 30, 19 65

Use: _____ Date First Used: _____, 19 ____ Use: _____ Date First Used _____, 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-366 Wyoming Statutes (1957 Supp.) or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1). The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

U.W. 1385

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Melvin Webb, Town Administrator — June 15, 19 82

Signature of Owner or Authorized Agent — Date

THE STATE OF WYOMING)
)
County of TETON)

I hereby certify that the forgoing statement was signed in my presence and sworn to before me by MELVIN WEBB this 15th day of June, 19 82.

My Commission Expires July 9, 19 83. DeAnn L. Sutton
Notary Public

DEANN L. SUTTON NOTARY PUBLIC TETON COUNTY, WYOMING

Date of Receipt: JUN 21 1982, 19

RECEIVED JUN 11 '82 NELSON ENGINEERING

SCANNED JUN 30 2011

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 43
Order Record No. 42 , Page 40 38
Permit No. 1385 , Proof No. 3249

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well is commingled with that of the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746.													
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground waters.													

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

16 ?
14035

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 104232
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 24.5.332

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING 1st Enl. Jackson Water Well No. 1 (Enlargement of UW 1385 for additional use and points of use only.)

1. Name of applicant(s) Town of Jackson Phone: (307)733-3932

2. Address of applicant(s) P.O. Box 1687 (MAILING ADDRESS) Jackson (CITY) WY (STATE) 83001 (ZIP)

3. Name & address of agent to receive correspondence and notices Applicant & copy to Theresa Gunn-Engineering Associates P.O. Box 1900 (MAILING ADDRESS) Cody (CITY) WY (STATE) 82414 (ZIP) Phone: (307)587-4911
& copy to Bob Norton-Nelson Engineering P.O. Box 1599 Jackson, WY 83001 (307)733-2087

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____.

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☒ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: See Remarks

☐ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SE 1/4 SE 1/4 of Sec. 27, T. 41 N., R. 116 W. of the 6th P.M. (~~XXXXXX~~), Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 200 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 (This Enl.) gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.
UW1385 950 gpm
Total 950 gpm

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
				See attached tabulation sheet															

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

SEE REVERSE SIDE

11. The well or spring is to be constructed on lands owned by U.S. Government-Federal Elk Refuge
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by residents of the Town of Jackson. See Remarks.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: See attached Remarks Continuation Sheet.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Theresa Gunn, PE (Agent) — Signature of Applicant or Authorized Agent

April 5 — Date, 19 96

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES — $25.00
(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS — $50.00

MONITOR (For water level measurements or chemical quality sampling) or TEST WELL — NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 8th day of April, A.D. 19 96, at 10:00 o'clock A. M.

Permit No. U.W. 104232

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

This permit serves to enlarge an existing well for additional use and points of use only and establish a valid water right for the same. STATEMENT OF COMPLETION WAIVED.
FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and~~ completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 20th day of October, A.D. 19 96.

Gordon W. Fassett

GORDON W. FASSETT State Engineer

First Enlargement of Jackson Water Well No. 1

Items below are numbered to correspond to the numbering on the UW5 permit.

4. Miscellaneous Use includes reservoir supply for the Town of Jackson Wastewater Treatment Plant Reservoir, Permit Nos. 8114R and 29 4/1957 (enl), West Borrow Area Lake Reservoir, Permit Nos. 8116R and 29 3/1957 (enl), Blue Heron Reservoir, Permit No. 29 3/1957, Sandhill Crane Reservoir, Permit No. 29 3/1957, Snowy Egret Reservoir, Permit No. 29 4/1957, South Park No. 1 Reservoir, Permit No. 9725R, South Park No. 2 Reservoir, Permit No. 9726R, and South Park No. 3 Reservoir, Permit No. 9727R. Commingling information is noted on the attached tabulation sheet.

7. (a) 950 gallons per minute was the previous appropriation under Permit No. UW1385.

(b) Ground water appropriated by the Town of Jackson from its Jackson Water Well Nos. 1, 2, 3, and 5 allow the Town to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a total combined quantity of no more than 5,000 acre-feet of ground water in any one calendar year. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993.

12. Water is also to be used on the following lands for Miscellaneous Use - reservoir supply.

Town of Jackson: Town of Jackson Wastewater Treatment Plant Reservoir TT T. 39 N., R. 116 W.
West Borrow Area Lake Reservoir TT No. 29 3/1957

Wyoming Game and Fish Department: Blue Heron Reservoir TT T. 39 N., R. 116 W. 3/1957
Sandhill Crane Reservoir TT No. 29 3/1957
Snowy Egret Reservoir TT T. 39 4/1957
South Park No. 1 Reservoir (9725 Res.)
South Park No. 2 Reservoir (9726 Res.)
South Park No. 3 Reservoir (9727 Res.)

An agreement between the Town of Jackson and the Wyoming Game and Fish Department dated May 31, 1993 entitled "Cooperative Wetlands Development Project Agreement" outlines the use of fully treated effluent from the Town of Jackson Wastewater Treatment Plant as the source of supply for the Blue Heron, Sandhill Crane, and Snowy Egret Reservoirs. Additional correspondence from Engineering Associates dated May 30, 1996 and from the Wyoming Game and Fish Department outlines the use of the same fully treated effluent mentioned herein as an additional source of supply for the South Park No.1, South Park No. 2, and South Park No. 3 Reservoirs.

The attached tabulation sheet lists the ground water wells that are commingled to make up the fully treated effluent that is discharged from the Town of Jackson Wastewater Treatment Plant.

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM

PERMIT NO. U.W. 104232

WELL REGISTRATION

DATE OF PRIORITY ~~APRIL 8, 1996~~

LOCATION SE ¼ SE ¼ of Section 27

NAME OF WELL 1ST ENL. JACKSON WW #1

T. 41 N., R. 116 W.

1. Name of Claimant(s) TOWN OF JACKSON

2. Address P.O. BOX 1687 JACKSON, WY Zip Code 83001

3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used OCT. 10 , 19 97
MISC. RESERVOIR
Use: SUPPLY Date First Used: OCT. 10 , 19 97 Use: _____ Date First Used _____ , 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 104232

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton PE-6152 Oct 16, 19 97

Signature of Owner or Authorized Agent — Date

THE STATE OF WYOMING)

County of _____)

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by _____

_____ this _____ day of _____, 19_____.

My Commission Expires _____, 19_____. _____

Notary Public

OCT 22 1997

Date of Receipt _____, 19_____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11, Page 266
Order Record No. 58, Page ~~138~~ 120
Permit No. U.W. 104232, Proof No. U.W. 4534

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enl. Jackson No. 5 Well, Permit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing the the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre feet of ground water in any ten (10) year period from its municipal water well field provided however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.													
			(NOTE: Limits under previous ground water permits were 4,500 acre feet yearly average; 5,000 acre feet yearly maximum, and 45,000 acre feet, total 10 year maximum.)														

FORM U.W. 5
Rev. 8/01
FILING FEE SCH
ON REVERSE SI

SE 4/16602
50.00
1/30/02

1-30-02
10.00A

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002
(307) 777-6163

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

MICRO FILMED JUN 14 2002

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 142426
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton

Temporary Filing No. U.W. 33-4-325

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING 2nd Enl. Jackson Water Well #1 (Enl. of Permit No. U.W. 1385 for yield only)

1. Name of applicant(s) Town of Jackson Phone:

2. Address of applicant(s) P. O. Box 1687 (MAILING ADDRESS) Jackson (CITY) WY (STATE) 83001 (ZIP)

3. Name & address of agent to receive correspondence and notices Shawn O'Malley

P.O. Box 1687 (MAILING ADDRESS) Jackson (CITY) WY (STATE) 83001 (ZIP) Phone: 307-739-4547

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____ .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____ .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☒ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, potable supplies in office, etc. Describe in remarks. SEE ATTACHMENT SHEET 2

☐ Coal Bed Methane Water produced in production of coal bed methane gas.

☐ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SE 1/4 SE 1/4 of Sec. 27, T. 41 N., R. 116 W. of the 6th P.M. (W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot/Tract _____ Block _____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 201 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 500 THIS ENL. gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

Permit No. U.W. 1385 950 gpm
Permit NO. U.W. 104232 (1st Enlargement) 0 gpm
This enlargement

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year no increase in total volume
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			SEE ATTACHMENT SHEETS 1 and 2																

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

SEE REVERSE SIDE

Permit No. U.W. 142426 Book No. 1056 Page No. 102

11. The well or spring is to be constructed on lands owned by **U.S. Government – Federal Elk Refuge**
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by **residents of the Town of Jackson.**
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: **Jackson Water Well #1 is to be increased in flow from 1000 GPM to 1500 GPM. Well #1 is N 83° – 43' W. , a distance of 762 ft. from the SE Corner of Sec. 27, T.4IN., R116W., 6 P.M. Teton county, Wyoming.**

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

X Steve P O'Reilly — 1/28/02, 20____
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS, COAL BED METHANE	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 30TH day of January, A.D. 20 02, at 10:00 o'clock A. M.

Permit No. U.W. 142426

Dawn Parkin
for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

Coal Bed Methane wells have Additional Conditions and Limitations on attachment sheet.
FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.
This permit serves to enlarge an existing well for additional yield only and establish a valid water right for the same.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring~~. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 20 03.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 29 day of February, A.D. 20 02.

Patrick T. Tyrrell
PATRICK T. TYRRELL, State Engineer
for

Attachment to Permit No. U.W. 142426

T.F. No. WW 33-4-325

MICRO FILMED JUN 14 2002

U.W. 142426

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for Municipal Uses as listed below.																
					Jackson Water Well No. 2, Permit Nos. UW 1386, UW 2055, UW 85495														U.W. 104233
					Jackson Water Well No. 3, Permit Nos. UW 1945, UW 85496														U.W. 104234
					Jackson No. 5 Well, Permit No. UW 69746														U.W. 104235
					Jackson No. 6 Well, Permit No. UW 101360														
					Jackson No. 7 Well, Permit No. UW 101361														
					Jackson No. 8 Well, Permit No. UW 101362														
40N	116W	5						X	X										
40N	116W	6	X	X	X	X	X	X	X	X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	31			X	X								X	X	X	X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			X = Municipal Point of Use																
Additional Miscellaneous Points of Use - reservoir supply are listed on the following page.																			

PERMIT NO. 142426 BOOK NO 1056 PAGE NO. 102

Attachment Permit No. U.W. 142426

REMARKS CONTINUATION

Permit No. U.W. 142426

T.F. No. U.W. 33-N-325

Enlargement of Jackson Water Well No. 1

Items below are numbered to correspond to the numbering on the UW5 permit.

4. Miscellaneous Use includes reservoir supply for the Town of Jackson Wastewater Treatment Plant Reservoir, Permit Nos. 8114R and 29 1/157 (enl), West Borrow Area Lake Reservoir, Permit Nos. 8116R and 29 3/157 (enl), Blue Heron Reservoir, Permit No. 29 5/157, Sandhill Crane Reservoir, Permit No. 29 3/157, Snowy Egret Reservoir, Permit No. 29 4/157, South Park No. 1 Reservoir, Permit No. 9725R, South Park No. 2 Reservoir, Permit No. 9726R, and South Park No. 3 Reservoir, Permit No. 9727R. Commingling information is noted on the attached tabulation sheet.

7. (a) 950 gallons per minute was the previous appropriation under Permit No. UW1385.

(b) Ground water appropriated by the Town of Jackson from its Jackson Water Well Nos. 1, 2, 3, and 5 allow the Town to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a total combined quantity of no more than 5,000 acre-feet of ground water in any one calendar year. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993.

12. Water is also to be used on the following lands for Miscellaneous Use - reservoir supply.

Town of Jackson: Town of Jackson Wastewater Treatment Plant Reservoir TF No. 29 1/157
West Borrow Area Lake Reservoir TF No. 29 3/157

Wyoming Game and Fish Department: Blue Heron Reservoir TF No. 29 5/157
Sandhill Crane Reservoir TF No. 29 3/157
Snowy Egret Reservoir TF No. 29 4/157
South Park No. 1 Reservoir (9725 Res.)
South Park No. 2 Reservoir (9726 Res.)
South Park No. 3 Reservoir (9727 Res.)

An agreement between the Town of Jackson and the Wyoming Game and Fish Department dated May 31, 1993 entitled "Cooperative Wetlands Development Project Agreement" outlines the use of fully treated effluent from the Town of Jackson Wastewater Treatment Plant as the source of supply for the Blue Heron, Sandhill Crane, and Snowy Egret Reservoirs. Additional correspondence from Engineering Associates dated May 30, 1996 and from the Wyoming Game and Fish Department outlines the use of the same fully treated effluent mentioned herein as an additional source of supply for the South Park No.1, South Park No. 2, and South Park No. 3 Reservoirs.

The attached tabulation sheet lists the ground water wells that are commingled to make up the fully treated effluent that is discharged from the Town of Jackson Wastewater Treatment Plant.

ATTACHMENT SHEET
2nd ENL. JACKSON NO 1, PERMIT NO. U.W. 142426

Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360, Jackson Well No. 7, Permit No. U.W. 101361, Jackson Well No. 8, Permit No. U.W. 101362, 1st Enl. Jackson Water Well No. 1, Permit No. U.W. 104232, 3rd Enl. Jackson Water Well No. 2, Permit No. U.W. 104233, 2nd Enl. Jackson Water Well No. 3, Permit No. U.W. 104234, and First Enlargement of Jackson No. 5, Permit No. U.W. 104235, 2nd Enl. Jackson No. 1, Permit No. U.W. 142426 and 3rd Enl. Jackson No. 3, Permit No. U.W. 146696 allow the City of Jackson to pump a total combined quantity of 6,700 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre-feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

(Note: Limits under previous ground water permits were 4,500 acre-feet, yearly average; 5,000 acre-feet, yearly maximum; and 45,000 acre-feet, total 10-year maximum.)

FORM UW: C&L,C1
Town of Jackson

PERMIT NO. 142426
T.F. No. 33-4-325

PERMIT STATUS

Priority Date January 30, 2002 **Approval Date** FEB 08 2002

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; 1st Enl. Jackson Water Well #1, Permit No. U.W. 104232;2nd Enl. Jackson Water Well #1, Permit No. U.W. 142426. Jackson Water Well No. 2, Permit No. U.W. 1386; 1st Enl. Jackson Water Well No. 2, Permit No. U.W. 2055; 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; 3rd Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Jackson Water Well No. 3, Permit No. U.W. 1945; 1st Enl. Jackson Water Well No. 3, Permit No. U.W. 85496; 2nd Enl. Jackson Water Well No. 3; Permit No. U.W. 104234; Jackson Water Well No. 5, Permit No. U.W. 69746; 1st Enl. Jackson Water Well No. 5, Permit No. U.W. 104235; Jackson Water Well No. 6, Permit No. U.W. 101360; Jackson Water Well No. 7; Permit No. U.W. 101361; and the Jackson Water Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of **6,700 acre-feet** of ground water on an average annual basis and a combined total quantity of no more than **7,000 acre-feet** of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than **67,000 acre-feet** of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

2/08/02
Date of Approval

Patrick T. Tyrrell, State Engineer

MICRO FILMED JUN 14 2002

SEP 30 '03 NOTICE OF EXPIRATION OF TIME FOR COMPLETION AND COMPLETION OF BENEFICIAL USE MAILED

MICRO FILMED OCT 30 2003

January 12, 2004 - Statement Of Completion on August 11, 2002 received.
January 23, 2004 - Proof of Beneficial Use on August 11, 2002 received in affidavit form.

SCANNED JUN 12 2014

FORM U.W.6
Rev. 12/2002

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E
CHEYENNE, WYOMING 82002
(307) 777-6163

SCANNED JUN 12 2014

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 142426 NAME OF WELL (SPRING) 2nd Enl. Jackson Water Well #1

1. NAME OF OWNER Town of Jackson

2. ADDRESS P.O. Box 1687
Please check if address has changed from that shown on permit. ☐
City Jackson State WY Zip Code 83001 Phone No. (307)733-3079

3. USE OF WATER ☐ Domestic ☐ Stock Watering ☐ Irrigation ☒ Municipal ☐ Industrial ☒ Miscellaneous per UWS al
☐ Monitor or Test ☐ Coal Bed Methane Explain proposed use (Example: One single family dwelling)

4. LOCATION OF WELL (SPRING): SE 1/4 SE 1/4 of Section 27, T. 41 N., R. 116 W., of the 6th P.M. (or W.R.M.)
Subdivision Name Lot Block
If surveyed, bearing, distance and reference point:
Longitude (degrees, minutes, seconds) Latitude (degrees, minutes, seconds)
Datum: ☐ 1927 ☐ 1983 Source: ☐ GPS ☐ Map ☐ Survey

5. TYPE OF CONSTRUCTION: DRILLED ☐ Dug ☐ Driven ☐ Other ☐
(type of rig, and fluid used if any)
Describe:

6. CONSTRUCTION: Total Depth of Well/Spring 200 ft.
Depth to Static Water Level 54.6 ft. (Below land surface) Casing Height above ground (ft.)
a. Diameter of borehole (Bit size) 28 inches. per phone call 3-5-04 al
b Casing Schedule: New ☐ Used ☐ Joint type: ☐ threaded ☐ glued ☐ welded
28" diameter from 0 ft. to 12 ft. Material Gage
12" diameter from 12 ft. to 160 ft. Material Gage
c. Grouted interval, from 0 ft. to 12 ft.
Amount of grout used: type:
(example: 10 sacks) (example: bentonite pellets)
d. Type of completion: ☐ factory screen ☐ open hole ☐ customized perforations
Perforation: Type of perforator used
Size of perforations inches by inches.
Number of perforations and depths where perforated:
perforations from ft. to ft.
perforations from ft. to ft.
Open hole from ft. to ft.
Well screen details:
Diameter slot size: set from ft. to ft.
Diameter slot size: set from ft. to ft.
e. Well development method How long did development last?
f. Was a filter pack installed? Yes ☐ No ☐ Size of sand/gravel
Filter pack installed from ft. to ft.
g. Was surface casing used: Yes ☒ No ☐ Was it cemented in place? Yes ☒ No ☐
Surface casing installed from ft. to ft.

RECEIVED
JAN 12 2004
STATE ENGINEER
CHEYENNE, WY

7. NAME AND ADDRESS OF DRILLING COMPANY Andrew Well Drilling

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) 8/11/02

9. PUMP INFORMATION: Manufacturer Lane/Bowler Type Vertical Turbine
Source of power Electrical Horsepower 150 Depth of Pump Setting or intake 91 ft.
Amount of Water Being Pumped ~~1450~~ 500 Gallons Per Minute. (For Springs or flowing wells, see item 10.) per UWS al
Total Volumetric Amount Used Per Calendar Year: 123 million

10. FLOWING WELL OR SPRING (Owner is responsible for control of flowing well).
If well yields artesian flow or if spring, yield is gal./min. Surface pressure is lb./sq.inch, or feet of water.
The flow is controlled by: valve ☐ cap ☐ plug ☐
Does well leak around casing? Yes ☐ No ☐

Orig #1385: 950 gpm + #104232; 0 gpm + #142426: 500 gpm = 1450 Total gpm

Permit No. U.W. 142426 Book No. 1056 Page No. 102

SEE REVERSE SIDE

per UWS al

11. If spring, how was it constructed? (Some method of artificial diversion, i.e., spring box, cribbing, etc., is necessary to qualify for a water right.) ______

12 PUMP TEST: Was a pump test made? Yes ☐ No ☐
If so, by whom ______
Yield: ______ gal./min. with ______ foot drawdown after ______ hours.
Yield: ______ gal./min. with ______ foot drawdown after ______ hours.

13. LOG OF WELL: Total depth drilled 200 feet.
Depth of completed well 160 feet. Diameter of well 12 inches.
Depth to first water bearing formation 44 feet.
Depth to principal water bearing formation. Top 50 feet to Bottom ______ feet.

Land surface elevation (ft. above mean sea level) ______ Datum: ☐ 1929 ☐ 1988
How determined: ☐ map ☐ altimeter ☐ survey ☐ other

DRILL CUTTINGS DESCRIPTION:

From Feet	To Feet	Material Type, Texture Color	Remarks (Cementing, Shutoff)	Indicate Water Bearing Formation & Name	Indicate Perforated Casing Location
		See permit # U.W. 1385			

14. QUALITY OF WATER INFORMATION:
Does a chemical and/or bacteriological water quality analysis accompany this form? Yes ☐ No ☐
It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)
If not, do you consider the water as: Good ☐ Acceptable ☐ Poor ☐ Unusable ☐

REMARKS: ______

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Clayton Corsi town of Jackson Water Supt. 1-7, 2004
Signature of Owner or Authorized Agent — Date

FOR STATE ENGINEER'S USE ONLY

Permit No. U.W. 142426

Date of Receipt JAN 12 2004, 20____

Date of Priority Jan. 30, 2002 per UW5 al

Date of Approval 3-5, 2004

Sheryl Lett
for State Engineer

ACKNOWLEDGMENT

State of Wyoming
County of Teton
On this 7th day of Jan, 2004,
personally appeared before me,
✓ who is personally known to me,
__ whose identity I verified on the basis of ______,
__ whose identity I verified on the oath/affirmation of ______,
a credible witness,
to be the signer of the foregoing document, and he/she acknowledge that he/she signed it.

Donna M Baur
Notary Public

My Commission Expires: 6/15/2005

DONNA M. BAUR - NOTARY PUBLIC
County of Teton — State of Wyoming
My Commission Expires 6/15/2005

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16) per nwsd

U.W. DISTRICT Teton County

PERMIT NO. U.W. 142426

DATE OF PRIORITY January 30, 2002

NAME OF WELL 2nd Enl. Jackson Water Well #1

LOCATION SE ¼ SE ¼ of Section 27

T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address P.O. Box 1687 Jackson, WY Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal & Miscellaneous Date First Used 8-11-02

Use: _____ Date First Used: _____ Use: _____ Date First Used: _____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

SEE REVERSE SIDE

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Clayton Corsi Water/Street Supt — 12-10-03 — 2003
Signature of Owner or Authorized Agent — Date

Clayton Corsi Water/Street Supt. — 1-21-04 — 2004

Date of Receipt: ~~DEC 18 2003~~ ~~JAN 12 2004~~ JAN 22 2004

THE STATE OF WYOMING
County of Teton

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by Clayton Corsi this 21st day of January 2004.

Donna M. Baur
NOTARY PUBLIC
My Commission Expires: 6/15/2005

DONNA M. BAUR - NOTARY PUBLIC
County of Teton
State of Wyoming
My Commission Expires 6/15/2005

THE STATE OF WYOMING

Certificate of Appropriation of Ground Water

Proof No. UW07793
CR UW - 23, Page 257
Water Division No. 4, District No. 16

WHEREAS, TOWN OF JACKSON has/have presented to the Board of Control of the State of Wyoming proof of the appropriation of ground water from the 2ND ENL. JACKSON WATER WELL NO. 1 located in the SE1/4SE1/4 of Section 27, T.041N., R.116W., Original Survey, under Permit No. P142426.0W for Miscellaneous, Municipal use here in described, lying and being in Teton County, Wyoming.

NOW KNOW YE that the State Board of Control, under the provisions of the Statutes of Wyoming, has by an order duly made on May 15, 2019, and entered on May 28, 2019 in Order Record 103 Page 096, determined and established the priority and amount of such appropriation as follows:

Name and Address of Appropriator(s): TOWN OF JACKSON, P.O. BOX 1687, JACKSON, WY, US, 83001.
Date of Appropriation (Priority) January 30, 2002.
Amount of Appropriation 500.00 gallons per minute.

DESCRIPTION OF LAND FOR WHICH THIS APPROPRIATION IS DETERMINED AND ESTABLISHED

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	TOTAL
			(SEE ATTACHED TABULATION)																

The right to water hereby confirmed and established is limited to Miscellaneous, Municipal use and the use is restricted to the place where acquired and to the purpose for which acquired.

IN TESTIMONY WHEREOF, I Rick Deuell, President of the State Board of Control, have hereunto set my hand on May 28, 2019 and caused the seal of said Board to be hereunto affixed.

CR Comments: This enlargement is for additional yield only. See proof for all commingling wells.

Attest: Cheryl Timm Ex-officio Secretary

Rick D-11 President.

TABULATION OF ADJUDICATED LANDS

CR UW - 23, Page 257
Order Record No. 103, Page 096
Permit No. P142426.0W, Proof No. UW07793

TWP	RNG	SEC	NE1/4				NW1/4				SW1/4				SE1/4				
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	TOTAL
Dependent Resurvey			Water from this well is used for miscellaneous purposes (reservoir supply for the Town of Jackson Waste Water Treatment Plant Reservoir, Permit No. 8114 Res.; Enl. Jackson Wastwater Treatment Plant Reservoir, Permit No. 14434 Res.; West Borrow Area Lake Reservoir, Permit No. 8116 Res., Enl. West Borrow Area Lake Reservoir, Permit No. 14435 Res.; Blue Heron Reservoir, Permit No. 14438 Res.; Sandhill Crane Reservoir, Permit No. 14436 Res.; and the Snowy Egret Reservoir, Permit No. 14437 Res.) at the following points of use:															
040N	**116W**	**29**			X	(reservoir outlet, Permit No. 8114 Res.)													
040N	**116W**	**29**							X	(reservoir outlets, Permit Nos. 8116 and 14435 Res.)									
040N	**116W**	**29**								X	(reservoir outlet, Permit No. 14434 Res.)								
040N	**116W**	**29**									X	(reservoir outlet, Permit No. 14438 Res.)							
040N	**116W**	**29**							(reservoir outlets, Permit Nos. 14436 Res. and 14437 Res.)							X			
Original Survey			Water from this well is also used for municipal purposes at the following points of use:																
040N	**116W**	**06**	Lot 1; Lot 2; Lot 3; Lot 4; Lot 5																
040N	**116W**	**06**			X	X				X									
041N	**116W**	**27**											X	X			X		
041N	**116W**	**28**				X									X		X	X	
041N	**116W**	**31**			X	X								X	X	X	X	X	
Dependent Resurvey																			
040N	**116W**	**05**	Lot 4																
040N	**116W**	**05**							X										
041N	**116W**	**32**	X	X	X	X								X	X	X	X	X	
041N	**116W**	**33**	X	X	X	X	X	X	X	X	X	X	X		X	X			
041N	**116W**	**34**	X	X	X	X	X	X	X	X	X	X			X	X			
041N	**116W**	**34**										X							

Permit No. U. W. 1386

Form UW3 PIONEER PRINTING & STATIONERY CO.

APPLICATION FOR PERMIT TO APPROPRIATE

UNDERGROUND WATERS IN THE STATE OF WYOMING

(Under Chapter 169, Session Laws of Wyoming, 1957)

WATER DIVISION NO. 4 (16) UNDERGROUND WATER DISTRICT TETON COUNTY

I, Albert L. Nelson of Rock Springs

County of Sweetwater, State of Wyoming,

being duly sworn according to law, upon my oath say:

1. The name of the applicant Town of Jackson, ~~Wyoming.~~ 108 South King St.

2. The postoffice address of the applicant % Town Clerk, Jackson, Wyoming. 83001

3. The use to which the water is to be applied is Municipal.
(State whether for irrigation, municipal, railway, industrial, etc.)

4. The name of the proposed well is Jackson Water Well No. 2.
(Designate by name and number)

5. The well is to be located in the S E ¼ S E ¼ of Section
(Designate Subdivision)
27, T. 41 N., R. 116 W., of the 6th P.M., Wyoming,
on land owned by U.S. Government - Federal Elk Refuge.

6. The type of the proposed well is Drilled.
(Drilled, Dug, Driven, or Jetted)

7. The estimated depth of the well is to be 200 feet.

8. The approximate depth to the water table below land surface is 50 feet.

9. The diameter of well at top is to be 16 inches, and at bottom 16 inches.

10. The kind of casing used, if any, is to be ~~Cast Iron~~ Steel.

11. Type of pump, if any, Vertical Turbine.
(Centrifugal, turbine, rotary, plunger)

Capacity of Pump 700 Gal. per min.

12. Type of power Electric Motor.
(Electric motor, steam or gasoline engine, etc.)

Horsepower of engine or motor 75 ~~###~~ Horsepower.

13. Construction of well will begin within one year from date of approval of this application.

14. Completion of the construction and completion of the application of water to the beneficial uses stated in this application will be made within two years from date of approval of this application.

15. Estimated yield of water from proposed well ..... 700 ..... gallons per minute.

16. Estimated cost of well and pumping equipment ..... 9,000.00 ..... Dollars.

17. If for irrigation, the land proposed to be irrigated should be described in the following tabulation.

(Give irrigable acreage in each legal subdivision and designate ownership of land. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or Permit Number, the source of supply and the name of the ditch or other well.)

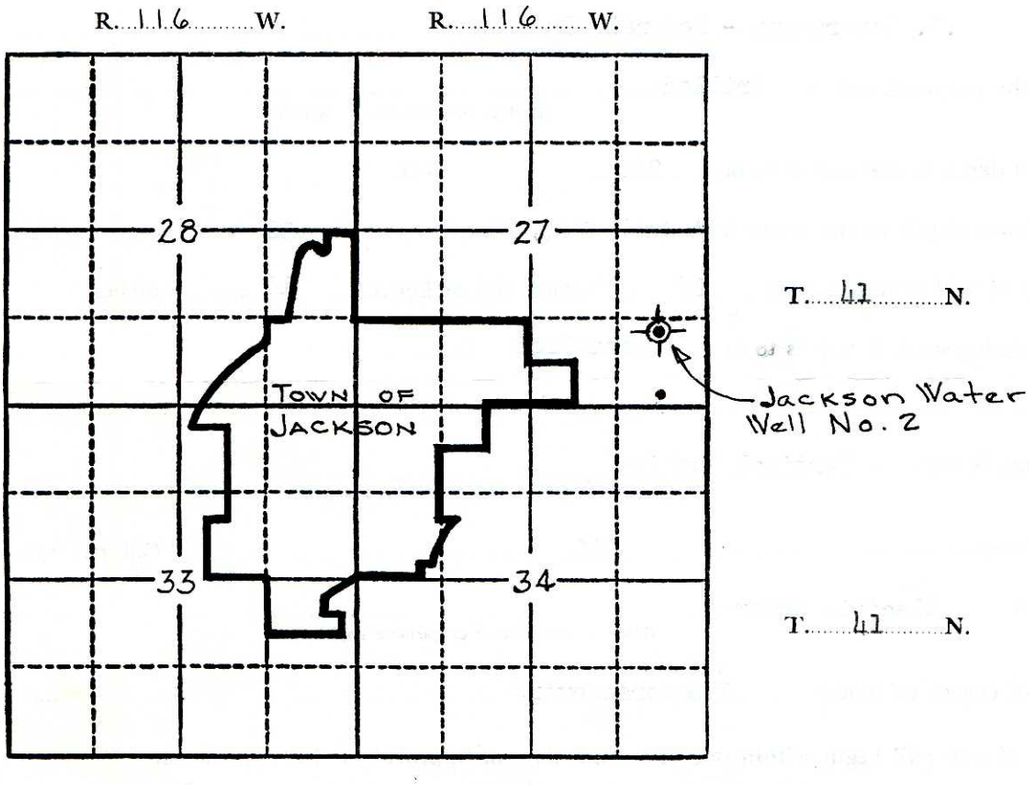
If not used for irrigation, state type, method and place of use.

U.W. 1386

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
41 N.	116 W.	27											X	X			X		
41 N.	116 W	28				X									X		X	X	
41 N	116 W	32	X	X	X	X								X	X	X	X	X	
41 N.	116 W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41 N.	116 W.	34	X	X	X	X	X	X	X	X	X	X			X	X			
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									Amended per BU Map
41N	116W	35										X							
			POINTS OF USE IN ABOVE MARKED AREAS TOGETHER WITH ANY																
			OTHER AREAS WHICH MAY BE SERVICED BY THE MUNICIPAL SYSTEM																
			IN THE FUTURE.																
			LANDS AT POINT OF DIVERSION OWNED BY U.S. GOV.																

TOTAL NUMBER OF ACRES TO BE IRRIGATED.....

Locate well and acreage to be irrigated as accurately as possible on the following plat:
If use is for purposes other than irrigation, show, in addition to well location, the point of use.



Scale: 2" = 1 Mile

REMARKS: Jackson Water Well No. 2 is N. 35°-32' W., a distance of 1312 feet from the S.E. Cor. of Sec. 27, T. 41 N., R. 116 W., 6 P.M., Teton County Wyoming.

(Signed) Albert L. Nelson

THE STATE OF WYOMING
COUNTY OF Sweetwater } SS.

I hereby certify that the foregoing application was signed in my presence and sworn to before me by Albert E. Nelson this 10 day of December, 1964

E. L. Ashmore
Notary Public

My Commission Expires 2-11, 1965

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } SS.

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

The right to be acquired under this permit shall not include the right to have the water level or artesian pressure at the point of diversion maintained at any level higher than that required for maximum beneficial use of available water in the source of supply.

If the well is a flowing artesian well it shall be so equipped that the flow may be shut off when not in use. Provision shall also be made for a threaded tap to which a pressure gage may be attached for determining shut-in pressure when desired.

This permit is granted subject to the condition that it shall not interfere with prior valid and existing rights to the use of the waters of said underground source, and use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957.

Construction of proposed work shall begin within one year from the date of approval.

The time for completing the work and completing the application of water to beneficial use shall terminate on December 31, 1966

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 24th day of December, A. D. 1964

Floyd A. Bishop
Floyd A. Bishop, State Engineer.

PERMIT NO. U.W. 1386 PAGE NO. 34

Permit No. U. W. 1386

Temp. Filing No. U. W. 2-3-194

APPLICATION FOR PERMIT TO APPROPRIATE UNDERGROUND WATERS IN THE STATE OF WYOMING

Water Division No. 4

Underground Water District TETON COUNTY

Applicant Town of Jackson

Town Clerk

Address Jackson, Wyoming

Name and Number of Well Jackson Water Well No. 2

Use Proposed Municipal

THE STATE OF WYOMING }
STATE ENGINEER'S OFFICE } SS.

This instrument was received and filed for record on the 18th day of December, A. D. 1964, at 9:00 o'clock A.M.

Floyd A. Bishop

Floyd A. Bishop, State Engineer.

Recorded in Book 6 of Underground Water Permits, on Page 34.

Form UW3

NOTICE

This application must be accompanied by a filing fee of two dollars.

Section 7, Chapter 169, Session Laws of Wyoming, 1957, provides in part: "Any person who after March 1, 1958, intends to acquire the right to beneficial use of any underground water in the State of Wyoming, except for those purposes specifically exempted by provisions, of Section 2 shall, before commencing construction of any well or performing any work in connection with said construction or proposed appropriation or any manner utilizing said water for beneficial purposes, file with the State Engineer an application for a permit to make such appropriation and shall not proceed with any of such construction or work until a permit is granted by the State Engineer, provided, that whenever any well constructed for any other purpose shall be found to be suitable for the withdrawal of underground water, such application shall be filed before said water is utilized for beneficial use."********

Final proof may be submitted in accordance with the provisions of Sections 7 and 12, Chapter 169, Session Laws of Wyoming, 1957, after which Certificate of Appropriation will be issued by the State Board of Control.

PERMIT NO. U. W. 1386

PERMIT STATUS

Priority Date December 18, 1964 Approval Date December 24, 1964

March 26, 1965 - Notice of commencement on December 27, 1964, received
March 26, 1965 - Notice of completion on February 5, 1965, received
March 26, 1965 - Notice of completion of beneficial use on February 5, 1965, received

June 21, 1982--Proof of beneficial use on February 5, 1965 received in affidavit form. (Long Form) MICRO-FILMED JUL 21 '82

June 27, 1991 - This permit has been enlarged by Permit No. U.W. 85495 for additional yield only. There is no physical enlargement of this well. MICRO FILMED SEP 10 '91

CERT. REC. U.W. 9 P. 44
PROOF NO. U.W. 3250, AC. -
G.P.M. 700 IRR. ___ STK. ___ DOM. ___ ~~MISC.~~ MUN ✓
MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

MICRO FILMED JUN 22 1994

April 8, 1996 - This permit has been enlarged by Permit No. U.W. 104233 for additional use and points of use only. There is no physical enlargement of this well.

MICRO FILMED JAN 21 1997

SCANNED AUG 30 2011

NOTE: "DO NOT FOLD THIS FORM. — ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH WATERPROOF INK WILL BE ACCEPTED."

Form UW4-A

STATEMENT OF COMPLETION OR ABANDONMENT OF PERMIT NO. U. W. 1386

UNDERGROUND WATERS

UNDER CHAPTER 169, SESSION LAWS OF WYOMING, 1957

WATER DIVISION NO. 4 (16) **UNDERGROUND WATER DISTRICT** Teton County

I, Albert L. Nelson of Jackson, County of Teton, State of Wyoming, being duly sworn according to law, upon my oath say:

1. The name of the permittee or present owner Town of Jackson, Wyoming

2. The postoffice address of the permittee or present owner 108 South King St. Jackson, Wyoming 83001

3. The name of the well is Jackson Water Well No. 2 (Designate by name and number)

4. Description of well: Location 1,335 feet from the N.36°25'W. corner of Section 27 T. 41 N., R. 116 W., and is in the SE. ¼ SE ¼ of Section 27 T. 41 N., R. 116 W.; the type of well is: Drilled (X), Dug ( ), Driven ( ), Jetted ( ), Other

CASING RECORD

Diameter Inches	Lbs. Per Foot	DEPTH Top	DEPTH Bottom	PERFORATIONS From	PERFORATIONS To
20	N.R.	Ground	202'	N.R.	

CEMENTING RECORD

DEPTH IN FEET From	DEPTH IN FEET To	No. Sacks Cement	Method Used
Ground	12'	N.R.	N. R.

Total depth of well 202 ft. feet, depth to static water level in well 38 ft. 4 in. feet.

FLOWING ARTESIAN WELLS ONLY: Is well equipped with gate valve? Yes ( ) No ( ).

Name and address of driller Andrew Well Drilling, Idaho Falls, Idaho

Date of commencement of well 27 Dec., 19 64.
Date of completion of well 5 Feb., 19 65.

5. If well under this permit is to be abandoned, please state reasons for abandonment. (If well has been abandoned, it will not be necessary to complete the balance of this form, except for log of well, Item 14, and signature before a Notary Public).
not applicable

6. Description of pump: Make Layne & Bowler; type vertical Turbine (Centrifugal, turbine, rotary, plunger); rated capacity of pump 750 gal. per minute.

7. Description of power plant: Method of operation electric motor (Electric motor, steam or gasoline engine, etc.); Horsepower of engine or motor 75.

8. Give date pump and power plant were installed and works completed 15 Feb., 19 65.

9. Record of Pumping Test (to be supplied by person or firm making test). Name and address of person making test. Well test report as supplied by Andrew Well Drilling is enclosed

date of test, 3, 4, & 5 Feb, 19 65; depth to water before test, 38'4" feet, and immediately afterward 45.3' feet; Length of test, app. 55 Hrs. hours; average discharge, approx. 1250 700 (Adj. Amt.) gal. per minute.

Permit No. U.W. 1386 Page No. 34

U.W. 1386

10. Actual cost of well and pumping equipment 8,550 Dollars.

11. If well is for irrigation purposes, and acreage to be served by well differs from lands described in permit, please re-describe lands in space below:

not applicable

12. Depth at which main zone of water was encountered is 60 feet to 165 feet, and the water bearing formation is gravel with some clay
(Sand, gravel, shale, clay, limestone, sandstone, etc.)

13. If other water zones were found give depth to each:
185 feet to 195 feet.
feet to feet.

14. LOG OF WELL. (If additional space is needed attach extra sheet).

TYPE OF MATERIAL ENCOUNTERED (Give color and tell whether hard or soft)	DEPTH IN FEET From	To	Thickness in feet	REMARKS (Especially information as to water found)
1. Clay and Gravel found	0	2	2	
2. Gravel	2	75	73	Water encountered
3. Clay and Gravel (Brown in Color)	75	85	10	Fairly good water bearing strata
4. Gravel	85	115	30	Very good water bearing strata
5. Gravel and Clay	115	165	50	Fair water bearing strata
6. Gray Clay	165	185	20	Poor water bearing strata
7. Gravel and Clay	185	195	10	Fair water bearing Strata
8. Conglomerate (mixture of rock & soil)	195	200	5	Poor water bearing Strata

REMARKS: This well along with the other facilities that the town incorporated into their water system has been completed and the water from this well has been put to a benificial use.
For well test report See Misc. Notices, Permit No. U.W. 1386

(Signed) Albert L. Nelson

THE STATE OF WYOMING,
County of Sweetwater } ss.

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by Albert L. Nelson this 25 day of March, 1965

My Commission Expires 9-20, 1966. Nancy Joan Esperetta
Notary Public.

Date of Receipt: March 26, 1965.

George L. Christopulos
George L. Christopulos, Deputy State Engineer.

Form U.W. 8

RECEIVED JUN 21 1982 STATE ENGINEER Cheyenne, Wyo.

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

MICRO. FILMED JUL 21 '82

SCANNED AUG 30 2011

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (6)

U.W. DISTRICT Teton County

STATEMENT OF CLAIM

DATE OF PRIORITY Dec 18, 1964

PERMIT NO. U.W. 1386

WELL REGISTRATION

LOCATION SE ¼ SE ¼ of Section 27

NAME OF WELL Jackson Water Well No. 2

T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address P.O. Box 1687, Jackson, Wy Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used Feb 5, 1965

Use: _____ Date First Used: _____, 19__ Use: _____ Date First Used _____, 19__

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-366 Wyoming Statutes (1957 Supp.) or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1). The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

U.W. 1386

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Melvin Webb, Town Administrator June 15, 19 82

Signature of Owner or Authorized Agent — Date

THE STATE OF WYOMING)
)
County of TETON)

I hereby certify that the forgoing statement was signed in my presence and sworn to before me by MELVIN WEBB

this 15th day of June, 19 82.

My Commission Expires July 9, 19 83.

DEANN L. SUTTON NOTARY PUBLIC TETON COUNTY, WYOMING

Deann L. Sutton
Notary Public

Date of Receipt: JUN 21 1982, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 44
Order Record No. 42 , Page ~~41~~ 38
Permit No. 1386 , Proof No. 3250

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495, is commingled with that of the Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 3, Permit No. U.W. 1945, and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746.												
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												

Sheet 01 of 01

NOTE: "DO NOT FOLD THIS FORM. — ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH WATERPROOF INK WILL BE ACCEPTED."

MICRO-FILMED NOV 15 '78

Form U. W. 3-A Temp. Filing No. U. W. 2-1-308

APPLICATION FOR PERMIT TO APPROPRIATE UNDERGROUND WATERS IN THE STATE OF WYOMING

(Under Chapter 169, Session Laws of Wyoming, 1957)

PERMIT NO. U. W. 2055 NAME OF WELL Jackson Water Well No. 2 (Enl.)

WATER DIVISION NO. 4 (16) UNDERGROUND WATER DISTRICT Teton County,

I, Paul N. Scherbel of Big Piney,
County of Sublette, State of Wyoming,
being duly sworn according to law, upon my oath say:

1. The name of the applicant Town of Jackson, a municipal corporation
(Notices & Statement of Compl. mailed to Paul Scherbel at Big Piney)

2. The postoffice address of the applicant 108 South King St. Jackson, Wyoming 83001

3. The use to which the water is to be applied is: Irrigation ( ), Municipal (x), Industrial ( ), Other

4. Name: Designate the well by name and number Jackson Water Well No. 2 (Enl.)

5. The well is to be located in the SE ¼ SE ¼ of Section 27, T. 41 N., R. 116 W., of the 6th P.M., Wyoming.

6. The type of the proposed well is: Drilled (x), Dug ( ), Driven ( ), Jetted ( ), Other

7. The estimated depth of the well is to be 202 feet.

8. The approximate depth to the water table below land surface is 54.5 feet.

9. The diameter of well at top is to be 30 inches, and at bottom 30 inches.

10. The kind of casing (a) lbs. per ft. ___, (b) diameter 28" 20", (c) new casing ( ), used casing ( ).

11. Type of pump, if any, Layne and Bowler turbine (Centrifugal, turbine, rotary, plunger), Capacity of pump 1700 Gal. Per Min.

12. Type of power Electric motor (Electric motor, steam or gasoline engine, etc.). Horsepower of engine or motor 150.

13. Construction of well will begin within one year from date of approval of this application.

14. Completion of the construction and completion of the application of water to the beneficial uses stated in this application will be made by December 31 of the second year after approval of this application.

15. Estimated yield of water from proposed well ~~1700~~ 950 - this enl. gallons per minute.
previous permit No. U. W. 1386 = ~~750~~ ~~700~~ 950 additional this application

16. Estimated cost of well and pumping equipment 10,000 Dollars.

17. The well is to be constructed on lands owned by: United States of America. Bureau of Sports Fisheries and Wildlife

18. The water is to be used on lands owned by: municipal

U.W. 2055

19. If for irrigation, the land proposed to be irrigated should be described in the following tabulation.

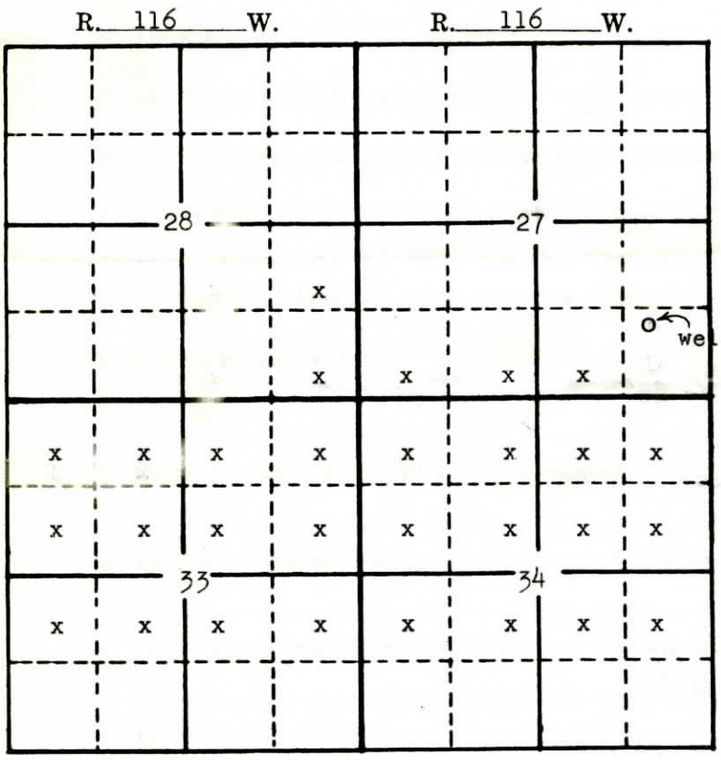
(Give irrigable acreage in each legal subdivision. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or Permit Number, the source of supply and the name of the ditch or other well.)

If not used for irrigation, state type, method and place of use.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			x = Points of Use									Amended per BU Map							
41N	116W	27											x	x			x		
		28				X									x		X	x	
		32 33	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
		34	x	x	x	x	x	x	x	x	x	x			x	x			
"	"	35 27										x						0	
			0 = Well Location, Jackson Water Well No. 2, Per. No. UW 1386, to be enlarged under this application.																
40	116	5																	
40	116	6	x				x	x											

TOTAL NUMBER OF ACRES TO BE IRRIGATED None

Locate well and acreage to be irrigated as accurately as possible on the following plat: If use is for purposes other than irrigation, show, in addition to well location, the point of use.



T. 41 N.

See Map to Accompany BU

T. 41 N.

REMARKS: Second filing on Jackson Water Well No. 2 amount additional 950 g.p.m.

Water to be used for municipal purposes at points of use shown on the plat and in the tabulation.

(Signed) Paul O. Schubel

THE STATE OF WYOMING,
County of SUBLETTE } ss.

I hereby certify that the foregoing application was signed in my presence and sworn to before me by Paul N. Scherbel this 23rd day of June, 19 67.

My Commission Expires 5 December 1969, 19 ___. Mrs. Rachel A. Scherbel
Notary Public.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } ss.

This instrument was received and filed for record on the 6th day of July, A. D. 19 67, at 9:00 o'clock A. M.

George L. Christopulos
George L. Christopulos, Deputy State Engineer.

Recorded in Book 12 of Underground Water Permits, on Page 100

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } ss.

NOTE: For detailed map showing water wells for the Town of Jackson, see Miscellaneous Notices, Permit No. U.W. 2055.

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

The right to be acquired under this permit shall not include the right to have the water level or artesian pressure at the point of diversion maintained at any level higher than that required for maximum beneficial use of available water in the source of supply.

If the well is a flowing artesian well it shall be so equipped that the flow may be shut off when not in use. Provision shall also be made for a threaded tap to which a pressure gage may be attached for determining shut-in pressure when desired.

This permit is granted subject to the condition that it shall not interfere with prior valid and existing rights to the use of the waters of said underground source, and use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957.

This permit is granted with the understanding that it is the responsibility of the applicant to acquire any rights of way or easements required in connection with the drilling of this well and the use of the water therefrom.

Construction of proposed work shall begin within one year from the date of approval.

The time for completing the work and completing the application of water to beneficial use shall terminate on December 31, 19 69.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 12th day of August, A. D. 19 67.

Floyd A. Bishop
State Engineer.

Permit No. U. W. 2055

Page No. 100

U. W. 2055
PERMIT NO.

PERMIT STATUS

Priority Date July 6, 1967 **Approval Date** August 12, 1967

May 24, 1968 - Notice of commencement prior to September 7, 1967, received.
September 12, 1967 - Statement of completion prior to September 7, 1967, received.
May 24, 1968 - Notice of beneficial use prior to September 7, 1967, received.

June 21, 1982--Proof of beneficial use on September 7, 1967 received in affidavit form.
(Long Form) MICRO FILMED JUL 21 '82

CERT. REC. U.W. 9 P. 46
PROOF NO. U.W. 3252, AC. —
G.P.M. 950 IRR. ___ STK. ___ DOM. ___ MUN ✓
MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

NOTICE

This application must be accompanied by a filing fee of two dollars.

Section 7, Chapter 169, Session Laws of Wyoming, 1957, provides in part: "Any person who after March 1, 1958, intends to acquire the right to beneficial use of any underground water in the State of Wyoming, except for those purposes specifically exempted by provisions, of Section 2 shall, before commencing construction of any well or performing any work in connection with said construction or proposed appropriation or any manner utilizing said water for beneficial purposes, file with the State Engineer an application for a permit to make such appropriation and shall not proceed with any of such construction or work until a permit is granted by the State Engineer, provided, that whenever any well constructed for any other purpose shall be found to be suitable for the withdrawal of underground water, such application shall be filed before said water is utilized for beneficial use - - - -."

Final proof may be submitted in accordance with the provisions of Sections 7 and 12, Chapter 169, Session Laws of Wyoming, 1957, after which Certificate of Appropriation will be issued by the State Board of Control.

The granting of a permit does not constitute the granting of right of way. If any right of way is necessary in connection with this application it should be understood that this responsibility is the applicant's.

M

NOTE: "DO NOT FOLD THIS FORM. — ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH WATERPROOF INK WILL BE ACCEPTED."

Form UW4-A

STATEMENT OF COMPLETION OR ABANDONMENT OF PERMIT NO. U. W. 2055

UNDERGROUND WATERS

UNDER CHAPTER 169, SESSION LAWS OF WYOMING, 1957

WATER DIVISION NO. 4 (16) **UNDERGROUND WATER DISTRICT** Teton County

I, Paul N. Scherbel of Big Piney, County of Sublette, State of Wyoming, being duly sworn according to law, upon my oath say:

1. The name of the permittee or present owner TOWN OF JACKSON, a municipal corporation
108 South King St.

2. The postoffice address of the permittee or present owner Jackson, Wyoming 83001

3. The name of the well is Jackson Water Well No. 2 (enl.)
(Designate by name and number)

4. Description of well: Location N36°-25'W, 1335 feet from the southeast corner of Section 27 T. 41 N., R. 116 W., and is in the SE ¼ SE ¼ of Section 27 T. 41 N., R. 116 W.; the type of well is: Drilled (xx), Dug ( ), Driven ( ), Jetted ( ), Other ____.

CASING RECORD

Diameter Inches	Lbs. Per Foot	DEPTH Top	DEPTH Bottom	PERFORATIONS From	PERFORATIONS To
20	N.R.	Ground	202'	N.R.	

CEMENTING RECORD

DEPTH IN FEET From	DEPTH IN FEET To	No. Sacks Cement	Method Used
Ground	12'	N.R.	N.R.

Total depth of well 202 ft. feet, depth to static water level in well 38'-4" feet.

Name and address of driller Andrew Well Drilling, Idaho Falls, Idaho

Date of commencement of well prior to Sept. 7, 19 67
Date of completion of well prior to Sept. 7, 19 67 (Date equipment installed ready to use)

5. If well under this permit is to be abandoned, please state reasons for abandonment. (If well has been abandoned, it will not be necessary to complete the balance of this form, except for log of well, Item 14, and signature before a Notary Public).
not applicable

6. Description of pump: Make Layne and Bowler; type vertical turbine (Centrifugal, turbine, rotary, plunger); rated capacity of pump 1700 gal. per minute.

7. Description of power plant: Method of operation electric motor (Electric motor, steam or gasoline engine, etc.); Horsepower of engine or motor 150.

8. Give date pump and power plant were installed and works completed prior to 7 September, 19 67.

9. Record of Pumping Test (to be supplied by person or firm making test). Name and address of person making test. Well test report as supplied by Andrew Well Drilling was furnished with Permit No. 1386. date of test, 3, 4, and 5 February, 19 65; depth to water before test, 38'-4" feet, and immediately afterward 45.3' feet; Length of test, app. 55 hours; average discharge, 1250 950 this enl. gal. per minute.

Permit No. U.W. 2055 Page No. 100

U.W. 2055

10. Actual cost of well and pumping equipment 10,000 Dollars.

11. If well is for irrigation purposes, and acreage to be served by well differs from lands described in permit, please re-describe lands in space below:

not for irrigation

12. Depth at which main zone of water was encountered is 60 feet to 165 feet, and the water bearing formation is _____
(Sand, gravel, shale, clay, limestone, sandstone, etc.)

13. If other water zones were found, give depth to each:
185 feet to 195 feet.
_____ feet to _____ feet.

14. LOG OF WELL. (If additional space is needed attach extra sheet).

TYPE OF MATERIAL ENCOUNTERED (Give color and tell whether hard or soft)	DEPTH IN FEET From	To	Thickness in feet	REMARKS (Especially information as to water found)
1. Clay and gravel found	0	2	2	
2. Gravel	2	75	73	Water encountered
3. Clay and gravel (brown)	75	85	10	Fairly good water bearing strata
4. Gravel	85	115	30	Very good water bearing strata
5. Gravel and clay	115	165	50	Fair water bearing strata
6. Gray clay	165	185	20	Poor water bearing strata
7. Gravel and clay	185	195	10	Fair water bearing strata
8. Conglomerate (mixture of rock and soil	195	200	5	Poor water bearing strata

15 **FLOWING ARTESIAN WELLS ONLY:** Is well equipped with gate valve? Yes ( ) No ( ).

REMARKS: _____

(Signed) Paul N. Scherbel

THE STATE OF WYOMING,
County of SUBLETTE } ss.

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by Paul N. Scherbel this 8th day of September, 1967.

My Commission Expires 5 December, 1967. Mrs. Rachel A. Scherbel
Notary Public.

Date of Receipt: September 12, 1967.

George L. Christopulos
George L. Christopulos, Deputy State Engineer.

Map showing Town of Jackson Water Wells filed Miscellaneous Notices, Permit No. U.W. 2055.

Form U.W. 8

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16) U.W. DISTRICT Teton County

STATEMENT OF CLAIM DATE OF PRIORITY July 6, 1967

PERMIT NO. U.W. 2055 LOCATION SE ¼ SE ¼ of Section 27

WELL REGISTRATION

NAME OF WELL Jackson Water Well No. 2 (Enl) T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address 108 South King St. P.O. Box 1687, Jackson, Wy Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used Sept 7, 1967

Use: _____ Date First Used: _____, 19__ Use: _____ Date First Used _____, 19__

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-366 Wyoming Statutes (1957 Supp.) or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

U.W. 2055

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Melvin Webb, Town Administrator — June 15, 19 82
Signature of Owner or Authorized Agent — Date

THE STATE OF WYOMING)
)
County of TETON)

I hereby certify that the forgoing statement was signed in my presence and sworn to before me by MELVIN WEBB

this 15th day of June, 19 82.

My Commission Expires July 9, 19 83. Deann L. Sutton
Notary Public

DEANN L. SUTTON NOTARY PUBLIC TETON COUNTY, WYOMING

JUN 21 1982

Date of Receipt: _____, 19 ____

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
JUN 21 1982
RECEIVED

SCANNED SEP 19 2011

COPY

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 46
Order Record No. 42 , Page ~~43~~ 38
Permit No. 2055 , Proof No. 3252

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well and its original permit, Permit No. U.W. 1386, and its enlargement, Permit No. U. W. 85495, is commingled with that of the Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 3, Permit No. U.W. 1945, and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746.												
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			This enlargement is for additional yield only for 950 g.p.m. with 700 g.p.m. covered under the original permit, Permit No. U.W. 1386 and 100 g.p.m. covered under its enlargement, Permit No. U.W. 85495, for a total production of 1750 g.p.m.																

FORM U.W. 5
Rev. 5-79
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
HERSCHLER BUILDING
CHEYENNE, WYOMING 82002

$25.00 Rec'd

MICRO FILMED SEP 11 '91

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

FOR OFFICE USE ONLY

PERMIT NO. U.W. ~~85495~~

WATER DIVISION NO. 4 DISTRICT 16

U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 21-1-335

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE.

NAME AND NUMBER OF WELL 2nd Enl. Jackson Water Well No. 2
(Enl. of Permit No. U.W. 1386 for Additional Yield Only)

1. Name of applicant(s) Town of Jackson Phone: 733-3932

2. Address of applicant(s) 108 South King St. Jackson, Wyoming Zip: 83001

3. Name & address of agent to receive correspondence and notices Robert Norton %Nelson Engineering

P.O. Box 1599 Jackson, Wyoming 83001

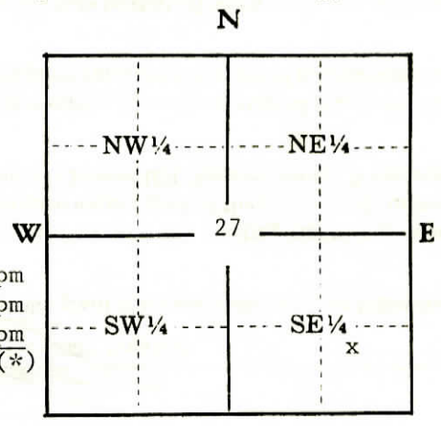
4. Use to which the water will be applied: Domestic [ ] Stock Watering [ ] Irrigation [ ] Municipal [X]
Industrial [ ] Miscellaneous [ ] (Describe completely and accurately) Permit No. U.W. 1386 is for Municipal Use at 700 gpm; 1st Enlargement under Permit No. U.W. 2055 for Municipal Use at 950 gpm; and this 2nd Enl. for Municipal Use for an additional 100gpm for a total production of 1750 gpm.

5. Location of the well: (NOTE: Quarter-quarter (40-acre subdivision) MUST be shown. EXAMPLE: SE¼NW¼ of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SE ¼ SE ¼ of Sec. 27, T. 41 N., R. 116 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, **also** provide Lot _____, Block _____ of the _____ Subdivision (or Add'n) of _____.

6. Mark the well location on the section grid to the right. LOCATION SHOWN IN ITEM 5 MUST AGREE WITH GRID. If the proposed well is for irrigation use, sketch and label all irrigation ditches and canals, stream, reservoirs and other wells. Indicate the point of use or lands to be irrigated from other sources. U.W.1386= 700 gpm
U.W.2055= 950 gpm
This Enl. = 100 gpm

7. Estimated depth of the well is 202 feet.

8. MAXIMUM quantity of water to be developed and beneficially (*) used: 100 gallons per minute. NOTE: If for domestic or stock use, this application will be processed for a maximum of 25 gallons per minute. SPRINGS: Only springs flowing 25 gallons per minute or less, where the proposed (*) use is domestic or stockwatering, will be considered as ground water appropriations. After approval of this application, some type of artificial diversion must be constructed to qualify for a water right. (*)Total=1750gpm



Scale: 2" = 1 mile

Above diagram represents one full section. Locate well accurately in small square representing 40 ac.

9. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation below.

10. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation below.
b. [ ] Land will be irrigated from this well only.
c. [ ] Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			---Corporate Limits of the Town of Jackson---																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			(Add per BLM Map)
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							

11. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc. _____

85495

SEE REVERSE SIDE

Permit No. U.W. _____ Book No. 635 Page No. 96

12. The well is to be constructed on lands owned by U.S. Department of the Interior-Fish and Wildlife Serv. (The granting of a permit does not constitute the granting of right of way. If any easement or right of way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not a co-applicant.)

13. The water is to be used on lands owned by Residents of the Town of Jackson
(If landowner is not the applicant, a copy of the agreement relating to usage of appropriated water on the land should be submitted to this office. If the landowner is included as a co-applicant on the application, this procedure need not be followed.)

REMARKS: Water from the Town of Jackson No. 2 Well, Permit No. U.W. 1386(Enlarged by Permit No. U.W. 2055 and this appropriation); is commingled with that of the Jackson No. 1 Well, Permit No. U.W. 1385; the Town of Jackson No. 3 Well, Permit No. U.W. 1945(Enlarged by Permit No. U.W. 85496); and the Town of Jackson No. 5 Well, Permit No. U.W.69746.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Robert R. Patton
Signature of Applicant or Authorized Agent

6/24/91
Date, 19

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as a single-family dwelling and the watering of lawns and gardens not exceeding one (1) acre)	$10.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$25.00
MONITOR (For water level measurements or chemical quality sampling)	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 27th day of June, A. D. 19 91, at 10:00 o'clock A M.

Permit No. U.W. 85495

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use, without loss of water into surface formations or at the surface.

This permit serves to enlarge an existing well for additional yield only and establish a valid water right for same. NOTICE OF COMMENCEMENT WAIVED. Time limit for completion of construction and completion of beneficial use waived.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well.~~

~~Construction of well will begin within one (1) year from date of approval. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19~~ .

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 8th day of July, A.D. 19 91.

Gordon W. Fassett
Gordon W. Fassett, State Engineer

June 27, 1991--Statement of Completion on September 7, 1967 received.
June 27, 1991--Proof of Beneficial use on September 7, 1967 received.

PERMIT NO. U.W. 85495

PERMIT STATUS

Priority Date June 27, 1991 Approval Date July 8, 1991

CERT. REC. U.W. 9, P. 49
PROOF NO. U.W. 3255, AC. —
G.P.M. 100 IRR. — STK. — DOM. — ~~MUN~~ V
MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

Form U.W. 6
Rev. 2-83

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

IF WELL IS TO BE ABANDONED, SEE ITEM 15, PAGE 4

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 85495 NAME OF WELL 2nd Enl. Jackson Water Well No.2

1. NAME OF OWNER Town of Jackson

2. ADDRESS 108 South King St. Jackson, Wyoming Zip Code 83001

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☒ Industrial ☐ Miscellaneous ☐

4. LOCATION OF WELL: SE ¼ SE ¼ of Section 27, T. 41 N., R. 116 W., of the 6th P.M. (or W.R.M.), Wyoming, being specifically N36° 25' W a distance of 1335ft (Bearing and Distance)

or _____ ft. North / South and _____ ft. East / West from the SE corner of Section 27, T. 41 N., R. 116 W.
(Strike out words not needed).

5. TYPE OF CONSTRUCTION: Drilled ☒ Rotary (Type of Rig) Dug ☐ Driven ☐ Jetted ☐

Other _____

6. CONSTRUCTION: Total Depth of Well 202 ft. Depth to Static Water Level 45 ft.

a. Casing Schedule New ☒ Used ☐

20"	diameter from 0	ft. to 202	ft.	Material Steel	Gage 0.250"
	diameter from	ft. to	ft.	Material	Gage
	diameter from	ft. to	ft.	Material	Gage

b. Perforations: Type of perforator used _____

Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:

_____ perforations from 60 ft. to 165 feet.

_____ perforations from 185 ft. to 195 feet.

(*)U.W. 1386=700 gpm
U.W. 2055=950 gpm
This Enl.=100 gpm
1750 gpm

RECEIVED JUN 27 1991 STATE ENGINEER CHEYENNE, WY.

c. Was well screen installed? Yes ☐ No ☒

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

d. Was well gravel packed? Yes ☒ No ☐ Size of gravel Pea Size

e. Was surface casing used? Yes ☐ No ☒ Was it cemented in place? Yes ☐ No ☐

7. NAME & ADDRESS OF DRILLER Andrew Well Drilling Idaho Falls, Idaho

8. DATE OF COMPLETION OF WELL (including pump installation) September 7, 1967

9. PUMP INFORMATION: Manufacturer Layne-Bowler Verti-Line Type Vertical Turbine

Source of power Electric Horsepower 150 Depth of Pump Setting 87

Amount of Water Being Pumped (*)100 Gallons Per Minute. (For springs or flowing wells, see item 11.)

85495
Permit No. U.W. _____

Book No. 635 Page No. 96

UW 85495

10. PUMP TEST: Was a pump test made? Yes ☒ No ☐

If so, by whom Andrew Well Drilling Address Idaho Falls, Idaho

Yield: 1250 gal./min. with 6.95 foot drawdown after 55 hours.

Yield: _____ gal./min. with _____ foot drawdown after _____ hours.

11. FLOWING WELL (Owner is responsible for control of flowing well).

If well yields artesian flow, yield is _____ gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.

The flow is controlled by: valve ☐ cap ☐ plug ☐

Does well leak around casing? Yes ☐ No ☐

12. LOG OF WELL: Total depth drilled 202 feet.

Depth of completed well 202 feet. Diameter of well 22 inches.

Depth to first water bearing formation 60 feet.

Depth to principal water bearing formation. Top 185 feet to Bottom 195 feet.

Ground Elevation, if known _____

From Feet	To Feet	Material Type, Texture, Color	REMARKS (Cementing, Shutoff, Packing, etc.)	Indicate Water Bearing Formation	Indicate Perforated Casing Location
0	2	Clay and Gravel			
2	75	Gravel		Water encountered	
75	85	Clay and Gravel(Brown)		Fairly good water bearing strata	
85	115	Gravel		Very good water bearing strata	
115	165	Clay and Gravel		Fair water bearing strata	
165	185	Gray Clay		Poor water bearing strata	
185	195	Gravel and clay		Fair water bearing strata	
195	200	Conglomerate		Poor water bearing strata	

QUALITY OF WATER INFORMATION:

Was a chemical analysis made? Yes ☐ No ☐

If so, please include a copy of the analysis with this form.

If not, do you consider the water as: Good ☐ Acceptable ☐ Poor ☐ Unusable ☐

UW 85495

13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for additional supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

Town-Ship	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
							---Town of Jackson corporate Limits---												
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							

TOTAL NUMBER OF ACRES TO BE IRRIGATED_____

Original Supply _____ acres

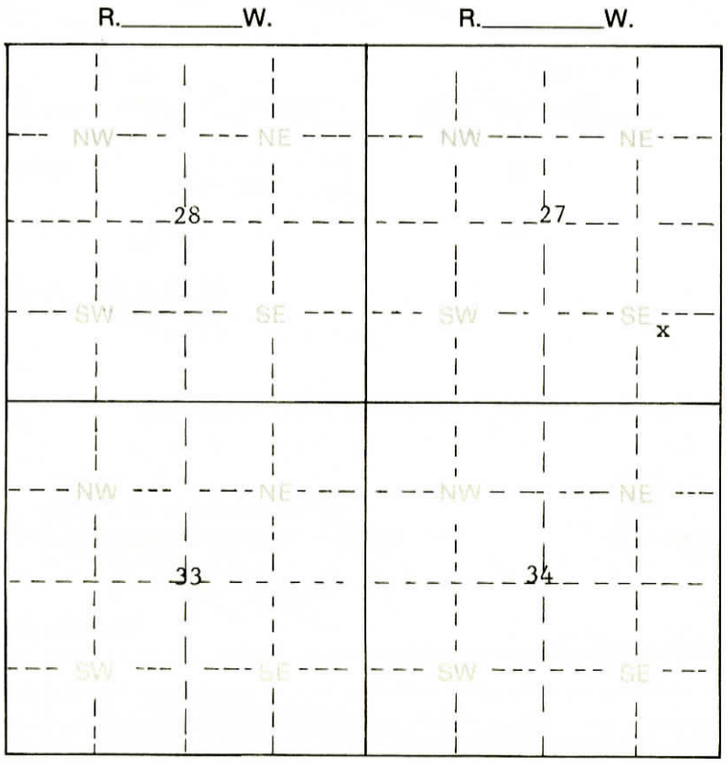
Additional Supply _____ acres

14. PLAT

a. If the well is to be used for irrigation, industrial, miscellaneous or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.

b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.

c. A separate map may be submitted if the information required cannot be shown on this plat.



Scale: 2" = 1 Mile

REMARKS: _____

15. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment and details of the plugging below.

It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

✓ Robert R. Norton
Signature of Owner or Authorized Agent

✓ 6/24/91, 19
Date

UW 85495

Date of Receipt JUN 27 1991, 19

Date of Priority June 27, 1991, 19

Date of Approval Sept. 4, 19 91

Richard S. Stanley
for State Engineer

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4(16)

U.W. DISTRICT Teton Co.

STATEMENT OF CLAIM
PERMIT NO. U.W. 85495
WELL REGISTRATION

DATE OF PRIORITY June 27, 1991

LOCATION SE ¼ SE ¼ of Section 27

NAME OF WELL 2nd Enl. Jackson Water Well No. 2

T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address 108 South King St. Jackson, Wyoming Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used ~~February 5~~ Sept. 7 (per U.W.8 of U.W. 6587 2055) 19 M.A

Use: _____ Date First Used: _____ , 19 ____ Use: _____ Date First Used _____ , 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 85495

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R. Norton
Signature of Owner or Authorized Agent

6/24/91
Date, 19 ____

Date of Receipt: JUN 27 1991, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 49
Order Record No. 42 , Page ~~45~~ 38
Permit No. 85495 , Proof No. 3255

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well and its original permit, Permit No. U.W. 1386, and its enlargement, Permit No. U.W. 2055, is commingled with that of the Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 3, Permit No. U.W. 1945, and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746.												
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			This enlargement is for additional yield only for 100 g.p.m. with 700 g.p.m. covered under the original permit, Permit No. U.W. 1386 and 950 g.p.m. covered under its enlargement, Permit No. U.W. 2055, for a total production of 1750 g.p.m.														

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

10.00
14035

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

MICRO FILMED JAN 21 1997

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY
PERMIT NO. U.W. 104233
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 24-6332

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING 3rd Enl. Jackson Water Well No. 2 (Enlargement of Permit No. UW1386 for additional use and points of use. and Volumetric yield)

1. Name of applicant(s) Town of Jackson Phone: (307)733-3932

2. Address of applicant(s) P.O. Box 1687 (MAILING ADDRESS) Jackson (CITY) WY (STATE) 83001 (ZIP)

3. Name & address of agent to receive correspondence and notices Applicant & copy to Theresa Gunn-Engineering Associates P.O. Box 1900 (MAILING ADDRESS) Cody (CITY) WY (STATE) 82414 (ZIP) Phone: (307)587-4911
& copy to Bob Norton-Nelson Engineering, P.O. Box 1599, Jackson, WY 83001 (307)733-2087

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____ .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____ .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☒ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: See Remarks

☐ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SE 1/4 SE 1/4 of Sec. 27, T. 41 N., R. 116 W. of the 6th P.M. ~~XXXXXXXX~~, Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____ . Resurvey Location: Tract _____, (or Lot) _____ .

6. Estimated depth of the well or spring is 202 feet. UW 1386 700 gpm; UW 2055 950 gpm; UW 85495 100 gpm

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 (This Enl.) gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right. Total 1750 gpm

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0 . See Conditions and Limitations.
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
					See Attached Tabulation Sheet														

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

SEE REVERSE SIDE

Permit No. U.W. 104233 Book No. 801 Page No. 34

11. The well or spring is to be constructed on lands owned by U.S. Government-Federal Elk Refuge
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by residents of the Town of Jackson. See Remarks.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: See Attached Remarks Continuation Sheet.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Teresa Lynn, PE (Agent) — Signature of Applicant or Authorized Agent

April 5 — Date, 19 96

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling) or TEST WELL	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 8th day of April, A.D. 19 96, at 10:00 o'clock A. M.

Permit No. U.W. 104233

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

This permit serves to enlarge an existing well for additional use and points of use only and establish a valid water right for the same. STATEMENT OF COMPLETION WAIVED. FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and~~ completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 20th day of October, A.D. 19 96.

Gordon W. Fassett

~~GORDON W. FASSETT~~ State Engineer

Permit No. U.W. 104233

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for																
			Municipal Uses as listed below.																
					Jackson Water Well No. 1, Permit No. UW 1385												&	U.W. 104232
					Jackson Water Well No. 3, Permit Nos. UW 1945, UW 85496												&	U.W. 104234
					Jackson No. 5 Well, Permit No. UW 69746												&	U.W. 104235
					Jackson No. 6 Well, Permit No. UW 101360													
					Jackson No. 7 Well, Permit No. UW 101361													
					Jackson No. 8 Well, Permit No. UW 101362													
40N	116W	5						X	X										
40N	116W	6	X	X	X	X	X	X	X	X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	31			X	X								X	X	X	X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
				X = Municipal Point of Use															
Additional Miscellaneous Points of Use - reservoir supply are listed on the following page.																			

REMARKS CONTINUATION

Permit No. U.W. 104233

Third Enlargement of Jackson Water Well No. 2

Items below are numbered to correspond to the numbering on the UW5 permit.

4. Miscellaneous Use includes reservoir supply for the Town of Jackson Wastewater Treatment Plant Reservoir, Permit Nos. 8114R and 29 1/157 (enl), West Borrow Area Lake Reservoir, Permit Nos. 8116R and 29 2/157 (enl), Blue Heron Reservoir, Permit No. 29 3/157, Sandhill Crane Reservoir, Permit No. 29 3/157, Snowy Egret Reservoir, Permit No. 29 4/157, ~~South Park No. 1 Reservoir, Permit No. 9725R, South Park No. 2 Reservoir, Permit No. 9726R, and South Park No. 3 Reservoir, Permit No. 9727R.~~ Commingling information is noted on the attached tabulation sheet.

7. (a) 1,750 gallons per minute is the total of previous appropriations. Previous appropriation amounts are listed below.

700 gpm	Permit No. UW 1386
950 gpm	Permit No. UW 2055
100 gpm	Permit No. UW 85495

(b) Ground water appropriated by the Town of Jackson from its Jackson Water Well Nos. 1, 2, 3, and 5 allow the Town to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a total combined quantity of no more than 5,000 acre-feet of ground water in any one calendar year. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993.

12. Water is also to be used on the following lands for Miscellaneous Use - reservoir supply.

Town of Jackson: Town of Jackson Wastewater Treatment Plant Reservoir TFNo. 29 1/157
West Borrow Area Lake Reservoir TFNo. 29 2/157

Wyoming Game and Fish Department:
Blue Heron Reservoir TFNo. 29 3/157
Sandhill Crane Reservoir TFNo. 29 3/157
Snowy Egret Reservoir TFNo. 29 4/157
~~South Park No. 1 Reservoir (9725 Res.)~~
~~South Park No. 2 Reservoir (9726 Res.)~~
~~South Park No. 3 Reservoir (9727 Res.)~~

An agreement between the Town of Jackson and the Wyoming Game and Fish Department dated May 31, 1993 entitled "Cooperative Wetlands Development Project Agreement" outlines the use of fully treated effluent from the Town of Jackson Wastewater Treatment Plant as the source of supply for the Blue Heron, Sandhill Crane, and Snowy Egret Reservoirs. Additional correspondence from Engineering Associates dated May 30, 1996 and from the Wyoming Game and Fish Department outlines the use of the same fully treated effluent mentioned herein as an additional source of supply for the South Park No.1, South Park No. 2, and South Park No. 3 Reservoirs.

The attached tabulation sheet lists the ground water wells that are commingled to make up the fully treated effluent that is discharged from the Town of Jackson Wastewater Treatment Plant.

Permit No. U.W. 104233

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for Miscellaneous Use - reservoir supply as listed below.																
					Lab Well No. 1, Permit No. UW 52345									U. W. 104236				
					Lab No. 2 Well									U.W. 104237				
					Pump Station No. 1 Well									U.W. 104238				
					Pump Station No. 2 Well									U.W. 104239				
					UV Building No. 1 Well									U.W. 104240				
					Jackson Water Well No. 1, Permit No. UW 1385														U.W. 104232
					Jackson Water Well No. 3, Permit Nos. UW 1945, UW 85496														U.W. 104234
					Jackson No. 5 Well, Permit No. UW 69746														U.W. 104235
					Jackson No. 6 Well, Permit No. UW 101360														
					Jackson No. 7 Well, Permit No. UW 101361														
					Jackson No. 8 Well, Permit No. UW 101362														
40N	116W	29			X	X				X									
			X = Misc. Point of Use-reservoir supply - Town of Jackson Wastewater Treatment Plant Reservoir, Permit No. 8114R + TFN 6.29 1/157																
40N	116W	29							X										
			X = Misc Point of Use-reservoir supply - West Borrow Area Lake Reservoir, Permit No. 8116R + TFN 6.29 2/157																
40N	116W	29									X								
			X = Misc. Point of Use-reservoir supply - Blue Heron Reservoir TFN 6.29 5/157																
40N	116W	29									X					X			
			X = Misc. Point of Use-reservoir supply - Sandhill Crane Reservoir TFN 6.29 3/157																
40N	116W	29														X			
			X = Misc. Point of Use-reservoir supply - Snowy Egret Reservoir TFN 6.29 4/157																
40N	116W	29														X	X		
			X = Misc. Point of Use-reservoir supply - South Park No. 1 Reservoir, Permit No. 9725R																
40N	116W	29															X	X	
			X = Misc. Point of Use-reservoir supply - South Park No. 2 Reservoir, Permit No. 9726R																
40N	116W	28										X	X						
40N	116W	29													X			X	
			X = Misc. Point of Use-reservoir supply - South Park No. 3 Reservoir, Permit No. 9727R																

FORM UW: C&D,C1
Town of Jackson

PERMIT NO. 104233
T.F. No. 24-6-332
PERMIT STATUS

Priority Date April 8, 1996 **Approval Date** October 20, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; 1st Enl. Jackson Water Well #1, Permit No. U.W. 104232; Jackson Water Well No. 2, Permit No. U.W. 1386; 1st Enl. Jackson Water Well No. 2, Permit No. U.W. 2055; 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; 3rd Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Jackson Water Well No. 3, Permit No. U.W. 1945; 1st Enl. Jackson Water Well No. 3, Permit No. U.W. 85496; 2nd Enl. Jackson Water Well No. 3; Permit No. U.W. 104234; Jackson Water Well No. 5, Permit No. U.W. 69746; 1st Enl. Jackson Water Well No. 5, Permit No. U.W. 104235; Jackson Water Well No. 6, Permit No. U.W. 101360; Jackson Water Well No. 7; Permit No. U.W. 101361; and the Jackson Water Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of **6,700 acre-feet** of ground water on an average annual basis and a combined total quantity of no more than **7,000 acre-feet** of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than **67,000 acre-feet** of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

October 20, 1996
DATE OF APPROVAL

Gordon W. Fassett
GORDON W. FASSETT, State Engineer

CERT. REC. U.W. 11 P. 267
PROOF NO. U.W. 4535 AC. 0
G.P.M. 0 IRR. ___ STK. ___ DOM. ___ MISC. X
MAP NO. 381-E

SCAN-MICRO DEC 07 2005
MUN. X
MICRO FILMED JAN 21 1997
MICRO FILMED SEP 25 1997
SEP 30 '97 NOTICE OF EXPIRATION OF TIME FOR COMPLETION OF BENEFICIAL USE MAILED

October 22, 1997 - Proof of Beneficial use on October 10, 1997 received.

SCANNED JUL 29 2013
MICRO FILMED FEB 19 1998

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM
PERMIT NO. U.W. 104233
WELL REGISTRATION

DATE OF PRIORITY ~~APRIL 8, 1996~~

LOCATION SE ¼ SE ¼ of Section 27

NAME OF WELL 3RD ENL. JACKSON WW #2

T. 41 N., R. 116 W.

1. Name of Claimant(s) TOWN OF JACKSON
2. Address P.O. BOX 1687 JACKSON, WY Zip Code 83001
3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used OCT. 10 , 19 97
   MISC. RESERVOIR
   Use: SUPPLY Date First Used: OCT. 10 , 19 97 Use: _____ Date First Used _____ , 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 104233

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton
Signature of Owner or Authorized Agent

Oct 16, 19 97
Date

THE STATE OF WYOMING)

County of _____)

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by _____ this _____ day of _____, 19____.

My Commission Expires _____, 19____.

_____
Notary Public

Date of Receipt OCT 22 1997, 19____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11 , Page 267
Order Record No. 58 , Page ~~140~~ 1210
Permit No. U.W. 104233 , Proof No. U.W. 4535

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enl. Jackson No. 5 Well, Pemrit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more then 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre feet of ground water in any ten (10) year period from its municipal water well field provided however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			(NOTE: Limits under previous ground water permits were 4,500 acre feet yearly average; 5,000 acre feet yearl maximum and 45,000 acre feet total 10 year maximum.)														

NOTE: "DO NOT FOLD THIS FORM. — ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH WATERPROOF INK WILL BE ACCEPTED."

Form U. W. 3-A

Temp. Filing No. U. W. 2-4-283

APPLICATION FOR PERMIT TO APPROPRIATE UNDERGROUND WATERS IN THE STATE OF WYOMING

(Under Chapter 169, Session Laws of Wyoming, 1957)

PERMIT NO. U. W. 1945

NAME OF WELL Jackson Water Well No. 3

WATER DIVISION NO. 4 (16)

UNDERGROUND WATER DISTRICT TETON County

I, Paul N. Scherbel of Big Piney, County of Sublette, State of Wyoming, being duly sworn according to law, upon my oath say:

1. The name of the applicant Town of Jackson a municipal corporation

2. The postoffice address of the applicant 108 South King St. Jackson, Wyoming 83001

3. The use to which the water is to be applied is: Irrigation ( ), Municipal (X), Industrial ( ), Other

4. Name: Designate the well by name and number Jackson Water Well No. 3

5. The well is to be located in the NE ¼ SE ¼ of Section 27, T. 41 N., R. 116 W., of the 6th P.M., Wyoming.

6. The type of the proposed well is: Drilled (X), Dug ( ), Driven ( ), Jetted ( ), Other

7. The estimated depth of the well is to be 200 feet.

8. The approximate depth to the water table below land surface is 27 feet.

9. The diameter of well at top is to be 24 inches, and at bottom inches.

10. The kind of casing (a) lbs. per ft. not known, (b) diameter 20", (c) new casing (X), used casing ( ).

11. Type of pump, if any, not known (Centrifugal, turbine, rotary, plunger), Capacity of pump 1000' Gal. Per Min.

12. Type of power electric motor (Electric motor, steam or gasoline engine, etc.). Horsepower of engine or motor not known.

13. Construction of well will begin within one year from date of approval of this application.

14. Completion of the construction and completion of the application of water to the beneficial uses stated in this application will be made by December 31 of the second year after approval of this application.

15. Estimated yield of water from proposed well 700 gallons per minute.

16. Estimated cost of well and pumping equipment 10,000 Dollars.

17. The well is to be constructed on lands owned by: United States of America - Fish and Wildlife Service

18. The water is to be used on lands owned by: municipal

U.W. 1945

19. If for irrigation, the land proposed to be irrigated should be described in the following tabulation.

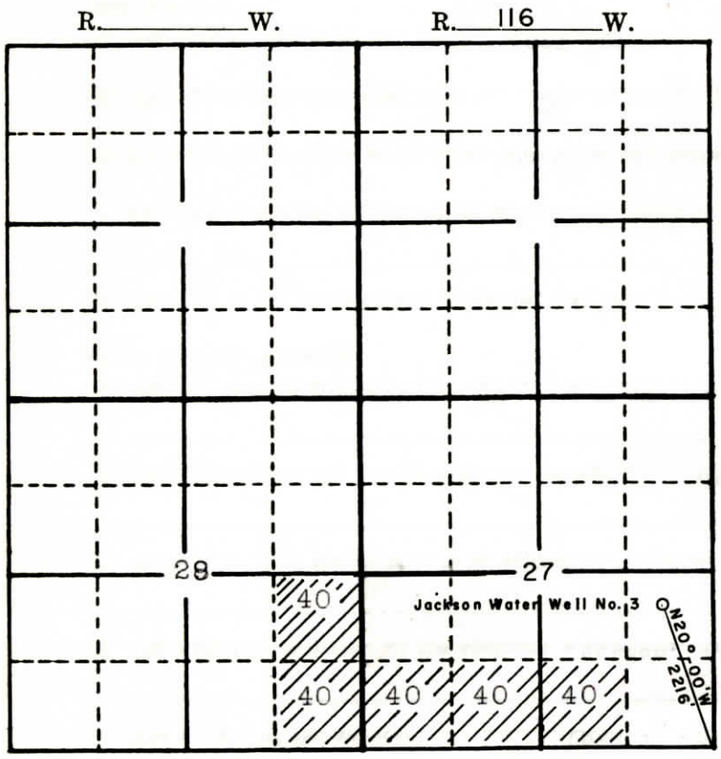
(Give irrigable acreage in each legal subdivision. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or Permit Number, the source of supply and the name of the ditch or other well.)

If not used for irrigation, state type, method and place of use.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
41N	116W	27											X	X			X		
"	"	28				X									X		X	X	
"	"	32	X	X	X	X								X	X	X	X	X	
"	"	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
"	"	34	X	X	X	X	X	X	X	X	X	X			X	X			
		35	Use will be made in above subdivisions together with any other areas which may be served by the municipal system in the future.									X							
																	Amended per BU Map		
40N	116	5 6	X		X	X		X	X	X									

TOTAL NUMBER OF ACRES TO BE IRRIGATED None

Locate well and acreage to be irrigated as accurately as possible on the following plat: If use is for purposes other than irrigation, show, in addition to well location, the point of use.



T.____N.

Scale: 2" = 1 Mile

T. 41 N.

See Attachment #1 for map which shows entire area receiving beneficial use from this well.

For map which shows actual tie of the well to the SE cor. of 27 See Miscellaneous Notices Permit No. U.W. 1945

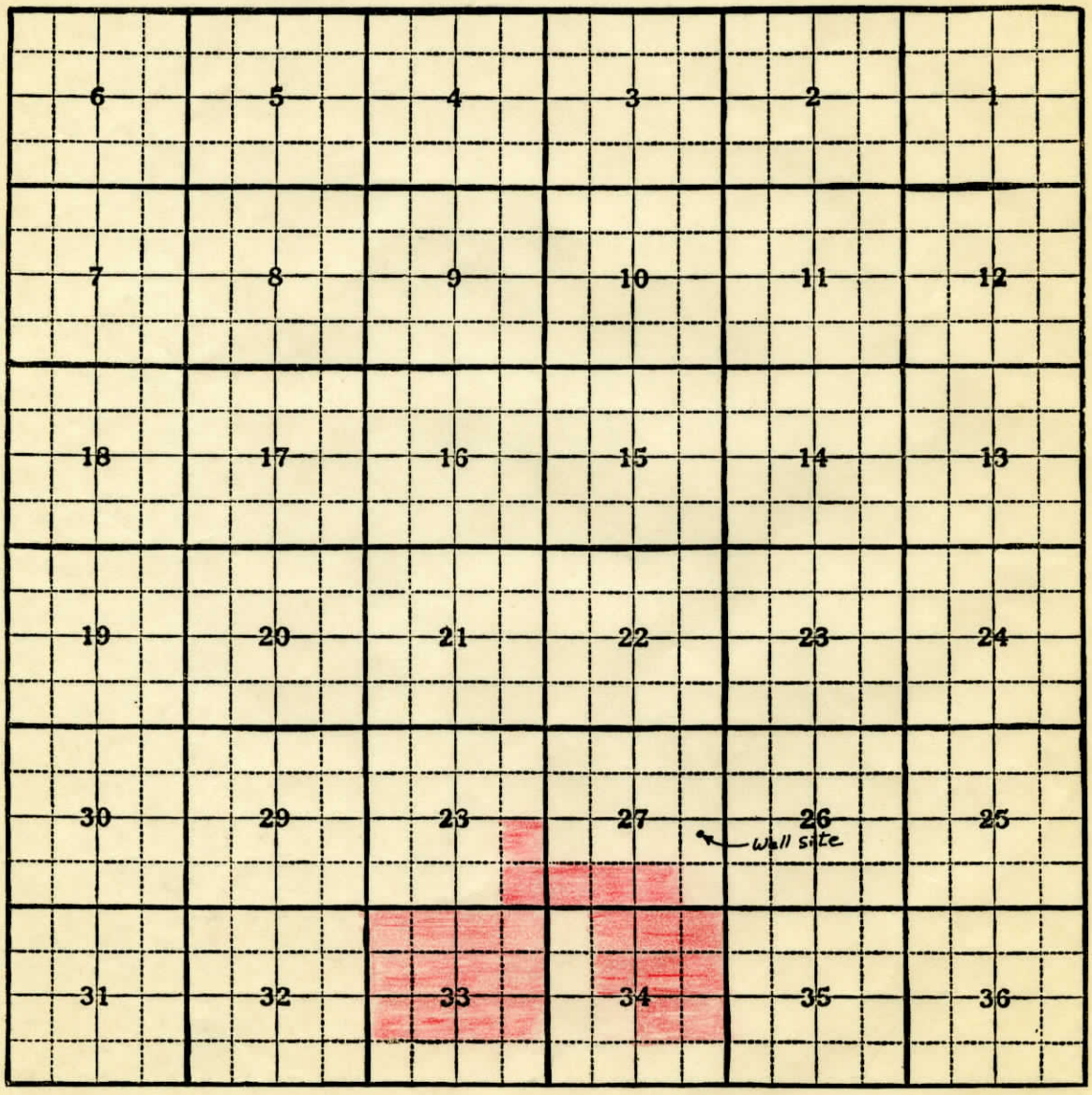
REMARKS: _____

(Signed) Paul T. Scherbel

ATTACHMENT NO. 1

Section ..... Township 41 Range 116

Teton County, State of Wyoming



FORM 981

GALLUP MAP & SUPPLY CO., KANSAS CITY, MO.

See Map to Accompany BU

= Area of Use

Permit No. U. W. 1945

THE STATE OF WYOMING,
County of Sublette } ss.

I hereby certify that the foregoing application was signed in my presence and sworn to before me by Paul N. Scherbel this 1st day of April, 19 67.

My Commission Expires 5 December, 19 69. Mrs. Rachel A. Scherbel
Notary Public.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } ss.

This instrument was received and filed for record on the 4th day of April, A. D. 19 67, at 3:00 o'clock P. M.

George L. Christopulos
George L. Christopulos, Deputy State Engineer.

Recorded in Book 11 of Underground Water Permits, on Page 90.

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } ss.

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

The right to be acquired under this permit shall not include the right to have the water level or artesian pressure at the point of diversion maintained at any level higher than that required for maximum beneficial use of available water in the source of supply.

If the well is a flowing artesian well it shall be so equipped that the flow may be shut off when not in use. Provision shall also be made for a threaded tap to which a pressure gage may be attached for determining shut-in pressure when desired.

This permit is granted subject to the condition that it shall not interfere with prior valid and existing rights to the use of the waters of said underground source, and use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957.

This permit is granted with the understanding that it is the responsibility of the applicant to acquire any rights of way or easements needed in connection with the drilling of this well and the use of the water therefrom.

Construction of proposed work shall begin within one year from the date of approval.

The time for completing the work and completing the application of water to beneficial use shall terminate on December 31, 19 69.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 10th day of June, A. D. 1967.

Floyd A. Bishop
State Engineer.

Permit No. U. W. 1945

Page No. 90

PERMIT NO. U. W. 1945

PERMIT STATUS

Priority Date April 4, 1967 **Approval Date** June 10, 1967

August 2, 1967 - Notice of commencement on July 27, 1966, received.

August 2, 1967 - Statement of Completion on July 1, 1967, received.

August 2, 1967 - Notice of beneficial use on July 1, 1967, received.

June 21, 1982--Proof of beneficial use on July 1, 1967 received in affidavit form. (Long Form)

June 27, 1991 - This permit has been enlarged by Permit No. U.W. 85496 for additional yield only. There is no physical enlargement of this well.

CERT. REC. U.W. 9, P. 45

PROOF NO. U.W. 3251, AC. —

G.P.M. 700 IRR. — STK. — DOM. — MUN ~~MISC.~~ ✓

MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

April 8, 1996 - This permit has been enlarged by Permit No. U.W. 104234 for additional use and points of use only. There is no physical enlargement of this well.

August 22, 2002 - This permit been enlarged by Permit No. U.W. 146696 for additional yield only. There is no physical enlargement of this well.

NOTICE

This application must be accompanied by a filing fee of two dollars.

Section 7, Chapter 169, Session Laws of Wyoming, 1957, provides in part: "Any person who after March 1, 1958, intends to acquire the right to beneficial use of any underground water in the State of Wyoming, except for those purposes specifically exempted by provisions, of Section 2 shall, before commencing construction of any well or performing any work in connection with said construction or proposed appropriation or any manner utilizing said water for beneficial purposes, file with the State Engineer an application for a permit to make such appropriation and shall not proceed with any of such construction or work until a permit is granted by the State Engineer, provided, that whenever any well constructed for any other purpose shall be found to be suitable for the withdrawal of underground water, such application shall be filed before said water is utilized for beneficial use - - - -."

Final proof may be submitted in accordance with the provisions of Sections 7 and 12, Chapter 169, Session Laws of Wyoming, 1957, after which Certificate of Appropriation will be issued by the State Board of Control.

The granting of a permit does not constitute the granting of right of way. If any right of way is necessary in connection with this application it should be understood that this responsibility is the applicant's.

8-2-67

NOTE: "DO NOT FOLD THIS FORM. — ONLY FORMS COMPLETED WITH TYPEWRITER OR NEATLY LETTERED WITH WATERPROOF INK WILL BE ACCEPTED."

Form UW4-A

STATEMENT OF COMPLETION OR ABANDONMENT OF PERMIT NO. U. W. 1945

UNDERGROUND WATERS

UNDER CHAPTER 169, SESSION LAWS OF WYOMING, 1957

WATER DIVISION NO. 4 (16) **UNDERGROUND WATER DISTRICT** Teton County

I, Paul N. Scherbel of Big Piney,
County of Sublette, State of Wyoming,
being duly sworn according to law, upon my oath say:

1. The name of the permittee or present owner Town of Jackson, a municipal corporation
108 South King St

2. The postoffice address of the permittee or present owner Jackson, Wyoming 83001

3. The name of the well is Jackson Water Well No. 3
(Designate by name and number)

4. Description of well: Location N20°-00'W, 2216 feet from the southeast corner of Section 27 T. 41 N., R. 116 W., and is in the NE ¼ SE ¼ of Section 27 T. 41 N., R. 116 W.; the type of well is: Drilled (x), Dug ( ), Driven ( ), Jetted ( ), Other ____.

CASING RECORD

Diameter Inches	Lbs. Per Foot	DEPTH Top	DEPTH Bottom	PERFORATIONS From	PERFORATIONS To
20"ID	--	0	200	~~75~~ 70 ~~178~~ 178	~~95~~ 100 ~~200~~ 196

CEMENTING RECORD

DEPTH IN FEET From	DEPTH IN FEET To	No. Sacks Cement	Method Used

Total depth of well 200 feet, depth to static water level in well 27 feet.

FLOWING ARTESIAN WELLS ONLY: Is well equipped with gate valve? Yes ( ) No ( ).

Name and address of driller Andrew Well Drilling, Idaho Falls, Idaho

Date of commencement of well 27 July, 1966
Date of completion of well 1 July, 1967

5. If well under this permit is to be abandoned, please state reasons for abandonment. (If well has been abandoned, it will not be necessary to complete the balance of this form, except for log of well, Item 14, and signature before a Notary Public).

6. Description of pump: Make Layne and Bowler; type vertical turbine (Centrifugal, turbine, rotary, plunger);
rated capacity of pump 750 gal. per minute.

7. Description of power plant: Method of operation electric motor (Electric motor, steam or gasoline engine, etc.);
Horsepower of engine or motor 75.

8. Give date pump and power plant were installed and works completed 1 July, 1967.

9. Record of Pumping Test (to be supplied by person or firm making test). Name and address of person making test. Andrew Well Drilling
date of test, 31 August, 1967; depth to water before test, 27' feet, and immediately afterward 66 feet; Length of test, 51 hours; average discharge, ~~825~~ 700 Adj. Amt. gal. per minute.

Permit No. U. W. 1945 Page No. 90

U.W. 1945

10. Actual cost of well and pumping equipment 10,000 Dollars.

11. If well is for irrigation purposes, and acreage to be served by well differs from lands described in permit, please re-describe lands in space below:
not applicable

12. Depth at which main zone of water was encountered is 75 feet to 95 feet, and the water bearing formation is gravel
(Sand, gravel, shale, clay, limestone, sandstone, etc.)

13. If other water zones were found, give depth to each:
178 feet to 195 feet.
feet to feet.

14. LOG OF WELL. (If additional space is needed attach extra sheet).

TYPE OF MATERIAL ENCOUNTERED (Give color and tell whether hard or soft)	DEPTH IN FEET From	To	Thickness in feet	REMARKS (Especially information as to water found)
10" top soil, clay and gravel	0	5	5	
clay and large gravel	5	38	33	
pea gravel and water	38	40	2	
pea gravel and water, some clay	40	50	10	
clay and some gravel	50	55	5	
clay and gravel	55	75	20	some water
gravel, some clay, water, trace of sand	75	95	20	perforated
clay, some gravel	95	100	5	
blue clay, trace of sand	100	107	7	
sand, trace of gravel	107	114	7	
blue clay, trace of gravel	114	130	16	
blue clay, pea gravel	130	140	10	
clay, sand and lt gravel	140	167	27	
sand, some gravel	167	178	11	
pea gravel, lt. and, water	178	190	12	perforated
gravel, clay, some sand	190	200	10	

REMARKS: The equipment installed for this well was removed from Well No. 2, Permit No. 1386.

(Signed) Paul N. Scherbel

THE STATE OF WYOMING,
County of SUBLETTE } ss.

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by Paul N. Scherbel this 31st day of July, 1967.

My Commission Expires 5 December, 1969. Mrs Rachel A. Scherbel
Notary Public.

Date of Receipt: August 2, 1967.

George L. Christopoulos
George L. Christopoulos, Deputy State Engineer.

For Dirller's Log of this well, see Miscellaneous Notices, Permit No. U.W. 1945.

Form U.W. 8

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT Teton County

STATEMENT OF CLAIM

DATE OF PRIORITY April 4, 1967 ~~July 1, 1967~~

PERMIT NO. U.W. 1945

WELL REGISTRATION

LOCATION NE ¼ SE ¼ of Section 27

NAME OF WELL Jackson Water Well No. 3

T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address P.O. Box 1687 Jackson, Wy Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used July 4, 19 67

Use: _____ Date First Used: _____, 19 ____ Use: _____ Date First Used _____, 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-366 Wyoming Statutes (1957 Supp.) or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

U.W. 1945

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Melvin Webb, Town Administrator — June 15, 19 82

Signature of Owner or Authorized Agent — Date

THE STATE OF WYOMING)
)
County of TETON)

I hereby certify that the forgoing statement was signed in my presence and sworn to before me by MELVIN WEBB

this 15th day of June, 19 82.

My Commission Expires: July 9, 19 83.

Notary Public

DEANN L. SUTTON NOTARY PUBLIC TETON COUNTY, WYOMING

JUN 21 1982

Date of Receipt: _____, 19 ____

RECEIVED JUN 21 1982 STATE ENGINEER Cheyenne, Wyo.

SCANNED

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 45
Order Record No. 42 , Page ~~42~~ 38
Permit No. 1945 , Proof No. 3251

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well and its enlargement, Permit No. U.W. 85496, is commingled with that of the Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; and the Jackson No. 5 Well, Permit No. U.W. 69746.												
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												

FORM U.W. 5
Rev. 5-79
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
HERSCHLER BUILDING
CHEYENNE, WYOMING 82002

+25.00 P

MICRO FILMED SEP 11 '91

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

FOR OFFICE USE ONLY

PERMIT NO. U.W. 85496

WATER DIVISION NO. 4 DISTRICT 16

U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 21-2-335

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE.

NAME AND NUMBER OF WELL 1st Enl. Jackson No. 3 Well
(enl. of Permit No. U.W. 1945 for Additional Yield Only)

1. Name of applicant(s) Town of Jackson Phone: 733-3932

2. Address of applicant(s) 108 South King St. Jackson, Wyoming Zip: 83001

3. Name & address of agent to receive correspondence and notices Robert Norton % Nelson Engineering

P.O. Box 1599 Jackson, WY 83001

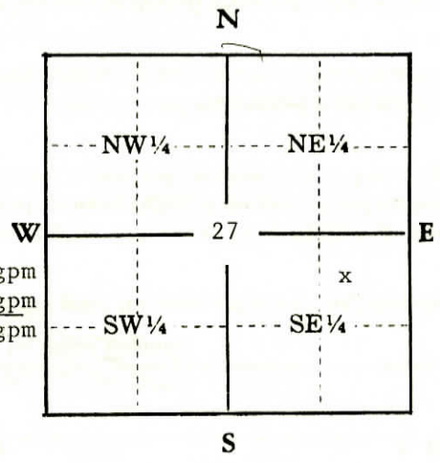
4. Use to which the water will be applied: Domestic [ ] Stock Watering [ ] Irrigation [ ] Municipal [X] Industrial [ ] Miscellaneous [ ] (Describe completely and accurately) Original permit for Municipal Use for 700 gpm. This Enl. for Municipal Use and an additional 75gpm for a total production of 775 gpm.

5. Location of the well: (NOTE: Quarter-quarter (40-acre subdivision) MUST be shown. EXAMPLE: SE¼NW¼ of Sec. 12, Township 14 North, Range 68 West.) Teton County, NE ¼ SE ¼ of Sec. 27, T. 41 N., R. 116 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, **also** provide Lot _____, Block _____ of the _____ Subdivision (or Add'n) of _____.

6. Mark the well location on the section grid to the right. LOCATION SHOWN IN ITEM 5 MUST AGREE WITH GRID. If the proposed well is for irrigation use, sketch and label all irrigation ditches and canals, stream, reservoirs and other wells. Indicate the point of use or lands to be irrigated from other sources. U.W. 1945= 700gpm
This Enl. = 75gpm
Total = 775gpm

7. Estimated depth of the well is 200 feet.

8. MAXIMUM quantity of water to be developed and beneficially used: 75 gallons per minute. NOTE: If for domestic or stock use, this application will be processed for a maximum of 25 gallons per minute. SPRINGS: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic or stockwatering, will be considered as ground water appropriations. After approval of this application, some type of artificial diversion must be constructed to qualify for a water right.



Scale: 2" = 1 mile

Above diagram represents one full section. Locate well accurately in small square representing 40 ac.

9. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation below.

10. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation below.
b. [ ] Land will be irrigated from this well only.
c. [ ] Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			---Corporate Limits of the Town of Jackson---																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X	(Add per BLM Map)		
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							

11. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc. _____

SEE REVERSE SIDE

Permit No. U.W. 85496 Book No. 635 Page No. 97

12. The well is to be constructed on lands owned by U.S. Department of Interior-Fish and Wildlife Service
(The granting of a permit does not constitute the granting of right of way. If any easement or right of way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not a co-applicant.)

13. The water is to be used on lands owned by Residents of the Town of Jackson
(If landowner is not the applicant, a copy of the agreement relating to usage of appropriated water on the land should be submitted to this office. If the landowner is included as a co-applicant on the application, this procedure need not be followed.)

REMARKS: Water from the Jackson No. 3 Well, Permit No. U.W. 1945(Enlarged by this appropriation); is commingled with that of the Jackson No. 1 Well, Permit No. U.W.1385; the Jackson No. 2 Well, Permit No. U.W. 1386(Enlarged by Permit No. U.W. 2055 and Permit No. U.W. 85495); and the Town of Jackson No. 5 Well, Permit No. U.W. 69746.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Robert R. Stanton — 6/24/91, 19____
Signature of Applicant or Authorized Agent — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as a single-family dwelling and the watering of lawns and gardens not exceeding one (1) acre)	$10.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$25.00
MONITOR (For water level measurements or chemical quality sampling)	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 27th day of June, A. D. 19 91, at 10:00 o'clock A M.

Permit No. U.W. 85496

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use, without loss of water into surface formations or at the surface.

This permit serves to enlarge an existing well for additional yield only and establish a valid water right for same. NOTICE OF COMMENCEMENT WAIVED. Time limit for completion of construction and completion of beneficial use waived.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well.~~

~~Construction of well will begin within one (1) year from date of approval. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19____.~~

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 8th day of July, A.D. 19 91.

Gordon W. Fassett
Gordon W. Fassett State Engineer

June 27, 1991--Statement of Completion on July 1, 1967 received.
June 27, 1991--Proof of Beneficial use on July 1, 1967 received.

PERMIT NO. U.W. 85496

PERMIT STATUS

Priority Date June 27, 1991 Approval Date July 8, 1991

CERT. REC. U.W. 9, P. 50
PROOF NO. U.W. 3256, AC. —
G.P.M. 75 IRR. — STK. — DOM. — MUN ✓
MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

Form U.W. 6
Rev. 2-83

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

IF WELL IS TO BE ABANDONED, SEE ITEM 15, PAGE 4

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 85496 NAME OF WELL 1st Enl. Jackson No. 3 Well

1. NAME OF OWNER Town of Jackson

2. ADDRESS 108 South King Street Jackson, Wyoming Zip Code 83001

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☒ Industrial ☐ Miscellaneous ☐

4. LOCATION OF WELL: NE ¼ SE ¼ of Section 27, T. 41 N., R. 116 W., of the 6th P.M. (or W.R.M.), Wyoming, being specifically N20° 16' W a distance of 2216ft (Bearing and Distance)

or _____ ft. North / South and _____ ft. East / West from the SE corner of Section 27, T. 41 N., R. 116 W.
(Strike out words not needed).

5. TYPE OF CONSTRUCTION: Drilled ☒ Rotary (Type of Rig) Dug ☐ Driven ☐ Jetted ☐

Other _____

6. CONSTRUCTION: Total Depth of Well 200 ft. Depth to Static Water Level 33.0' ft.

a. Casing Schedule New ☒ Used ☐

20"	diameter from 0	ft. to 200	ft.	Material steel	Gage .250"
	diameter from	ft. to	ft.	Material	Gage
	diameter from	ft. to	ft.	Material	Gage

b. Perforations: Type of perforator used _____

Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:

_____ perforations from 70 ft. to 100 feet.

_____ perforations from 178 ft. to 196 feet.

(*)U.W. 1945= 700 gpm
This Enl. = 75 gpm
Total =775 gpm

c. Was well screen installed? Yes ☐ No ☒

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

d. Was well gravel packed? Yes ☐ No ☐ Size of gravel _____

e. Was surface casing used? Yes ☐ No ☐ Was it cemented in place? Yes ☐ No ☐

7. NAME & ADDRESS OF DRILLER Andrews Well Drilling Idaho Falls, Idaho

8. DATE OF COMPLETION OF WELL (including pump installation) July 1, 1967

9. PUMP INFORMATION: Manufacturer Layne-Bowler Verti-Line Type Vertical Turbine

Source of power Electric Horsepower 75 Depth of Pump Setting 103

Amount of Water Being Pumped (*)75 Gallons Per Minute. (For springs or flowing wells, see item 11.)

Permit No. U.W. 85496 Book No. 635 Page No. 97

UW 85496

10. PUMP TEST: Was a pump test made? Yes ☒ No ☐

If so, by whom Andrews Well Driiling Address Idaho Falls, Idaho

Yield: 825 gal./min. with 66 foot drawdown after 51 hours.

Yield: _____ gal./min. with _____ foot drawdown after _____ hours.

11. FLOWING WELL (Owner is responsible for control of flowing well).

If well yields artesian flow, yield is _____ gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.

The flow is controlled by: valve ☐ cap ☐ plug ☐

Does well leak around casing? Yes ☐ No ☐

12. LOG OF WELL: Total depth drilled 200 feet.

Depth of completed well 200 feet. Diameter of well 22 inches.

Depth to first water bearing formation 38 feet.

Depth to principal water bearing formation. Top 70 / 178 feet to Bottom 100 / 196 feet.

Ground Elevation, if known N/A

From Feet	To Feet	Material Type, Texture, Color	REMARKS (Cementing, Shutoff, Packing, etc.)	Indicate Water Bearing Formation	Indicate Perforated Casing Location
0	5	10" top soil,Clay&Gravel			
5	38	Clay and Large Gravel			
38	40	Pea Gravel and Water			
40	50	Pea Gravel&water,some clay			
50	55	Clay and some gravel			
55	75	Clay and gravel			70ft
75	95	Gravel,some clay,water,			x
		trace of sand			x
95	100	Clay,some gravel			100ft
100	107	Blue clay,trace of sand			
107	114	Sand,trace of gravel			
114	130	Blue clay,trace of gravel			
130	140	Blue clay,pea gravel			
140	167	Clay,sand and Lt gravel			
167	178	Sand,some gravel			
178	190	Pea gravel,lt and water			178
190	200	Gravel,claymsome sand			196

QUALITY OF WATER INFORMATION:

Was a chemical analysis made? Yes ☐ No ☐

If so, please include a copy of the analysis with this form.

If not, do you consider the water as: Good ☐ Acceptable ☐ Poor ☐ Unusable ☐

UW 85496

13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for additional supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

Town-Ship	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			---Town of Jackson Corporate Limits---																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							

TOTAL NUMBER OF ACRES TO BE IRRIGATED_____

Original Supply _____ acres

Additional Supply _____ acres

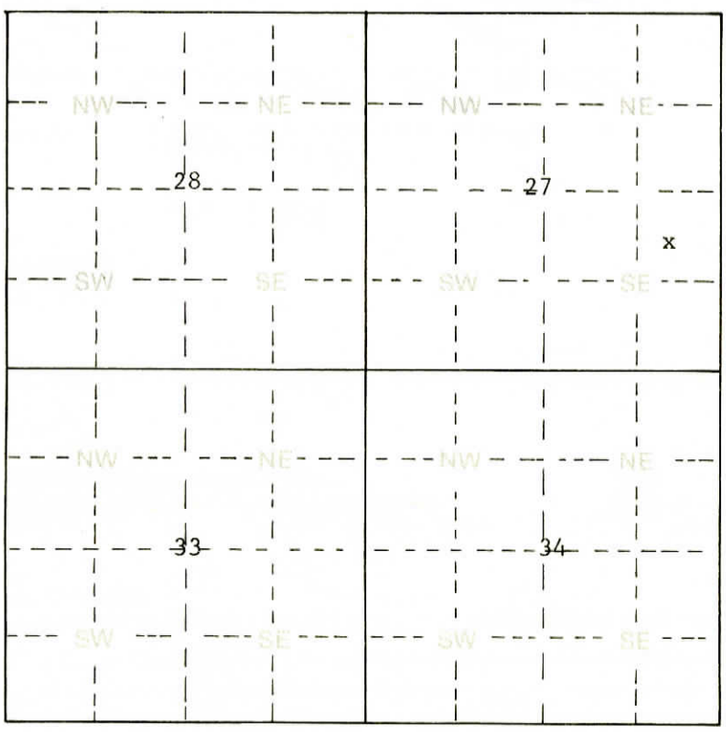
14. PLAT

a. If the well is to be used for irrigation, industrial, miscellaneous or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.

b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.

c. A separate map may be submitted if the information required cannot be shown on this plat.

R. 116 W. R._____W.



Scale: 2" = 1 Mile

T. 41 N.

T._____N.

REMARKS: _____

15. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment and details of the plugging below.

It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert L. Norton
Signature of Owner or Authorized Agent

6/24/91, 19
Date

UW 85496

Date of Receipt JUN 27 1991, 19

Date of Priority June 27, 1991, 19

Date of Approval Sept. 4, 19 91

Richard S. Stockdale
for State Engineer

Form U.W. 8
Rev: 2-82

RECEIVED
JUN 27 1991
STATE ENGINEER
CHEYENNE, WY.

FILED SEP 11 '91

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4(16)

U.W. DISTRICT Teton Co.

STATEMENT OF CLAIM

DATE OF PRIORITY June 27, 1991

PERMIT NO. U.W. 85496

WELL REGISTRATION

LOCATION NE ¼ SE ¼ of Section 27

NAME OF WELL 1st Enl. Jackson No. 3 Well

T. 41 N., R. 116 W.

1. Name of Claimant(s) Town of Jackson

2. Address 108 South King St. Jackson,Wyoming Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used July 1 , 19 67

Use: _____ Date First Used: _____ , 19 ____ Use: _____ Date First Used _____ , 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

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A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 85496

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R. Norton
Signature of Owner or Authorized Agent

6/24/91
Date, 19 ____

Date of Receipt: JUN 27 1991, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 50
Order Record No. 42 , Page ~~47~~ 38
Permit No. 85496 , Proof No. 3256

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well and its original permit, Permit No. U.W. 1945, is commingled with that of the Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055, and Permit No. U.W. 85495; and the Jackson No. 5 Well, Permit No. U.W. 69746.												
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargement, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			This enlargement is for additional yield only for 75 g.p.m. with 700 g.p.m. covered under the original permit, Permit No. U.W. 1945, for a total production of 775 g.p.m.																

Sheet 01 of 01

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

10:00
14035

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

MICRO FILMED JAN 2 1 1997

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 104234
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 24-7.332

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING 2nd Enl. Jackson Water Well No. 3 (Enlargement of Permit No. UW 1945 for additional use and points of use and volumetric yield)

1. Name of applicant(s) Town of Jackson Phone: (307)733-3932

2. Address of applicant(s) P.O. Box 1687 (MAILING ADDRESS) Jackson (CITY) WY (STATE) 83001 (ZIP)

3. Name & address of agent to receive correspondence and notices Applicant & copy to Theresa Gunn-Engineering Associates P.O. Box 1900 (MAILING ADDRESS) Cody (CITY) WY (STATE) 82414 (ZIP) Phone: (307)587-4911
& copy to Bob Norton-Nelson Engineering, P.O. Box 1599, Jackson WY 83001 (307)733-2087

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____ .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____ .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☒ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: See Remarks

☐ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, NE 1/4 SE 1/4 of Sec. 27, T. 41 N., R. 116 W. of the 6th P.M. (~~xxWRM~~) Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 200 feet. UW 1945 700 gpm UW 85496 75 gpm

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 (this Enl.) gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right. Total 775 gpm See Conditions and Limitations.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 0 (this Enl.). Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
					See Attached Tabulation Sheet														

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

SEE REVERSE SIDE

Permit No. U.W. 104234 Book No. 801 Page No. 35

11. The well or spring is to be constructed on lands owned by U.S. Government-Fish & Wildlife Service
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by residents of the Town of Jackson. See Remarks.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: See Attached Remarks Continuation Sheet.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Teresa Lynn, PE (Agent) — Signature of Applicant or Authorized Agent

April 5, 19 96 — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES $25.00
(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS (~~$50.00~~)

MONITOR (For water level measurements or chemical quality sampling) or TEST WELL NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 8th day of April, A.D. 19 96, at 10:00 o'clock A. M.

Permit No. U.W. 104234

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

This permit serves to enlarge an existing well for additional use and points of use only and establish a valid water right for the same. STATEMENT OF COMPLETION WAIVED. FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and~~ completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 20th day of October, A.D. 19 96.

Gordon W. Fassett
GORDON W. FASSETT State Engineer

Permit No. U.W. 104234

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for Municipal Uses as listed below.																
					Jackson Water Well No. 1, Permit No. UW 1385														U.W. 104232
					Jackson Water Well No. 2, Permit Nos. UW 1386, UW 2055, UW 85495														U.W. 104233
					Jackson No. 5 Well, Permit No. UW 69746														U.W. 104235
					Jackson No. 6 Well, Permit No. UW 101360														
					Jackson No. 7 Well, Permit No. UW 101361														
					Jackson No. 8 Well, Permit No. UW 101362														
40N	116W	5						X	X										
40N	116W	6	X	X	X	X	X	X	X	X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	31			X	X								X	X	X	X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
				X = Municipal Point of Use															
Additional Miscellaneous Points of Use - reservoir supply are listed on the following page.																			

PERMIT NO. U.W. 104234

REMARKS CONTINUATION

Permit No. U.W. 104234

Second Enlargement of Jackson Water Well No. 3

Items below are numbered to correspond to the numbering on the UW5 permit.

4. Miscellaneous Use includes reservoir supply for the Town of Jackson Wastewater Treatment Plant Reservoir, Permit Nos. 8114R and 29 1/157 (enl), West Borrow Area Lake Reservoir, Permit Nos. 8116R and 29 2/157 (enl), Blue Heron Reservoir, Permit No. 29 5/157, Sandhill Crane Reservoir, Permit No. 29 3/157, Snowy Egret Reservoir, Permit No. 29 4/157, ~~South Park No. 1 Reservoir, Permit No. 9725R, South Park No. 2 Reservoir, Permit No. 9726R, and South Park No. 3 Reservoir, Permit No. 9727R~~. Commingling information is noted on the attached tabulation sheet.

7. (a) 775 gallons per minute is the total of previous appropriations. Previous appropriation amounts are listed below.

700 gpm	Permit No. UW 1945
75 gpm	Permit No. UW 85496

(b) Ground water appropriated by the Town of Jackson from its Jackson Water Well Nos. 1, 2, 3, and 5 allow the Town to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a total combined quantity of no more than 5,000 acre-feet of ground water in any one calendar year. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993.

12. Water is also to be used on the following lands for Miscellaneous Use - reservoir supply.

Town of Jackson: Town of Jackson Wastewater Treatment Plant Reservoir TFN 6.29 1/157
West Borrow Area Lake Reservoir TFN 6.29 2/157

Wyoming Game and Fish Department:
Blue Heron Reservoir TFN 6.29 5/157
Sandhill Crane Reservoir TFN 6.29 3/157
Snowy Egret Reservoir TFN 6.29 4/157
~~South Park No. 1 Reservoir (9725 Res.)~~
~~South Park No. 2 Reservoir (9726 Res.)~~
~~South Park No. 3 Reservoir (9727 Res.)~~

An agreement between the Town of Jackson and the Wyoming Game and Fish Department dated May 31, 1993 entitled "Cooperative Wetlands Development Project Agreement" outlines the use of fully treated effluent from the Town of Jackson Wastewater Treatment Plant as the source of supply for the Blue Heron, Sandhill Crane, and Snowy Egret Reservoirs. Additional correspondence from Engineering Associates dated May 30, 1996 and from the Wyoming Game and Fish Department outlines the use of the same fully treated effluent mentioned herein as an additional source of supply for the South Park No.1, South Park No. 2, and South Park No. 3 Reservoirs.

The attached tabulation sheet lists the ground water wells that are commingled to make up the fully treated effluent that is discharged from the Town of Jackson Wastewater Treatment Plant.

Permit No. U.W. 104234

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for Miscellaneous Use - reservoir supply as listed below.																
					Lab Well No. 1, Permit No. UW 52345									U.W. 104236					
					Lab No. 2 Well									U.W. 104237					
					Pump Station No. 1 Well									U.W. 104238					
					Pump Station No. 2 Well									U.W. 104239					
					UV Building No. 1 Well									U.W. 104240					
					Jackson Water Well No. 1, Permit No. UW 1385														U.W. 104232
					Jackson Water Well No. 2, Permit Nos. UW 1386, UW 2055, UW 85495														U.W. 104233
					Jackson No. 5 Well, Permit No. UW 69746														U.W. 104234
					Jackson No. 6 Well, Permit No. UW 101360														
					Jackson No. 7 Well, Permit No. UW 101361														
					Jackson No. 8 Well, Permit No. UW 101362														
40N	116W	29			X	X				X									
			X = Misc. Point of Use-reservoir supply - Town of Jackson Wastewater Treatment Plant Reservoir, Permit No. 8114R TF No. 29 1/157																
40N	116W	29							X										
			X = Misc Point of Use-reservoir supply - West Borrow Area Lake Reservoir, Permit No. 8116R TF No. 29 2/157																
40N	116W	29									X								
			X = Misc. Point of Use-reservoir supply - Blue Heron Reservoir TF No. 29 3/157																
40N	116W	29									X					X			
			X = Misc. Point of Use-reservoir supply - Sandhill Crane Reservoir TF No. 29 3/157																
40N	116W	29														X			
			X = Misc. Point of Use-reservoir supply - Snowy Egret Reservoir TF No. 29 4/157																
40N	116W	29														X	X		
			X = Misc. Point of Use-reservoir supply - South Park No. 1 Reservoir, Permit No. 9725R																
40N	116W	29															X	X	
			X = Misc. Point of Use-reservoir supply - South Park No. 2 Reservoir, Permit No. 9726R																
40N	116W	28										X	X						
40N	116W	29													X			X	
			X = Misc. Point of Use-reservoir supply - South Park No. 3 Reservoir, Permit No. 9727R																

FORM UW: C&L, C1
Town of Jackson

CERT. REC. U.W. 11 P. 268
PROOF NO. U.W. 45366 AC. 0
G.P.M. 0 IRR. STK. DOM. MISC. X
MAP NO. 381-E
MUN. X

PERMIT NO. 104234
T.F. No. 24-7-332
PERMIT STATUS

Priority Date April 8, 1996 **Approval Date** October 20, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; 1st Enl. Jackson Water Well #1, Permit No. U.W. 104232; Jackson Water Well No. 2, Permit No. U.W. 1386; 1st Enl. Jackson Water Well No. 2, Permit No. U.W. 2055; 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; 3rd Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Jackson Water Well No. 3, Permit No. U.W. 1945; 1st Enl. Jackson Water Well No. 3, Permit No. U.W. 85496; 2nd Enl. Jackson Water Well No. 3; Permit No. U.W. 104234; Jackson Water Well No. 5, Permit No. U.W. 69746; 1st Enl. Jackson Water Well No. 5, Permit No. U.W. 104235; Jackson Water Well No. 6, Permit No. U.W. 101360; Jackson Water Well No. 7; Permit No. U.W. 101361; and the Jackson Water Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of **6,700 acre-feet** of ground water on an average annual basis and a combined total quantity of no more than **7,000 acre-feet** of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than **67,000 acre-feet** of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

October 20, 1996
DATE OF APPROVAL

Gordon W. Fassett
GORDON W. FASSETT, State Engineer

MICRO FILMED JAN 21 1997

SEP 30 '97 NOTICE OF EXPIRATION OF TIME FOR COMPLETION OF BENEFICIAL USE MAILED

MICRO FILMED SEP 25 1997

October 22, 1997 - Proof of Beneficial use on October 10, 1997 received.

MICRO FILMED FEB 19 1998

PERMIT NO. U.W. 104234

PERMIT STATUS

Priority Date April 8, 1996

Approval Date Oct. 20, 1996

CERT. REC. U.W. 11 P. 268

PROOF NO. U.W. 4536 AC. 0

G.P.M. 0 IRR. ___ STK. ___ DOM. ___ MISC. X

MAP NO. 381-E

MUN. X

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM 104234

DATE OF PRIORITY ~~APRIL 8, 1996~~

PERMIT NO. U.W. _____

WELL REGISTRATION

LOCATION NE ¼ SE ¼ of Section 27

NAME OF WELL 2ND ENL JACKSON WW #3

T. 41 N., R. 116 W.

1. Name of Claimant(s) TOWN OF JACKSON

2. Address P.O. BOX 1687 JACKSON, WY Zip Code 83001

3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used OCT. 10 , 19 97

MISC. RESERVOIR

Use: SUPPLY Date First Used: OCT. 10 , 19 97 Use: _____ Date First Used _____ , 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 104234

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton PEALS 2910 — Oct 16, 1997

Signature of Owner or Authorized Agent — Date

THE STATE OF WYOMING)

County of _____)

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by _____ this _____ day of _____, 19_____.

My Commission Expires _____, 19_____.

_____
Notary Public

Date of Receipt OCT 22 1997, 19_____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11, Page 268
Order Record No. 58, Page 142 126
Permit No. U.W. 104234, Proof No. U.W. 4536

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enl. Jackson No. 5 Well, Permit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed of the basis of ten (10) consecutive years commending with the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre feet of ground water in any ten (10) year period from its municipal water well field proved however, that the State Engineer may, pursuant to application, permit the town of Jackson to withdraw additional quantities of ground water.												
			(NOTE: Limits under previous ground water permits were 4,500 acre feet yearly average; 5,000 acre feet yearly maximum, and 45,000 acre feet total 10 year maximum.)														

Sheet 02 of 02

FORM U.W. 5
Rev. 5-79
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
BARRETT BUILDING
CHEYENNE, WYOMING 82002

MICRO-FILMED MAY 1 '85

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

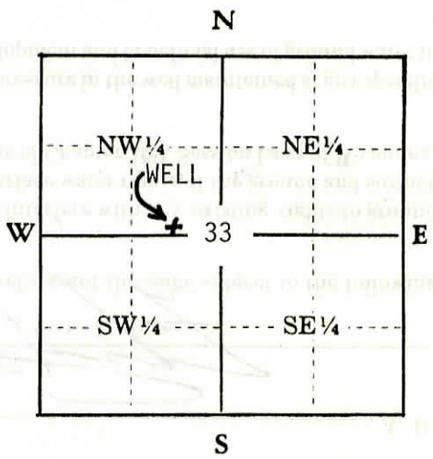
FOR OFFICE USE ONLY
PERMIT NO. U.W. 69746
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 18-7-192

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE.

NAME AND NUMBER OF WELL Jackson No. 5

1. Name of applicant(s) Town of Jackson ~~DEPAD, State of Wyoming~~ Phone: 307/733-3932
2. Address of applicant(s) Box 1687 108 South King St. ~~Herschler Building~~ Zip:
   Jackson, WY 83001 ~~Cheyenne, WY 82002~~
3. Name & address of agent to receive correspondence and notices Robert R. Norton, PE & LS,
   Nelson Engineering, P.O. Box 1599, Jackson, WY 83001
4. Use to which the water will be applied: Domestic [ ] Stock Watering [ ] Irrigation [ ] Municipal [XX]
   Industrial [ ] Miscellaneous [ ] (Describe completely and accurately)
5. Location of the well: (NOTE: Quarter-quarter (40-acre subdivision) MUST be shown. EXAMPLE: SE¼NW¼ of Sec. 12, Township 14 North, Range 68 West.)
   Teton County, SE ¼ NW ¼ of Sec. 33
   T. 41 N., R. 116 W. of the 6th P.M. (~~XXXXXXX~~), Wyoming. If located in a platted subdivision, **also** provide Lot _____, Block _____ of the _____ Subdivision (or Add'n) of _____.



Scale: 2" = 1 mile

Above diagram represents one full section. Locate well accurately in small square representing 40 ac.

6. Mark the well location on the section grid to the right. LOCATION SHOWN IN ITEM 5 MUST AGREE WITH GRID. If the proposed well is for irrigation use, sketch and label all irrigation ditches and canals, stream, reservoirs and other wells. Indicate the point of use or lands to be irrigated from other sources.
7. Estimated depth of the well is 160 feet.
8. MAXIMUM quantity of water to be developed and beneficially used: 2500 gallons per minute. NOTE: If for domestic or stock use, this application will be processed for a maximum of 25 gallons per minute. SPRINGS: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic or stockwatering, will be considered as ground water appropriations. After approval of this application, some type of artificial diversion must be constructed to qualify for a water right.
9. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation below.
10. If for irrigation use:
    a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation below.
    b. [ ] Land will be irrigated from this well only.
    c. [ ] Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
41	116	27							~~X~~			~~X~~	X	X			X	~~X~~	
		28				X									X		X	X	
		32	X	X	X	X								X	X	X	X	X	
		33	X	X	X	X	X	X	X	X	X	X	X		X	X			
		34	X	X	X	X	X	X	X	X	X	X			X	X			
		35						~~X~~	~~X~~		~~X~~	X	~~X~~	~~X~~					
40	116	5						X	X										
		6	X	~~X~~	X	X	~~X~~	~~X~~	~~X~~	X									

Amended per BLM Map.

X = Area of use

11. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc. N/A

SEE REVERSE SIDE

Permit No. U.W. 69746 Book No. 477 Page No. 76

12. The well is to be constructed on lands owned by Rochdale Karns
(The granting of a permit does not constitute the granting of right of way. If any easement or right of way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not a co-applicant.)

13. The water is to be used on lands owned by residents of the Town of Jackson
(If landowner is not the applicant, a copy of the agreement relating to usage of appropriated water on the land should be submitted to this office. If the landowner is included as a co-applicant on the application, this procedure need not be followed.)

REMARKS: Water from this well will be comingled in the Jackson Municipal Water System with water from Town of Jackson Wells No. 1, UW1385, Jackson Well No. 2, UW1386 and 2055(Enl.), Jackson Well No. 3, UW1945, ~~Jackson Well No. 4, UW4486~~, and water from Cache Creek through the Jackson Pipeline, Permit No. 15133.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Robert R. Norton PE & LS — Signature of Applicant or Authorized Agent

April 3 — Date, 19 85

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as a single-family dwelling and the watering of lawns and gardens not exceeding one (1) acre)	$10.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$25.00
MONITOR (For water level measurements or chemical quality sampling)	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 5th day of April, A. D. 19 85, at 9:30 o'clock A M.

Permit No. U.W. 69746

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use, without loss of water into surface formations or at the surface.

Special attention is called to paragraph one (1) of these limitations and conditions as outlined above relating to the interconnection of ground water and surface water sources. FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET

Approval of this application may be considered as authorization to proceed with construction of the proposed well.

Construction of well will begin within one (1) year from date of approval. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 ~~86~~ 87.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 10th day of April, A.D. 19 85.

George L. Christopulos State Engineer

April 15, 1985--Notice of Commencement for on April 11, 1985 received.

MICRO. FILMED JUN 19 '85

SEE: PERMIT STATUS SHEET.

FORM UW:C&L
Rev:10-28-8

PERMIT NO. U.W. 69746
T.F. No.U.W. 18-7-192
PERMIT STATUS

MICRO-FILMED MAY 1 '85

Priority Date April 5, 1985 Approval Date April 10, 1985

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

2. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

3. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

4. The report shall contain at least two (2) semi-annual measurements of the pumping water level in the well as measured after a minimum of twenty-four (24) consecutive hours of pumping. The dates the measurements were obtained and period of time the well was pumped prior to obtaining the measurements must be specified.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

4-10-85
DATE OF APPROVAL

GEORGE L. CHRISTOPULOS, State Engineer

October 15, 1985 - Statement of Completion on August 16, 1985 received. MICRO-FILMED NOV 20 '85

SEP 30 1986

NOTICE OF EXPIRATION OF TIME FOR COMPLETION OF BENEFICIAL USE MAILED

MICRO-FILMED JUL 30 '86

December 16, 1986 - Request for an extension of time for completion of beneficial use received and granted until December 31, 1987. Letter of request filed in Miscellaneous Notices under Permit No. U.W. 69746. Applicant notified of extension by letter on JAN 81987.

12-30-86
Date of approval

RICHARD G. STOCKDALE
Ground Water Geologist

MICRO-FILMED JAN 14 '87

SEP 30 1987

NOTICE OF EXPIRATION OF TIME FOR COMPLETION OF BENEFICIAL USE MAILED

MICRO-FILMED JUL 7 '87

December 9, 1987--Proof of Beneficial use on January 1986 received.

MICRO FILMED JUN 17 '88

December 9, 1987--Linen Map received (TM No. 1424E)

PERMIT NO. U.W. 69746

PERMIT STATUS

Priority Date April 5, 1985 **Approval Date** April 10, 1985

CERT. REC. U.W. 9, P. 47
PROOF NO. U.W. 3253, AC. —
G.P.M. 2500 IRR. ___ STK. ___ DOM. ___ ~~MISC.~~ MUN ✓
MAP NO. 239-E

ADDITIONAL CONDITIONS AND LIMITATIONS

Ground Water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.), Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746; shall allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

April 8, 1996 - This permit has been enlarged by Permit No. U.W. 104235 for additional use and points of use only. There is no physical enlargement of this well.

Form U.W. 6
Rev. 2-83

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

SCANNED FEB 22 2013

IF WELL IS TO BE ABANDONED, SEE ITEM 15, PAGE 4

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL

MICRO-FILMED NOV 20 '85

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 69746 NAME OF WELL Jackson No. 5

1. NAME OF OWNER Town of Jackson ~~and DEPAD, State of Wyoming~~

2. ADDRESS Box 1687, 108 South King St. Jackson, Wyoming Zip Code 83001

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☒ Industrial ☐ Miscellaneous ☐

4. LOCATION OF WELL: SE ¼ NW ¼ of Section 33, T. 41 N., R. 116 W., of the 6th P.M. ~~(or W.R.M.)~~, Wyoming, being specifically N86 Degrees 32'E, 600.8 Feet (Bearing and Distance)

or _____ ft. North South and _____ ft. East West from the CW 1/16 corner of Section 33, T. 41 N., R. 116 W.
(Strike out words not needed).

5. TYPE OF CONSTRUCTION: Drilled ☒ Cable Tool (Type of Rig) Dug ☐ Driven ☐ Jetted ☐

Other _____

6. CONSTRUCTION: Total Depth of Well 148 ft. Depth to Static Water Level 5 ft.

a. Casing Schedule New ☒ Used ☐

20"	diameter from	0	ft. to	96	ft.	Material Steel Gage 0.3125"
	diameter from		ft. to		ft.	Material Gage
	diameter from		ft. to		ft.	Material Gage

b. Perforations: Type of perforator used N/A

Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:

_____ perforations from _____ ft. to _____ feet.

_____ perforations from _____ ft. to _____ feet.

RECEIVED
OCT 15 1985
STATE ENGINEER
Cheyenne, Wyo.

c. Was well screen installed? Yes ☒ No ☐

Diameter: 18" slot size: 100 set from 96 feet to 146 feet.

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

d. Was well gravel packed? Yes ☐ No ☒ Size of gravel _____

e. Was surface casing used? Yes ☒ No ☐ Was it cemented in place? Yes ☐ No ☒ (See remarks)

7. NAME & ADDRESS OF DRILLER Andrew Well Drilling, 1268 E. 17th, Idaho Falls, ID 83401

8. DATE OF COMPLETION OF WELL (including pump installation) August 16, 1985

9. PUMP INFORMATION: Manufacturer Aurora Type Vertical Turbine

Source of power Elec. Motor Horsepower 200 Depth of Pump Setting 90'8"

Amount of Water Being Pumped 2500 Gallons Per Minute. (For springs or flowing wells, see item 11.)

Permit No. U.W. 69746 Book No. 477 Page No. 76

U.W. 69746

10. PUMP TEST: Was a pump test made? Yes [X] No [ ]

If so, by whom Nelson Engineering Address Box 1599, Jackson, WY 83001

Yield: 2300 gal./min. with 29.0 foot drawdown after 116 hours.

Yield: 3000 gal./min. with 50.4 foot drawdown after 7 hours.

11. FLOWING WELL (Owner is responsible for control of flowing well).

If well yields artesian flow, yield is N/A gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.

The flow is controlled by: valve [ ] cap [ ] plug [ ]

Does well leak around casing? Yes [ ] No [ ]

12. LOG OF WELL: Total depth drilled 148 feet.

Depth of completed well 146.5 feet. Diameter of well 20 inches.

Depth to first water bearing formation 5 feet.

Depth to principal water bearing formation. Top 82 feet to Bottom 147 feet.

Ground Elevation, if known 6170.8

From Feet	To Feet	Material Type, Texture, Color	REMARKS (Cementing, Shutoff, Packing, etc.)	Indicate Water Bearing Formation	Indicate Perforated Casing Location
0	1	Clayey silt, black loam	Concrete surface seal		
1	5	Clayey silt/gravel; tan	Concrete surface seal		
5	6	Silty gravelly sand, lt. brn	Concrete surface seal	Water	
6	34	Silty, cobbly, clay, tan	Cement surface seal		
34	36	Sandy, gravelly, silt, red	Cement surface seal	Some water	
36	39	Silty sand, buff	Cement surface seal	Water	
39	69	Silty, clayey to sandy,	Cement surface seal	Not much water	
		buff, felsic			
69	80	Sand, silty to fine gravel	Cement surface seal	Large amount	
		subrounded, tan		of water	
80	82	Sand, gravelly, subrounded	Cement surface seal	Large amount	
		tan, loose		of water	
82	117	Sand, gravelly, subrounded	Cement surface seal	Large amount	Well screen 96
		to rounded, firm	to 83 feet	of water	feet to 146 feet
117	119	Siltstones, mudstones,		Not much water	with blank 116
		limestone in matrix of			to 122
		white clay			
119	120	Clay, white trace pink,		No water	
		with small angular gravel			
120	147	Gravel, sand, subrounded		Large amount	
		light colored		of water	
147	148	Clay, dark gray, tight,	Bottom of hole	No water	
		firm, dry			

QUALITY OF WATER INFORMATION:

Was a chemical analysis made? Yes [X] No [ ]

If so, please include a copy of the analysis with this form.

If not, do you consider the water as: Good [X] Acceptable [ ] Poor [ ] Unusable [ ]

U.W. 69746

13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for additional supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

Township	Range	Sec.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
41	116	27							~~out~~ X			~~out~~ X	X	X			X	~~out~~ X	
		28				X									X		X	X	
		32	X	X	X	X								X	X	X	X	X	
		33	X	X	X	X	X	X	X	0 X	X	X	X		X	X			
		34	X	X	X	X	X	X	X	X	X	X			X	X			
		35						~~out~~ X	~~out~~ X		~~out~~ X	X	~~out~~ X	~~out~~ X					
40	116	5						X	X						Amended per BU Map.				
		6	X	~~out~~ X	X	X	~~out~~ X	~~out~~ X	~~out~~ X	~~out~~ X									
									0 = LOCATION OF WELL										
									X = AREA OF USE										

TOTAL NUMBER OF ACRES TO BE IRRIGATED N/A

Original Supply _____ acres

Additional Supply _____ acres

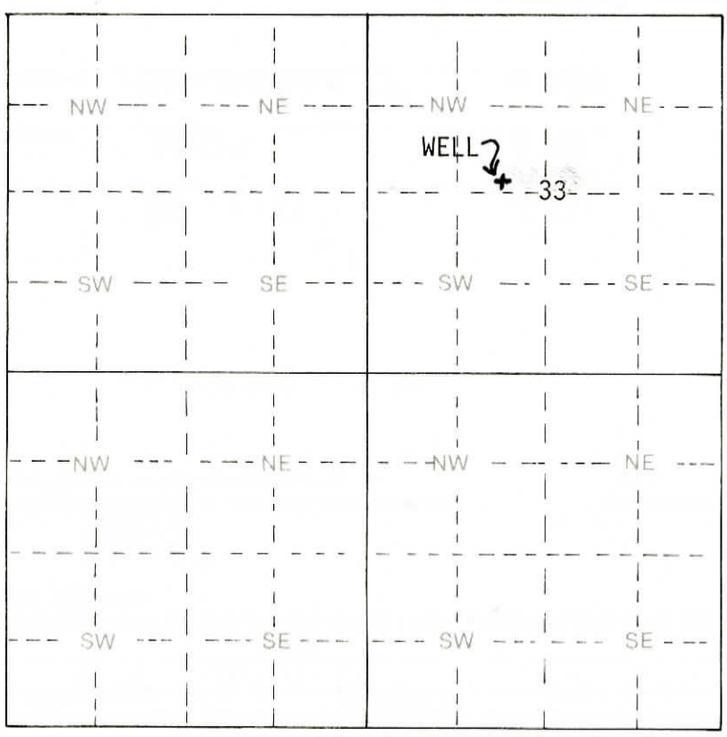
14. PLAT

a. If the well is to be used for irrigation, industrial, miscellaneous or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.

b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.

c. A separate map may be submitted if the information required cannot be shown on this plat.

R._____W. R. 116 W.



Scale: 2" = 1 Mile

T. 41 N.

T._____N.

REMARKS: The water will be conveyed by the Town of Jackson's distribution pipe network to the Jackson water users.

A 26-inch diameter surface casing was used in drilling the well but was pulled while pumping cement grout into the anular space between the 20-inch casing and the drill hole.

U.W. 69746

15. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment and details of the plugging below.

It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Melvin Wahl, Town Administrator — October 10, 19 85

Signature of Owner or Authorized Agent — Date

Date of Receipt OCT 15 1985 M.A., 19

Date of Priority April 5, 19 85

Date of Approval November 7, 19 85

for State Engineer John L. Flint

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

KK

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4(16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM

DATE OF PRIORITY APRIL 5, 1985

PERMIT NO. U.W. 69746
WELL REGISTRATION

LOCATION SE ¼ NW ¼ of Section 33

NAME OF WELL JACKSON #5 WELL

T. 41 N., R. 116 W.

1. Name of Claimant(s) TOWN OF JACKSON ~~& DEPARTMENT OF ECONOMIC PLANNING AND DEVELOPMENT~~

2. Address P.O. Box 1687 108 South King St. Jackson, Wyoming Zip Code 83001

3. For What Purpose(s) is Water Used? Use: Municipal Date First Used January , 19 86

Use: _____ Date First Used: _____ , 19 ____ Use: _____ Date First Used _____ , 19 ____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

U.W. 69746

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert J. R. Norton PE & LS
Signature of Owner or Authorized Agent

Agent for Town of Jackson

DEC. 3
Date

, 19 87

Date of Receipt: DEC 9 1987, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 9 , Page 47
Order Record No. 42 , Page ~~44~~ 38
Permit No. 69746 , Proof No. 3253

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			This appropriation is limited to municipal purposes for the Town of Jackson within the following described area:																
40N	116W	5						X	X										
40N	116W	6	X		X	X				X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			Water from this well is commingled with that of the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; and the Jackson Water Well No. 3, Permit No. U.W. 1945, and its enlargement, Permit No. U.W. 85496.												
			Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, and its enlargements, Permit No. U.W. 2055 and Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945 and its enlargement, Permit No. U.W. 85496; and the Jackson No. 5 Well, Permit No. U.W. 69746, allow the Town of Jackson to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 5,000 acre-feet of ground water in any one calendar year from its municipal water well field. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 45,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												

FORM U.W. 5
Rev. 3-95
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

10[illegible]
14035

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

MICRO FILMED JAN 21 1997

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 104235
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 24-8.330

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING First Enlargement of Jackson No. 5 Well
Enlargement of Permit No. UW 69746 for additional use + point of use and volumetric yield

1. Name of applicant(s) Town of Jackson Phone: (307)733-3932

2. Address of applicant(s) P.O. Box 1687 (MAILING ADDRESS) Jackson (CITY) WY (STATE) 83001 (ZIP)

3. Name & address of agent to receive correspondence and notices Applicant & Copy to Theresa Gunn-Engineering Associates P.O. Box 1900 (MAILING ADDRESS) Cody (CITY) WY (STATE) 82414 (ZIP) Phone: (307)587-4911
& copy to Bob Norton-Nelson Engineering, P.O. Box 1599, Jackson, WY 83001 (307)733-2087

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____ .

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use. Number of stock tanks? _____ .

☐ Irrigation: Watering of commercially grown crops (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use).

☒ Municipal: Use of water in incorporated Towns and Cities (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use).

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals (oil field water flood operations, power plant water supply, etc.). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: See Remarks

☐ Monitor, Observation or ☐ Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SE 1/4 NW 1/4 of Sec. 33, T. 41 N., R. 116 W. of the 6th P.M. ~~(XXXXXXX~~ Wyoming. If located in a platted subdivision, also provide Lot ____ Block ____ of the _____ Subdivision (or Add'n) of _____. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 148 feet. UW69746 2500 gpm

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 0 (this Enl.) gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right. Total 2500 gpm See Conditions and Limitations.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: ~~0~~ (this Enl.). Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
					See Attached Tabulation Sheet														

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc.: _____

104235 SEE REVERSE SIDE 801 36

Permit No. U.W. _____ Book No. _____ Page No. _____

11. The well or spring is to be constructed on lands owned by Town of Jackson
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands owned by residents of the Town of Jackson. See Remarks.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.)
NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: See Attached Remarks Continuation Sheet.

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Teresa Gunn, PE (Agent) — Signature of Applicant or Authorized Agent

April 5, 1996 — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES $25.00
(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS (\$50.00)

MONITOR (For water level measurements or chemical quality sampling) or TEST WELL NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 8th day of April, A.D. 19 96, at 10:00 o'clock A. M.

Permit No. U.W. 104235

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

This permit serves to enlarge an existing well for additional use and points of use only and establish a valid water right for the same. STATEMENT OF COMPLETION WAIVED. FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

~~Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.~~

~~Completion of construction and~~ completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 20th day of October, A.D. 19 96.

Gordon W. Fassett
GORDON W. FASSETT State Engineer

Permit No. U.W. 104235

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for Municipal Uses as listed below.																
					Jackson Water Well No. 1, Permit No. UW 1385														U.W. 104232
					Jackson Water Well No. 2, Permit Nos. UW 1386, UW 2055, UW 85495														U.W. 104233
					Jackson Water Well No. 3, Permit Nos. UW 1945, UW 85496														U.W. 104234
					Jackson No. 6 Well, Permit No. UW 101360														
					Jackson No. 7 Well, Permit No. UW 101361														
					Jackson No. 8 Well, Permit No. UW 101362														
40N	116W	5						X	X										
40N	116W	6	X	X	X	X	X	X	X	X									
41N	116W	27											X	X			X		
41N	116W	28				X									X		X	X	
41N	116W	31			X	X								X	X	X	X	X	
41N	116W	32	X	X	X	X								X	X	X	X	X	
41N	116W	33	X	X	X	X	X	X	X	X	X	X	X		X	X			
41N	116W	34	X	X	X	X	X	X	X	X	X	X			X	X			
41N	116W	35										X							
			X = Municipal Point of Use																
Additional Miscellaneous Points of Use - reservoir supply are listed on the following page.																			

REMARKS CONTINUATION

Permit No. U.W. 104235

First Enlargement of Jackson No. 5 Well

Items below are numbered to correspond to the numbering on the UW5 permit.

4. Miscellaneous Use includes reservoir supply for the Town of Jackson Wastewater Treatment Plant Reservoir, Permit Nos. 8114R and TF29 1/57 (enl), West Borrow Area Lake Reservoir, Permit Nos. 8116R and TF 29 2/57 (enl), Blue Heron Reservoir, Permit No. 29 5/57, Sandhill Crane Reservoir, Permit No. TF29 3/57, Snowy Egret Reservoir, Permit No. 29 4/57, South Park No. 1Reservoir, Permit No. 9725R, South Park No. 2 Reservoir, Permit No. 9726R, and South Park No. 3 Reservoir, Permit No. 9727R. Commingling information is noted on the attached tabulation sheet.

7. (a) 2,500 gallons per minute was the previous appropriation under Permit No. UW69746.

(b) Ground water appropriated by the Town of Jackson from its Jackson Water Well Nos. 1, 2, 3, and 5 allow the Town to pump a total combined quantity of 4,500 acre-feet of ground water on an average annual basis and a total combined quantity of no more than 5,000 acre-feet of ground water in any one calendar year. Such average annual pumping shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993.

12. Water is also to be used on the following lands for Miscellaneous Use - reservoir supply.

Town of Jackson: Town of Jackson Wastewater Treatment Plant Reservoir TFNo. 29 1/57
West Borrow Area Lake Reservoir TFNo. 29 2/57

Wyoming Game and Fish Department:
Blue Heron Reservoir TFNo. 29 5/57
Sandhill Crane Reservoir TFNo. 29 3/57
Snowy Egret Reservoir TFNo. 29 4/57
~~South Park No. 1 Reservoir (9725Res.)~~
~~South Park No. 2 Reservoir (9726Res.)~~
~~South Park No. 3 Reservoir (9727Res.)~~

An agreement between the Town of Jackson and the Wyoming Game and Fish Department dated May 31, 1993 entitled "Cooperative Wetlands Development Project Agreement" outlines the use of fully treated effluent from the Town of Jackson Wastewater Treatment Plant as the source of supply for the Blue Heron, Sandhill Crane, and Snowy Egret Reservoirs. Additional correspondence from Engineering Associates dated May 30, 1996 and from the Wyoming Game and Fish Department outlines the use of the same fully treated effluent mentioned herein as an additional source of supply for the South Park No.1, South Park No. 2, and South Park No. 3 Reservoirs.

The attached tabulation sheet lists the ground water wells that are commingled to make up the fully treated effluent that is discharged from the Town of Jackson Wastewater Treatment Plant.

Permit No. U.W. 104235

TABULATION SHEET

Township	Range	Sec.	NE1/4				NW1/4				SW1/4				SE1/4				TOTALS
			NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	NE1/4	NW1/4	SW1/4	SE1/4	
			Water from this well is commingled with waters from the following wells for Miscellaneous Use - reservoir supply as listed below.																
					Lab Well No. 1, Permit No. UW 52345									U.W. 104236					
					Lab No. 2 Well									U.W. 104237					
					Pump Station No. 1 Well									U.W. 104238					
					Pump Station No. 2 Well									U.W. 104239					
					UV Building No. 1 Well									U.W. 104240					
					Jackson Water Well No. 1, Permit No. UW 1385														
					Jackson Water Well No. 2, Permit Nos. UW 1386, UW 2055, UW 85495														U.W. 104232
					Jackson Water Well No. 3, Permit Nos. UW 1945, UW 85496														U.W. 104233
					Jackson No. 6 Well, Permit No. UW 101360														U.W. 104234
					Jackson No. 7 Well, Permit No. UW 101361														
					Jackson No. 8 Well, Permit No. UW 101362														
40N	116W	29			X	X				X									
			X = Misc. Point of Use-reservoir supply - Town of Jackson Wastewater Treatment Plant Reservoir, Permit No. 8114R TFN 6.29 1/157																
40N	116W	29							X										
			X = Misc Point of Use-reservoir supply - West Borrow Area Lake Reservoir, Permit No. 8116R TFN 6.29-2/157																
40N	116W	29									X								
			X = Misc. Point of Use-reservoir supply - Blue Heron Reservoir TFN 6.29 5/157																
40N	116W	29									X					X			
			X = Misc. Point of Use-reservoir supply - Sandhill Crane Reservoir TFN 6.29 3/157																
40N	116W	29														X			
			X = Misc. Point of Use-reservoir supply - Snowy Egret Reservoir TFN 6.29 4/157																
40N	116W	29														X	X		
			X = Misc. Point of Use-reservoir supply - South Park No. 1 Reservoir, Permit No. 9725R																
40N	116W	29															X	X	
			X = Misc. Point of Use-reservoir supply - South Park No. 2 Reservoir, Permit No. 9726R																
40N	116W	28										X	X						
40N	116W	29													X			X	
			X = Misc. Point of Use-reservoir supply - South Park No. 3 Reservoir, Permit No. 9727R																

FORM UW: C&L, C1
Town of Jackson

PERMIT NO. 104235
T.F. No. 24-8-332
PERMIT STATUS

Priority Date April 8, 1996 **Approval Date** October 20, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; 1st Enl. Jackson Water Well #1, Permit No. U.W. 104232; Jackson Water Well No. 2, Permit No. U.W. 1386; 1st Enl. Jackson Water Well No. 2, Permit No. U.W. 2055; 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; 3rd Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Jackson Water Well No. 3, Permit No. U.W. 1945; 1st Enl. Jackson Water Well No. 3, Permit No. U.W. 85496; 2nd Enl. Jackson Water Well No. 3; Permit No. U.W. 104234; Jackson Water Well No. 5, Permit No. U.W. 69746; 1st Enl. Jackson Water Well No. 5, Permit No. U.W. 104235; Jackson Water Well No. 6, Permit No. U.W. 101360; Jackson Water Well No. 7; Permit No. U.W. 101361; and the Jackson Water Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of **6,700 acre-feet** of ground water on an average annual basis and a combined total quantity of no more than **7,000 acre-feet** of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than **67,000 acre-feet** of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

October 20, 1996
DATE OF APPROVAL

Gordon W. Fassett
GORDON W. FASSETT, State Engineer

CERT. REC. U.W. ___ P. 269
PROOF NO. U.W. 4537 AC. 0
G.P.M. 0 IRR. ___ STK. ___ DOM. ___ MISC. X
MAP NO. 38-E

October 22, 1997 - Proof of Beneficial use on October 10, 1997 received.

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM 104235
PERMIT NO. U.W.
WELL REGISTRATION

DATE OF PRIORITY ~~APRIL 8, 1996~~

LOCATION SE ¼ NW ¼ of Section 33

NAME OF WELL 1ST ENL. JACKSON WW #5

T. 41 N., R. 116 W.

1. Name of Claimant(s) TOWN OF JACKSON

2. Address P.O. BOX 1687 JACKSON, WY Zip Code 83001

3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used OCT. 10, 19 97

Use: MISC. RESERVOIR ~~SUPPLY~~ Date First Used: OCT. 10, 19 97 Use: ______ Date First Used ______, 19 ___

If use is for irrigation, give date irrigation was completed on all lands under this Permit: ______

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 104235

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton PEGLS 2910 — Signature of Owner or Authorized Agent

Oct 16 — Date, 19 97

THE STATE OF WYOMING)

County of _____)

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by _____ this _____ day of _____, 19_____.

My Commission Expires _____, 19_____.

_____ Notary Public

Date of Receipt OCT 22 1997, 19_____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11, Page 269
Order Record No. 58, Page ~~144~~ 1226
Permit No. U.W. 104235, Proof No. U.W. 4537

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enl. Jackson Water Well No. 5 Well, Permit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1996. The Town of Jackson shall pump no ore than 67,000 acre feet of ground water in any ten (10) year period from its municipal water well field provided however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			(NOTE: Limits under previous ground water permits were 4,500 acre feet yearly average; 5,000 acre feet, yearly maxmin, and 45,000 acre feet, total 10 year maximum.)																

FORM U.W.
Rev. 3-94
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

MICRO FILMED MAR 0 1 1996

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 101360
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 24-12-61

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING JACKSON WELL NO. 6

1. Name of applicant(s) TOWN OF JACKSON ~~& WWDC~~ Phone: 307-733-3932

2. Address of applicant(s) BOX 1687 (STREET) JACKSON (CITY) WY (STATE) 83001 (ZIP)
~~HERSCHLER BUILDING CHEYENNE, WY 82002~~

3. Name & address of agent to receive correspondence and notices Robert R. Norton, PE & LS,
Box 1599 (STREET) Jackson (CITY) WY (STATE) 83001 (ZIP) Phone: 307-733-2087

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use.

☐ Irrigation: Watering of commercially grown crops, (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use.)

☒ Municipal: Use of water in incorporated Towns and Cities, (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use.)

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals, (oil field water flood operations, power plant water supply, etc). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: Recreation Supply for Wastewater reservoirs and all habitat wetland ponds

☐ Monitor, Observation or Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SW 1/4 SW 1/4 of Sec. 36, T. 41 N., R. 117 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot 55, Block _____ of the Indian Springs Ranch Subdivision (or ~~Addn's~~) of Teton County. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 90 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 1300 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 732. Circle appropriate units: ~~(Gallons)~~ (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation box below.

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box below.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

TABULATION BOX See attached sheet

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
40	116	5						X	X										
41	116	6	X	X	X	X	X	X	X	X									
41	116	31			X	X									X	X	X	X	
41	116	32			X	X								X	X	X	X	X	
41	116	33							X			X							

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc: _____

SEE REVERSE SIDE

Permit No. U.W. 101360 Book No. 782 Page No. 11

11. **The well or spring is to be constructed on lands owned by** Indian Springs Ranch Limited Partnership
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. **The water is to be used on lands ~~owned by~~** served by the Town of Jackson Water System.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.) NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: This well will supply water to the Town of Jackson Water Distribution System. Water will be comingled with water from other Jackson Well No's. 1, UW 1385; No. 2, UW 1386; UW 20555 (Fed.), and UW 85495 (Fed.); No. 3, UW 1945 and UW 85496 (Fed.); No. 5, UW 69746; No. 7, U.W. 101361; and the No. 8, U.W. 101362

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Robert K. Norton — **Signature of Applicant or Authorized Agent**

April 12, 1995 — **Date**

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	**$25.00**
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	**$50.00**
MONITOR (For water level measurements or chemical quality sampling, test well)	**NO FEE**

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 17th **day of** April **, A.D.** 19 95 **, at** 9:30 **o'clock** A. **M.**

Permit No. U.W. 101360

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. ~~Construction of well or spring will begin within one (1) year from date of approval.~~ A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97 **.**

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 2nd **day of** February **, A.D. 19** 96 **.**

Gordon W. Fassett

Gordon W. Fassett, **State Engineer**

Attachment sheet for the Jackson Well No. 6 PERMIT NO. U.W. 101360

Township	Range	Section	NE¼				NW¼				SW¼				SE¼				Total
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Corporate limits of the Town of Jackson																
40	116	5						X	X										
40	116	6	X	X	X	X	X	X	X	X									
41	116	27											X	X			X		
		28				X									X		X	X	
		31			X	X									X	X	X	X	
		32	X	X	X	X								X	X	X	X	X	
		33	X	X	X	X	X	X	X	X	X	X	X		X	X			
		34	X	X	X	X	X	X	X	X	X	X			X	X			
		35										X							
40	116	29	~~X~~	~~X~~	X	X	~~X~~	~~X~~	~~X~~	X	X	~~X~~	~~X~~	~~X~~	X	X	~~X~~	~~X~~	
			Above are reservoir and basin pond locations as determined at this time.																
			Town of Jackson Waste Water Treatment Plant Res. - 8114R																
			"								"							Enl.-TF 29-1-157	
			West Borrow Area Lake Reservoir, Permit 8116R.																
			"				"		"		"				Enl.-T.F. 29-2-157				
			Blue Heron Res.																
			Sandhill Crane Res.																
			Snowy Egret Res.																
			Miscellaneous uses outside Corporate Limits																
41N	116W	32			X	X													
		33							X										
		34											X	X	(Snow Making)				
		36			(Indian Springs Ranch Equestrian Center)												X	X	

FORM UW: C&L,C1
Rev: 5-10-93

CERT. REC. U.W. 11, P. 263
PROOF NO. U.W. 4531, AC. 0
G.P.M. 1300 IRR. ___ STK. ___ DOM. ___ MISC. X
MAP NO. 381-E
MUN. X

PERMIT NO. 101360

T.F. No. U.W. 24-12-61

PERMIT STATUS

Priority Date April 17, 1995 **Approval Date** February 2, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.) Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85946; the Jackson No. 5 Well, Permit No. U.W. 69746; Jackson Well No. 6, Permit No. U.W. 101360; the Jackson Well No. 7, Permit No. U.W. 101361; and the Jackson Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of 6,700 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre-feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 67,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

February 2, 1996
DATE OF APPROVAL

Gordon W. Fassett
Gordon W. Fassett, State Engineer

CERT. REC. U.W. 11, P. 263
PROOF NO. U.W. 4531, AC. 0
G.P.M. 1300 IRR. ___ STK. ___ DOM. ___ MISC. X
MAP NO. 381-E
MUN. X

SEP 30 '97 NOTICE OF EXPIRATION OF TIME FOR COMPLETION AND COMPLETION OF BENEFICIAL USE MAILED

October 22, 1997 - Statement of Completion on April 15, 1997 received.
October 22, 1997 - Proof of Beneficial use on October 10, 1997 received.

FORM U.W.6
REV. 5-93

MICRO FILMED F 3 1998

SCAN-MICRO DEC 07 2005

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BUILDING
CHEYENNE, WYOMING 82002
(307) 777-5959

SCANNED NOV 19 2013

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 101360 NAME OF WELL (SPRING) ~~JACKSON WELL #6~~

1. NAME OF OWNER 1) TOWN OF JACKSON ~~2) WWDC~~

2. ADDRESS 1) Box 1687 ~~2) Herschler Building~~
1) Jackson Please check if address has changed from that shown on permit. ☐ 1) 307-733-3932
City ~~2) Cheyenne~~ State WY Zip Code 1) 83001 ~~2) 82002~~ Phone No. ~~2) 307-777-7226~~

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☒ Industrial ☐ Miscellaneous ☒
Explain proposed use (Example: One single family dwelling) Municipal - Incorporated limits Town of Jackson. Miscellaneous - 127 acres outside incorporated limits Town of Jackson and to supply reservoirs at Town of Jackson Wastewater Treatment Plant

4. LOCATION OF WELL (SPRING): SW ¼ SW ¼ of Section 36, T. 41 N., R. 117 W., of the 6th P.M. (or W.R.M.),

Subdivision Name Indian Springs Ranch Lot NA Block NA

If surveyed, bearing, distance and reference point: N1°29'E - 756' from SW corner S.36

5. TYPE OF CONSTRUCTION: Drilled ☒ Air Rotary (Type of Rig) Dug ☐ Driven ☒ Other ☐

Describe:

6. CONSTRUCTION: Total Depth of Well/Spring 79 ft. Depth to Static Water Level 6.6 ft. (Below land surface)
a. Diameter of borehole (Bit size) 15 inches.

b. Casing Schedule New ☒ Used ☐

16" diameter from 0 ft. to 56 ft. Material Carbon Steel Gage ¼"

_____ diameter from _____ ft. to _____ ft. Material _____ Gage _____

c. Was casing cemented: Yes ☒ No ☐ Cemented Interval, From 10 feet to 50 feet.

d. Number of sacks of cement used 73 type of cement Portland Cement Grout

e. Perforations: Type of perforator used NA
Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:
_____ perforations from _____ ft. to _____ feet.
_____ perforations from _____ ft. to _____ feet.

RECEIVED OCT 22 1997 STATE ENGINEER Cheyenne, Wyo

f. Was well screen installed? Yes ☒ No ☐
Diameter: 16" slot size: 60 set from 54 feet to 69'
Diameter: 16" slot size: 40 set from 69 feet to 79'

g. Was well gravel packed? Yes ☐ No ☒ Size of gravel _____

h. Was surface casing used: Yes ☐ No ☒ Was it cemented in place? Yes ☐ No ☐

7. NAME & ADDRESS OF DRILLING COMPANY Thomas Bros. Drilling, Rout1, Afton, WY 83110

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) April 15, 1997

9. PUMP INFORMATION: Manufacturer Crown Type Submersible
Source of power Electric Horsepower 150 Depth of Pump Setting or intake 53'
Amount of Water Being Pumped ~~1250~~ 1300 Gallons Per Minute. (For Springs or flowing wells, see item 10.)
Total Volumetric Gallons Used Per Calendar Year. 182.5 million gallons

10. FLOWING WELL (Owner is responsible for control of flowing well). NA
If well yields artesian flow, yield is _____ gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.
The flow is controlled by: valve ☐ cap ☐ plug ☐
Does well leak around casing? Yes ☐ No ☐

Permit No. U.W. 101360 Book No. 782 Page No. 11

11. If spring, how was it constructed? (Some method of artificial diversion, i.e., spring box, cribbing, etc., is necessary to qualify for a water right.) _____

12. PUMP TEST: Was a pump test made? Yes [X] No [ ]
If so, by whom Thomas Bros. Drilling Address Route 1, Afton, WY 83110
Yield: 1250 gal./min. with 31.5 foot drawdown after 4 hours.
Yield: 1100 gal./min. with 27 foot drawdown after 120 hours.

13. LOG OF WELL: Total depth drilled 81 feet.
Depth of completed well 79 feet. Diameter of well 16 inches.
Depth to first water bearing formation 7 feet.
Depth to principal water bearing formation. Top 7 feet to Bottom 81 feet.

Ground Elevation, if known 6107

DRILL CUTTINGS DESCRIPTION:

From Feet	To Feet	Material Type, Texture Color	Remarks (Cementing, Shutoff)	Indicate Water Bearing Formation & Name	Indicate Perforated Casing Location
0	30	Gravel & Cobbles		Snake R. Alluvium	
30	40	Coarse sand			
		Gravel & cobbles		Snake R. Alluvium	
40	81	Gravel & sand	Well screen	Snake R. Alluvium	54-79

14. QUALITY OF WATER INFORMATION:
Does a chemical and/or bacteriological water quality analysis accompany this form? Yes [X] No [ ]
It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)
If not, do you consider the water as: Good [ ] Acceptable [ ] Poor [ ] Unusable [ ]

REMARKS: _____

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert K Norton PE/LS 2910 — Signature of Owner or Authorized Agent

Oct 15, 1997 — Date

UW 101360

FOR STATE ENGINEER'S USE ONLY

Date of Receipt OCT 22 1997, 19____

Date of Priority APR 17 1995, 19____

Date of Approval Dec 12, 19 97

for State Engineer

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM

DATE OF PRIORITY ~~APRIL 17, 1995~~

PERMIT NO. U.W. 101360

WELL REGISTRATION JACKSON WELL #6

LOCATION SW ¼ SW ¼ of Section 36

NAME OF WELL _____

T. 41 N., R. 117 W.

1) TOWN OF JACKSON ~~2) WWDC~~

1. Name of Claimant(s) _____

2. Address P.O. BOX 1687 JACKSON, WY 83001 ~~HERSCHLER BUILDING CHEYENNE, WY 82002~~ Zip Code _____

3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used APRIL 15 , 19 97

Use: MISCELLANEOUS Date First Used: APRIL 15 , 19 97 Use: Misc. RESERVOIR SUPPLY Date First Used OCT. 10 , 19 97

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 101360

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton PE #45290 Oct 16, 19 97

Signature of Owner or Authorized Agent — Date

Date of Receipt: OCT 22 1997, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11, Page 263
Order Record No. 58, Page ~~132~~ 1726
Permit No. U.W. 101360, Proof No. U.W. 4531

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Water from this well commingles with that of the Jackson Well No. 7, Permit No. U.W. 101361 and the Jackson Well No. 8, Permit No. U.W. 101362; and ultimately commingles with the rest of the system: the Jackson No. 1 Well, Permit No. U.W. 1385; the Jackson No. 2 Well, Permit No. U.W. 1386; the Jackson No. 3 Well, Permit No. U.W. 1945 and the Jackson No. 5 Well, Permit No. U.W. 69746.												
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; 2nd Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enlargement of Jackson No. 5 Well, Permit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre feet of ground water in any ten (10) year period from its municipal water well field proviced, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			NOTE: Limits under previous ground water permits were 4,500 acre feet, yearly average: 5,000 acre feet, yearly maximum; and 45,000 acre feet, total 10 year maximum.)																

FORM U.W. 5
Rev. 3-94
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

$50.00

MICRO FILMED MAR 0 1 1996

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 101361
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co

Temporary Filing No. U.W. 24-1-62

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING JACKSON WELL NO. 7

1. Name of applicant(s) TOWN OF JACKSON ~~& WWDC~~ Phone: 307-733-3932
2. Address of applicant(s) BOX 1687 ~~HERSCHLER BUILDING~~ JACKSON ~~CHEYENNE~~ WY 83001 ~~82002~~
   (STREET) (CITY) (STATE) (ZIP)
3. Name & address of agent to receive correspondence and notices Robert R. Norton, PE & LS
   Box 1599 Jackson WY 83001 Phone: 307-733-2087
   (STREET) (CITY) (STATE) (ZIP)
4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use.

☐ Irrigation: Watering of commercially grown crops, (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use.)

☒ Municipal: Use of water in incorporated Towns and Cities, (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use.)

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals, (oil field water flood operations, power plant water supply, etc). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: Reservoir Supply for all wastewater recycling and all Habitat Wetland Ponds

☐ Monitor, Observation or Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
   Teton County, SW 1/4 SW 1/4 of Sec. 36, T. 41 N., R. 117 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot 55, Block _____ of the Indian Springs Ranch Subdivision ~~(or Addition)~~ of Teton County, WY. Resurvey Location: Tract _____, (or Lot) _____.
6. Estimated depth of the well or spring is 90 feet.
7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 1300 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

   (b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 732. Circle appropriate units: ~~(Gallons)~~ (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.
8. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation box below.
9. If for irrigation use:
   a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box below.
   b. ☐ Land will be irrigated from this well only.
   c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

TABULATION BOX See attached sheet

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
40	116	5						X	X										
41	116	6	X	X	X	X	X	X	X	X									
41	116	31			X	X									X	X	X	X	
41	116	32			X	X								X	X	X	X	X	
41	116	33							X				X						

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc: _____

SEE REVERSE SIDE

Permit No. U.W. 101361 Book No. 782 Page No. 12

11. The well or spring is to be constructed on lands owned by Indian Springs Ranch Limited Partnership
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands ~~owned by~~ XXXXXXX served by the Town of Jackson Water System.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.) NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: This well will supply water to the Town of Jackson Water Distribution System. Water will be comingled with water from other Jackson Well No's. 1, UW1385; No. 2, UW1386, UW 2055(Enl.) and UW85495(Enl.); No. 3, UW1945, and UW85496(Enl.); No. 5, UW69796; No. 6, U.W. 101360 ; and the No. 8, U.W. 101362

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton
Signature of Applicant or Authorized Agent

April 12, 19 95
Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	$25.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	$50.00
MONITOR (For water level measurements or chemical quality sampling, test well)	NO FEE

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 17th day of April, A.D. 19 95, at 9:30 o'clock A. M.

Permit No. U.W. 101361

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. ~~Construction of well or spring will begin within one (1) year from date of approval~~. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 2Nd day of February, A.D. 19 96.

Gordon W. Fassett
Gordon W. Fassett, State Engineer

Attachment sheet for the Jackson Well No. 7. PERMIT NO. U.W. 101361

Township	Range	Section	NE¼				NW¼				SW¼				SE¼				Total
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Corporate limits of the Town of Jackson																
40	116	5						X	X										
40	116	6	X	X	X	X	X	X	X	X									
41	116	27											X	X			X		
		28				X									X		X	X	
		31			X	X									X	X	X	X	
		32	X	X	X	X								X	X	X	X	X	
		33	X	X	X	X	X	X	X	X	X	X	X		X	X			
		34	X	X	X	X	X	X	X	X	X	X			X	X			
		35										X							
40	116	29	~~X~~	~~X~~	X	X	~~X~~	~~X~~	~~X~~	X	X	~~X~~	~~X~~	~~X~~	X	~~X~~	~~X~~	~~X~~	
			Here are remain Pool Exhibit pond locations As determined at this time.																
			Misc. Uses outside Corporate limits:																
41	116	32			X	X													
		33							X										
		34											X	X					
		36															X	X	

FORM UW: C&L,C1
Rev: 5-10-93

PERMIT NO. 101361
T.F. No. U.W. 24-1-62
PERMIT STATUS

Priority Date April 17, 1995 **Approval Date** February 2, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.) Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85946; the Jackson No. 5 Well, Permit No. U.W. 69746; Jackson Well No. 6, Permit No. U.W. 101360; the Jackson Well No. 7, Permit No. U.W. 101361; and the Jackson Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of 6,700 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre-feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 67,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

February 2, 1996
DATE OF APPROVAL

Gordon W. Fassett
Gordon W. Fassett, State Engineer

CERT. REC. U.W. 11, P. 264
PROOF NO. U.W. 4532 AC. 0
G.P.M. 1300 IRR. ___ STK. ___ DOM. ___ MISC. X
MAP NO. 381-E Mun. X

SEP 30 '97 NOTICE OF EXPIRATION OF TIME FOR COMPLETION AND COMPLETION OF BENEFICIAL USE MAILED

October 22, 1997 - Statement of Completion on April 15, 1997 received.
October 22, 1997 - Proof of Beneficial use on October 10, 1997 received.

FORM U.W.6
REV. 5-93

MICRO FILMED FEB 13 [illegible]

SCANNED NOV 19 2013

SCAN-MICRO DEC 07 2005

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BUILDING
CHEYENNE, WYOMING 82002
(307) 777-5959

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 101361 NAME OF WELL (SPRING) ~~JACKSON WELL #7~~

1. NAME OF OWNER 1) TOWN OF JACKSON ~~2) WWDC~~

2. ADDRESS 1) Box 1687 ~~2) Herschler Building~~
Please check if address has changed from that shown on permit. ☐
City 1) Jackson ~~2) Cheyenne~~ State WY Zip Code 1) 83001 ~~2) 82002~~ Phone No. 1) 307-733-3932 2) 307-777-7226

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☒ Industrial ☐ Miscellaneous ☒
Explain proposed use (Example: One single family dwelling) Municipal - Incorporated limits Town of Jackson. Miscellaneous - 127 acres outside incorporated limits Town of Jackson and to supply reservoirs at Town of Jackson Wastewater Treatment Plant.

4. LOCATION OF WELL (SPRING): SW ¼ SW ¼ of Section 36, T. 41 N., R. 117 W., of the 6th P.M. (or W.R.M.),

Subdivision Name Indian Springs Ranch Lot NA Block NA

If surveyed, bearing, distance and reference point: N1°06'E - 1056' from SW corner S. 36

5. TYPE OF CONSTRUCTION: Drilled ☒ Air Rotary (Type of Rig) Dug ☐ Driven ☒ Other ☐

Describe:

6. CONSTRUCTION: Total Depth of Well/Spring 80 ft. Depth to Static Water Level 5.8 ft. (Below land surface)
a. Diameter of borehole (Bit size) 15 inches.

b. Casing Schedule New ☒ Used ☐

16" diameter from 0 ft. to 57 ft. Material Carbon Steel Gage ¼" wall

_____ diameter from _____ ft. to _____ ft. Material _____ Gage _____

c. Was casing cemented: Yes ☒ No ☐ Cemented Interval, From 10 feet to 50 feet.

d. Number of sacks of cement used 78 type of cement Portland Cement Grout

e. Perforations: Type of perforator used NA
Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:
_____ perforations from _____ ft. to _____ feet.
_____ perforations from _____ ft. to _____ feet.

RECD OCT 22 1997 STATE ENGR

f. Was well screen installed? Yes ☒ No ☐
Diameter: 16" slot size: 40 set from 55 feet to 65'.
Diameter: 16" slot size: 60 set from 65 feet to 80'.

g. Was well gravel packed? Yes ☐ No ☐ Size of gravel _____

h. Was surface casing used: Yes ☐ No ☒ Was it cemented in place? Yes ☐ No ☐

7. NAME & ADDRESS OF DRILLING COMPANY Thomas Bros. Drilling, Route 1, Afton, WY 83110

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) April 15, 1997

9. PUMP INFORMATION: Manufacturer Crown Type Submersible
Source of power Electric Horsepower 150 Depth of Pump Setting or intake 58'
Amount of Water Being Pumped ~~1250~~ 1300 Gallons Per Minute. (For Springs or flowing wells, see item 10.)
Total Volumetric Gallons Used Per Calendar Year. 18225 million gallons

10. FLOWING WELL (Owner is responsible for control of flowing well). NA
If well yields artesian flow, yield is _____ gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.
The flow is controlled by: valve ☐ cap ☐ plug ☐
Does well leak around casing? Yes ☐ No ☐

Permit No. U.W. 101361 Book No. 782 Page No. 12

11. If spring, how was it constructed? (Some method of artificial diversion, i.e., spring box, cribbing, etc., is necessary to qualify for a water right.) _____

12. PUMP TEST: Was a pump test made? Yes [X] No [ ]
If so, by whom Thomas Bros. Drilling Address Route 1, Afton, WY 83110
Yield: 700 gal./min. with 18.7 foot drawdown after 2 hours.
Yield: 910 gal./min. with 31.2 foot drawdown after 50 hours.

13. LOG OF WELL: Total depth drilled 80 feet.
Depth of completed well 80 feet. Diameter of well 16 inches.
Depth to first water bearing formation 6 feet.
Depth to principal water bearing formation. Top 6 feet to Bottom 80 feet.

Ground Elevation, if known 6106

DRILL CUTTINGS DESCRIPTION:

From Feet	To Feet	Material Type, Texture Color	Remarks (Cementing, Shutoff)	Indicate Water Bearing Formation & Name	Indicate Perforated Casing Location
0	20	Gravel & Cobble Stone		Snake R. Alluvium	
20	40	Coarse Sand, Gravel & Some Cobbles		Snake R. Alluvium	
40	80	Gravel & Sand	Well Screen	Snake R. Alluvium	55-80

14. QUALITY OF WATER INFORMATION:
Does a chemical and/or bacteriological water quality analysis accompany this form? Yes [X] No [ ]
It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)
If not, do you consider the water as: Good [ ] Acceptable [ ] Poor [ ] Unusable [ ]

REMARKS: _____

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert K Norton PE&LS 2910
Signature of Owner or Authorized Agent

_____, 19____
Date

UW 101361

FOR STATE ENGINEER'S USE ONLY

OCT 22 1997

Date of Receipt _____, 19____

Date of Priority APR 17 1995, 19____

Date of Approval Dec 12, 19 97

for State Engineer

Form U.W. 8
Rev: 8-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 4 (16)

U.W. DISTRICT TETON COUNTY

STATEMENT OF CLAIM
PERMIT NO. U.W. 101361
WELL REGISTRATION

DATE OF PRIORITY APRIL 17, 1995

LOCATION SW ¼ SW ¼ of Section 36

T. 41 N., R. 117 W.

NAME OF WELL JACKSON WELL #7

1. Name of Claimant(s) 1) TOWN OF JACKSON ~~2) WWDC~~
2. Address P.O. BOX 1687 JACKSON, WY 83001 ~~HERSCHLER BUILDING CHEYENNE, WY 82002~~ Zip Code

3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used APRIL 15, 19 97

Use: MISCELLANEOUS Date First Used: APRIL 15, 19 97 Use: RESERVOIR SUPPLY (Misc.) Date First Used OCT. 10, 19 97

If use is for irrigation, give date irrigation was completed on all lands under this Permit:

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 101361

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton PE#52910 Oct 16, 19 97

Signature of Owner or Authorized Agent — Date

OCT 22 1997

Date of Receipt: _____, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11, Page 264
Order Record No. 58, Page ~~134~~ 126
Permit No. U.W. 101361, Proof No. U.W. 4532

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Water from this well commingles with that of the Jackson Well No. 6, Permit No. U.W. 102360 and the Jackson Well No. 8, Permit No. U.W. 101362 and ultimately commingles with the rest of the system: the Jackson No. 2 Well, Permit No. U.W. 1385; the Jackson No. 2 Well, Permit No. U.W. 1386; the Jackson No. 3 Well, Permit No. U.W. 1945 and the Jackson No. 5 Well, Permit No. U.W. 69746.																
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enl. Jackson No. 5 Well, Permit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre fee of ground water in any ten (10) year period from its municipal water well field provided however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.																
			(NOTE: Limits under previous ground water permits were 4,500 acre feet yearly average; 5,000 acre feet,yearly maximum, and 45,000 acre feet, total 10 year maximum.)																

FORM U.W. 5
Rev. 3-94
FILING FEE SCHEDULE
ON REVERSE SIDE

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

MICRO FILMED MAR 0 1 1996

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

FOR OFFICE USE ONLY

PERMIT NO. U.W. 101362
WATER DIVISION NO. 4 DISTRICT 16
U.W. DISTRICT Teton Co.

Temporary Filing No. U.W. 24-2-62

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING JACKSON WELL NO. 8

1. Name of applicant(s) TOWN OF JACKSON ~~& WWDC~~ Phone: 307-733-3932

2. Address of applicant(s) BOX 1687 (STREET) JACKSON (CITY) WY (STATE) 83001 (ZIP)
~~HERSCHLER BUILDING CHEYENNE, WY 82002~~

3. Name & address of agent to receive correspondence and notices Robert R. Norton, PE & LS

Box 1599 (STREET) Jackson (CITY) WY (STATE) 83001 (ZIP) Phone: 307-733-2087

4. Use to which the water will be applied:

☐ Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? _____.

☐ Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use.

☐ Irrigation: Watering of commercially grown crops, (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use.)

☒ Municipal: Use of water in incorporated Towns and Cities, (use of water in unincorporated towns, subdivisions, improvement districts, mobile home parks, etc. are classified as miscellaneous use.)

☐ Industrial: Long term use of water for the manufacture of a product or production of oil/gas or other minerals, (oil field water flood operations, power plant water supply, etc). (Describe in REMARKS)

☒ Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: Reservoir Supply for All wastewater reservoirs and all wetlands Ponds.

☐ Monitor, Observation or Test Well: (Describe in REMARKS)

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)
Teton County, SW 1/4 SW 1/4 of Sec. 36, T. 41 N., R. 117 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot 55, Block _____ of the Indian Springs Ranch Subdivision (or Addn) of Teton County. Resurvey Location: Tract _____, (or Lot) _____.

6. Estimated depth of the well or spring is 90 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 1300 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

(b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: 732. Circle appropriate units: ~~(GALLONS)~~ (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation box below.

9. If for irrigation use:
a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box below.
b. ☐ Land will be irrigated from this well only.
c. ☐ Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

TABULATION BOX See attached sheet

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
40	116	5						X	X										
41	116	6	X	X	X	X	X	X	X	X									
41	116	31			X	X									X	X	X	X	
41	116	32			X	X								X	X	X	X	X	
41	116	33							X				X						

10. If for irrigation use, describe method of irrigation, i.e. center pivot sprinkler, flood, etc: _____

SEE REVERSE SIDE

Permit No. U.W. 101362 Book No. 782 Page No. 13

11. **The well or spring is to be constructed on lands owned by** Indian Springs Ranch Limited Partnership
(The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. **The water is to be used on lands ~~owned by~~** XXXXXXX served by the Town of Jackson Water System.
(If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.) NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: This well will supply water to the Town of Jackson Water Distribution System. Water will be comingled with water from other Jackson Well No's. 1, UW1385; No.2, UW1386, UW2055(Enl.), and UW85495(Enl.); No.3, UW1945, and UW85496(Enl.); No.5, UW69746; No.6 U.W. 101360 ; No.7, U.W. 1201361

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Robert K Norton — Signature of Applicant or Authorized Agent

April 12, 1995 — Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less.)	**$25.00**
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	**$50.00**
MONITOR (For water level measurements or chemical quality sampling, test well)	**NO FEE**

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)
) ss.
STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 17th day of April, A.D. 19 95, at 9:30 o'clock A. M.

Permit No. U.W. 101362

for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use without loss of water into sub-surface formations or at the land surface.

FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET.

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. ~~Construction of well or spring will begin within one (1) year from date of approval~~. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in Item 4 of this application will be made by December 31, 19 97.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this 2nd day of February, A.D. 19 96.

Gordon W. Fassett

Gordon W. Fassett, State Engineer

Attachment sheet for the Jackson Well No. 8 PERMIT NO. U.W. 101362

Township	Range	Section	NE¼				NW¼				SW¼				SE¼				Total
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Corporate limits of the Town of Jackson																
40	116	5						X	X										
40	116	6	X	X	X	X	X	X	X	X									
41	116	27											X	X			X		
		28				X									X		X	X	
		31			X	X									X	X	X	X	
		32	X	X	X	X								X	X	X	X	X	
		33	X	X	X	X	X	X	X	X	X	X	X		X	X			
		34	X	X	X	X	X	X	X	X	X	X			X	X			
		35										X							
40	116	29	~~X~~	~~X~~	X	X	~~X~~	~~X~~	~~X~~	~~X~~	X	~~X~~	~~X~~	~~X~~	~~X~~	X	~~X~~	~~X~~	
			Above are reservoir and water well locations as determined at this time.																
			Misc. uses outside Corporate limits:																
41	116	32			X	X													
		33							X										
		34											X	X					
		36															X	X	

FORM UW: C&L,C1
Rev: 5-10-93

PERMIT NO. 101362
T.F. No. U.W. 24-2-62
PERMIT STATUS

Priority Date April 17, 1995 **Approval Date** February 2, 1996

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. Ground water appropriated by the Town of Jackson from its Jackson Water Well No. 1, Permit No. U.W. 1385; the Jackson Water Well No. 2, Permit No. U.W. 1386, enlarged by Jackson Water Well No. 2 (Enl.) Permit No. U.W. 2055, and 2nd Enl. Jackson Water Well No. 2, Permit No. U.W. 85495; the Jackson Water Well No. 3, Permit No. U.W. 1945, enlarged by 1st Enl. Jackson No. 3 Well, Permit No. U.W. 85946; the Jackson No. 5 Well, Permit No. U.W. 69746; Jackson Well No. 6, Permit No. U.W. 101360; the Jackson Well No. 7, Permit No. U.W. 101361; and the Jackson Well No. 8, Permit No. U.W. 101362; shall allow the Town of Jackson to pump a total combined quantity of 6,700 acre-feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre-feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1993. The Town of Jackson shall pump no more than 67,000 acre-feet of ground water in any ten (10) year period from its municipal water well field provided, however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.

2. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

3. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well each month during the previous January 1 to December 31, twelve (12) month period.

4. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.

5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

February 2, 1996
DATE OF APPROVAL

Gordon W. Fassett
Gordon W. Fassett, State Engineer

CERT. REC. U.W. 11, P. 365
PROOF NO. U.W. 4533, AC. 0
G.P.M. 1300 IRR. ___ STK. ___ DOM. ___ MISC. X
MUW. X
MAP NO. 381-E

October 22,, 1997 - Statement of Completion on April 15, 1997 received.
October 22, 1997 - Proof of Beneficial use on October 10, 1997 received.

FORM U.W.6
REV. 5-93

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER
HERSCHLER BUILDING
CHEYENNE, WYOMING 82002
(307) 777-5959

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 101362 NAME OF WELL (SPRING) ~~JACKSON WELL #8~~

1. NAME OF OWNER ~~TOWN OF JACKSON 2) WWDC~~

2. ADDRESS 1) Box 1687 ~~2) Herschler Building~~
1) Jackson Please check if address has changed from that shown on permit. ☐
City ~~2) Cheyenne~~ State WY Zip Code 1) 83001 ~~2) 82002~~ Phone No. 1) 307-733-3932 ~~2) 307-777-7226~~

3. USE OF WATER: Domestic ☐ Stock Watering ☐ Irrigation ☐ Municipal ☒ Industrial ☐ Miscellaneous ☒
Explain proposed use (Example: One single family dwelling) Municipal - Incorporated limits Town of Jackson. Miscellaneous - 127 acres outside incorporated limits Town of Jackson and to supply reservoirs at Town of Jackson Wastewater Treatment Plant.

4. LOCATION OF WELL (SPRING): SW ¼ SW ¼ of Section 36, T. 41 N., R. 117 W., of the 6th P.M. (or W.R.M.),

Subdivision Name Indian Springs Ranch Lot NA Block NA

If surveyed, bearing, distance and reference point: N2°22'E - 458' from SW corner S. 36

5. TYPE OF CONSTRUCTION: Drilled ☒ Air Rotary (Type of Rig) Dug ☐ Driven ☒ Other ☐

Describe:

6. CONSTRUCTION: Total Depth of Well/Spring 81 ft. Depth to Static Water Level 55 ft. (Below land surface)
a. Diameter of borehole (Bit size) 15 inches.

b. Casing Schedule New ☒ Used ☐

16" diameter from 0 ft. to 58 ft. Material Carbon Steel Gage ¼" wall

_____ diameter from _____ ft. to _____ ft. Material _____ Gage _____

c. Was casing cemented: Yes ☒ No ☐ Cemented Interval, From 10 feet to 50 feet.

d. Number of sacks of cement used 78 type of cement Portland Cement Grout

e. Perforations: Type of perforator used NA
Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:
_____ perforations from _____ ft. to _____ feet.
_____ perforations from _____ ft. to _____ feet.

f. Was well screen installed? Yes ☒ No ☐
Diameter: 16 slot size: 60 set from 56 feet to 71.
Diameter: 16 slot size: 40 set from 71 feet to 81.

g. Was well gravel packed? Yes ☐ No ☒ Size of gravel _____

h. Was surface casing used: Yes ☐ No ☒ Was it cemented in place? Yes ☐ No ☐

7. NAME & ADDRESS OF DRILLING COMPANY Thomas Bros. Drilling, Route 1, Afton, WY 83110

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) April 15, 1997

9. PUMP INFORMATION: Manufacturer Crown Type Submersible
Source of power Electric Horsepower 150 Depth of Pump Setting or intake 53
Amount of Water Being Pumped ~~1250~~ 1300 Gallons Per Minute. (For Springs or flowing wells, see item 10.)
Total Volumetric Gallons Used Per Calendar Year. 182.5 million gallons

10. FLOWING WELL (Owner is responsible for control of flowing well). NA
If well yields artesian flow, yield is _____ gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.
The flow is controlled by: valve ☐ cap ☐ plug ☐
Does well leak around casing? Yes ☐ No ☐

Permit No. U.W. 101362 Book No. 782 Page No. 13

11. If spring, how was it constructed? (Some method of artificial diversion, i.e., spring box, cribbing, etc., is necessary to qualify for a water right.) NA

12. PUMP TEST: Was a pump test made? Yes ☒ No ☐
If so, by whom Thomas Bros. Drilling Address Route 1, Afton, WY 83110
Yield: 1360 gal./min. with 30.8 foot drawdown after 31 hours.
Yield: 1500 gal./min. with 30.8 foot drawdown after 3 hours.

13. LOG OF WELL: Total depth drilled 81 feet.
Depth of completed well 81 feet. Diameter of well 16 inches.
Depth to first water bearing formation 6 feet.
Depth to principal water bearing formation. Top 6 feet to Bottom 81 feet.

Ground Elevation, if known 6105

DRILL CUTTINGS DESCRIPTION:

From Feet	To Feet	Material Type, Texture Color	Remarks (Cementing, Shutoff)	Indicate Water Bearing Formation & Name	Indicate Perforated Casing Location
0	30	Cobbles, Gravel & Sand		Snake R. Alluvium	
30	40	Coarse Sand, Gravel & Some Cobbles		Snake R. Alluvium	
40	81	Gravel & Sand	Well Screen	Snakr R. Alluvium	56-81

14. QUALITY OF WATER INFORMATION:
Does a chemical and/or bacteriological water quality analysis accompany this form? Yes ☒ No ☐
It is recommended that chemical and bacteriologic water quality analyses be performed and that the report(s) be filed with the records of this well. (Contact Department of Agriculture, Analytical Lab Services, Laramie, 742-2984.)
If not, do you consider the water as: Good ☐ Acceptable ☐ Poor ☐ Unusable ☐

REMARKS:

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert K Norton PE/LS 2910
Signature of Owner or Authorized Agent

Oct 15, 1997
Date

UW 101362

FOR STATE ENGINEER'S USE ONLY

Date of Receipt OCT 22 1997, 19____

Date of Priority APR 17 1995, 19____

Date of Approval Dec 12, 19 97

for State Engineer

Form U.W. 8
Rev: 2-82

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION ~~4 (16)~~

U.W. DISTRICT ~~TETON COUNTY~~

STATEMENT OF CLAIM

DATE OF PRIORITY APRIL 17, 1995

PERMIT NO. U.W. 101362
WELL REGISTRATION

LOCATION SW ¼ SW ¼ of Section 36

NAME OF WELL ~~JACKSON WELL #8~~

T. 41 N., R. 117 W.

1. Name of Claimant(s) 1) TOWN OF JACKSON ~~2) WWDC~~

2. Address P.O. BOX 1687 JACKSON, WY 83001 ~~HERSCHLER BUILDING CHEYENNE, WY 82002~~ Zip Code

3. For What Purpose(s) is Water Used? Use: MUNICIPAL Date First Used APRIL 15, 19 97

Use: MISCELLANEOUS Date First Used: APRIL 15, 19 97 Use: RESERVOIR (Misc.) SUPPLY Date First Used OCT. 10, 19 97

If use is for irrigation, give date irrigation was completed on all lands under this Permit:

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

(1) The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.

(2) The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7½ minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:

(a) The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.

(b) The scale on said quadrangle map must be one to twenty-four thousand.

(c) An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.

(d) The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.

(e) Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

UW 1013602

Under penalties of perjury, I declare that I have examined this form and to the best of my knowledge and belief it is true, correct and complete.

Robert R Norton PE 0452910 Oct 16, 19 97

Signature of Owner or Authorized Agent — Date

Date of Receipt: OCT 22 1997, 19 ____

TABULATION OF ADJUDICATED LANDS

Certificate Record No. U.W. 11, Page 265
Order Record No. 58, Page ~~136~~ 126
Permit No. U.W. 101362, Proof No. U.W. 4533

COPY

TWP	RANGE	SEC	NE ¼				NW ¼				SW ¼				SE ¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
			Ground water appropriated by the Town of Jackson from its Jackson Well No. 6, Permit No. U.W. 101360; Jackson Well No. 7, Permit No. U.W. 101361; Jackson Well No. 8, Permit No. U.W. 101362; Enl. Jackson Water Well No. 1, Permit No. U.W. 104232; Enl. Jackson Water Well No. 2, Permit No. U.W. 104233; Enl. Jackson Water Well No. 3, Permit No. U.W. 104234; and Enl. Jackson Water Well No. 5 Well, Permit No. U.W. 104235, allow the City of Jackson to pump a total combined quantity of 6,700 acre feet of ground water on an average annual basis and a combined total quantity of no more than 7,000 acre feet of ground water in any one calendar year from its municipal well field. Such average annual pumpage shall be computed on the basis of ten (10) consecutive years commencing with the calendar year of 1996. The Town of Jackson shall pump no more than 67,000 acre feet of ground water in any ten (10) year period from its municipal water well field provided however, that the State Engineer may, pursuant to application, permit the Town of Jackson to withdraw additional quantities of ground water.												
			(NOTE: Limits under previous ground water permits were 4,500 acre feet yearly average; 5,000 acre feet, yearly maximum, and 45,000 acre feet, total 10 year maximum.)														

APPENDIX C

Fire Hydrant Data

Hydrant No.	Physical Address	Type	Year	Barrel Length	Date Flushed	Condition
1-024	510 Cache Creek Drive	Waterous	2004	28"		
1-023	550 Cache Creek Drive	Waterous	2004	28"		
1-009	820 Cache Creek Drive	Waterous	2006	28"		
1-003	Cache Creek Drive & Cedar Lane	Waterous	1993	34"		
1-002	990 Cache Creek Drive	Waterous	1993	34"		
1-001	1250 Cache Creek Drive	Waterous	1993	34"		
1-004	655 Cedar Lane	Waterous	1993	34"		
1-005	950 Cache Creek Drive	Waterous	1993	34"		
1-006	Cache Creek Drive and Lodgepole Lane	Waterous	1993	28"		
1-007	620 Lodgepole Lane	Waterous	1991	22"		
1-008	855 Cache Creek Drive	Waterous	1992	22"		
1-010	1030 Upper Cache Creek Drive	Waterous	1988	22"		
1-011	Upper Cache Creek Drive and Enoch Ferrin Cr	Waterous	1986	22"		
1-012	960 Upper Cache Creek Drive	Waterous	1996	34"		
1-013	920 Upper Cache Creek Drive	Waterous	1979	22"		
1-014	865 Upper Cache Creek Drive	Waterous	2002	22"		
1-015	830 Upper Cache Creek Drive	Waterous	2006	28"		
1-016	Upper Cache Creek Dr & Budge Trailer Park	Waterous	2006	28"		
1-017	705 Cache Cr Dr	Waterous	1978	22"		
1-018	735 Snow King Drive	Waterous	2018	36"		
1-019	855 Snow King Drive	Waterous	2018	36"		
1-020	Snow King Drive & Snow King Court	Waterous	2018	36"		
1-021	955 Snow King Drive	Waterous	2018	36"		
1-096	970/980 Snow King Estate Cul de Sac	Waterous	2009	36"		
1-099	960 Snow King Drive	Waterous	2018	36"		
1-100	950 Snow King Drive	Waterous	2018	36"		
1-101	930 Snow King Drive	Waterous	2018	36"		
1-102	45 Snow King Court	Waterous	2018	36"		
1-103	800 Snow King Drive	Waterous	2018	36"		
1-104	760 Snow King Drive	Waterous	2018	36"		
1-105	650 Snow King Drive	Waterous	2018	36"		
Frost Free	North East corner of 715 Snow King Drive		2018			
1-022	Snow King Estates Booster	Waterous	2001	22"		
1-025	450 Rancher	Waterous	2004	28"		
1-026	340 Rancher	Waterous	1982	22"		
1-027	100 Rancher	Waterous	2004	28"		
1-029	885 E. Boradway & Nelson	Waterous	2008	24"		
1-030	65 Nelson Drive	Waterous	1978	10"		
1-031	95 Nelson	Waterous	2002	28"		
1-032	Nelson Drive and Buffalo Head	Waterous	2002	28"		
1-034	E. Hansen St & Nelson Dr	Waterous	2004	28"		
1-039	820 E. Hansen	Waterous	1991	28"		
1-041	690 E. Hansen	Waterous	1981	22"		
1-043	E. Kelly & Redmond St.	Waterous	2001	34"		
1-042	690 E. Kelly	Waterous	2001	34"		
1-040	675 E Hall	Waterous				
1-044	Redmond & E. Hall Ave	Waterous	2008	34"		
1-097	584 W Hall	Waterous	2010	24"		
1-098	512 W Hall	Waterous	2011	24"		
1-045	Redmond & E. Hansen	Waterous	1994	22"		
1-046	Redmond & E. Simpson	Waterous	1999	22"		
1-047	715 E Simpson Ave & Pioneer	Waterous	2008	28"		

1-095	50 Pioneer Lane	Waterous				
1-051	E Broadway & Pioneer Lane	Waterous	2002	28"		
1-050	E. Broadway & Wapiti Drive	Waterous	2002	28"		
1-049	E. Broadway & Absaroka Drive	Waterous	2003	28"		
1-028	780 E Broadway & Rancher	Waterous	2008	24"		
1-048	Wapiti Dr & E Pearl Ave	Waterous	2001	22"		
1-054	E. Broadway & Entrance to ER	Waterous	2003	28"		
1-059	E. Broadway & Stormy Circle N side of street	Waterous	2002	28"		
1-062	465 E. Broadway	Waterous	1985	22"		
1-063	110 Moose Street	Waterous	1989	22"		
1-064	Moose & Teton	Waterous	1989	22"		
1-065	335 Teton Avenue	Waterous	1989			
1-066	185 Moran Street	Waterous	1989	22"		
1-067	345 E. Deloney Ave.	Waterous	1989	22"		
1-068	210 N. Jean Ave.	Waterous	1988	22"		
1-069	315 Teton Ave.	Waterous	1988	22"		
1-070	210 N. Gros Ventre St.	Waterous	1989	22"		
1-071	415 E. Deloney Ave.	Waterous	1982	22"		
1-072	Stormy Circle Loop	Waterous	1976	22"		
1-073	130 Redmond Street	Waterous	1963	36"		
1-074	520 Clark Street	Waterous	1979	28"		
1-077	E Kelly Ave & Clark Street	Waterous	2001	34"		

Town of Jackson Fire Hydrant Log Zone 2 Year:_____ Season: 9/19

Hydrant No.	Physical Address	Type	Year	Barrel Length	Date Flushed	Condition
2-005	475/515 N. Cache (Rustic Inn)	Waterous	2002			
2-006	425 N. Cache (Rustic Inn)	Waterous	1982	22"		
2-007	85 Perry Street	Waterous	1989	22"		
2-008	N. Cache & Perry Street	Waterous	1979	22"		
2-012	315/325 N. Cache	Waterous	1982	22"		
2-013	105 Mercill Ave.	Waterous	1993	22"		
2-014	Saddle Butte Booster Pump	Waterous	1993			
2-015	290 Millward	Waterous	1980	22"		
2-016	210 Cache NW corner of Home Ranch	Waterous	1989	22"		
2-018	W Side of the Rec. Center	Waterous	1992	36"		
2-019	SW Corner of the Rec. Center Property	Waterous	1975	22"		
2-022	NW Corner N Glenwwod & W Gill	Waterous	2013	28"		
2-020	175 N. Jackson St. (NE Corner Rusty Parrot)	Waterous	1979			
2-021	SW Corner N. Millward & W. Gill	Waterous	2004	28"		
2-023	SW Corner N. Cache & W. Gill	Waterous	1993	28"		
2-024	NW Corner N. Willow & E. Deloney	Waterous	1988	22"		
2-025	NE Corner Center St. & E. Deloney	Waterous	1988	22"		
2-026	NE Corner of N. Glenwood & Deloney	Waterous	1977	28"		
2-028	NE Corner N Jackson & W Deloney	Waterous	1981	28"		
2-029	SW Corner of Millward & W. Deloney	Waterous	1979	28"		
2-030	SW Corner N. Cache & W. Deloney	Waterous	1989	22"		
2-149	Dollar-Rent-A-Car	Waterous	2013	28"		
2-031	395 W. Broadway (Loaf n Jug)	Waterous	1989			
2-032	475/485 W. Broadway - 5-way (Ace)	Waterous	1989			
2-033	545 W. Broadway (First Republic Bank)	Clow				
3-230	855 West Broadway (Walgreens)	Waterous	2008	36"		
3-026	1040 Budge Dr	Waterous	2000	34"		
3-027	1010 Budge Dr	Waterous	2000	34"		
3-028	990 Budge Dr	Waterous	2001	22"		
2-133	925 W. Broadway & Budge Dr.	Waterous	2001	22"		
2-134	945 W. Broadway (End of Hillside Bldg.)	Waterous	2002	22"		
2-135	1025 W. Broadway (Hillside Booster)	Waterous	1981	22"		
2-153	1127 W Hwy 22	Waterous		22		
New	SW corner 1225 W Hwy 22	Waterous	2018	?	needs ext.	
2-147	1175 Hwy 22 Conrad Bischoff	Clow	2015			
2-148	1255 W Hwy 22 West View	Clow	2015			
3-037	Teton Gables Motel by HWY 22	Waterous	1975	22"		
2-143	NE Corner Star Bus & Karns Meadow Rd	Clow	2014	24"		
2-144	SE Corner Star Bus & Karns Meadow Rd	Clow	2014	24"		
2-145	610 W Broadway (centianial bldg)	Waterous	2014	36"		
2-034	W. Broadway (Exxon)	Waterous	1992	36"		
2-035	SW Flat Creek & 520 W. Broadway	Waterous	1989	28"		
2-036	SW Corner W. Broadway & S. Jackson	Waterous	1975	28"		
2-037	SE Corner W. Broadway & S. Millward	Waterous	1989			
2-038	SE Corner W. Broadway & S. Glenwood	Waterous	1993			
2-039	SE Corner E. Broadway & S. Cache	Waterous	1991			
2-040	SW Corner E. Broadway & S. King	Waterous	1994			
2-041	NW Corner E. Broadway & N. Willow	Waterous	1973			
2-042	SE Corner E. Broadway & S. Jean	Waterous	1974			
2-131	SW Corner of No Name & Broadway	Waterous	1989			
2-043	455 E. Pearl Ave.	Waterous	1990			
2-045	NE Corner S. Willow & E. Pearl	Waterous	2008			

2-046	NE Corner of S. Cache & E. Pearl	Waterous	2001			
2-047	NW Corner of S. Millward & W. Pearl	Waterous	2000			
2-048	425 W. Pearl Ave.	Waterous	1982			
2-049	SE Corner of Clissold & W. Pearl	Waterous	1988			
2-050	SE Corner of S. Jackson & W. Pearl	Waterous	1994			
2-051	SE Corner of S. Glenwood and W. Pearl	Waterous	2000			
2-052	40 E Pearl Ave (fire station)	Waterous	1973			
2-053	SW Corner of S. Gros Ventre & W. Pearl	Waterous	1982			
2-054	510 E. Simpson Ave.	Waterous	1981			
2-055	455 E. Simpson Ave.	Waterous	1974			
2-056	295 E Simpson					
2-057	NW Corner King & Simpson					
2-058	S. Corner of Clissold & W. Simpson	Waterous	1988			
2-059	SW Corner of S. Jackson & W. Simpson(need pu	Waterous	1988			
2-060	SW Corner of S. Millward & W. Simpson	Waterous	1988			
2-061	S. Glenwood @ Center for the Arts	Waterous	2004			
2-062	S. Corner of S. Cache & E. Simpson	Waterous	1973			
2-063	SE Corner of South Willow & E Simpson	Waterous	1975			
2-064	300 E. Simpson (Cacher Creek Town Home)	Waterous	1994			
2-065	265 E Hansen	Waterous	1978			
2-141	N King & Hansen	Waterous				
2-066	S. Corner of Jackson & W. Hansen	Waterous	1988	22"		
2-067	SW Corner of Clissold & W Hansen	Waterous	1988	22"		
2-068	SW Corner of S. Millward & W. Hansen	Waterous	1988	22"		
2-069	S. Corner of S. Glenwood & W. Hansen	Waterous	2005	22"		
2-070	S. Corner of S. Cache & E. Hansen	Waterous	2006	22"		
2-142	Hansen & Willow	Waterous		28"		
2-071	410 E. Hansen & Gros Ventre	Waterous	2006	36"		
2-072	510/530 E. Hansen	Waterous	2006	36"		
2-073	435 E. Kelly	Waterous	2001	36"		
2-077	NE Corner of S. Cache & E. Kelly	Waterous	2000	36"		
2-132	Corner of W Kelly & S Jackson St	Waterous	2008	28"		
2-133	Corner of W Kelly & Flat Creek	Waterous	2008	28"		
2-074	Flat Creek & W. Hansen (355 Flat Creek Dr.)	flow	2008	28"		
2-134	SW Corner of 530 W Hansen	Waterous	2002	22"		
2-075	SE corner of Clissold & W. Kelly	flow	2008	30"		
2-076	SE Corner of S. Millward & W. Kelly	Waterous	2001	22"		
2-078	SE Corner of S. King & E. Kelly	Waterous	2001	36"		
2-079	SE Corner of S. Willow & E. Kelly	Waterous	2001	36"		
2-080	E. Corner of Vine St. & E. Kelly	Waterous	2001	36"		
2-081	N. Corner of Vine St. & e. Karns	Waterous	2003	28"		
2-082	NE Corner of S. Willow & E. Karns	Waterous	2003	28"		
2-083	NE Corner of S. King & E. Karns	Waterous	2003	28"		
2-084	NW Corner of S. Cache & W. Karns	Waterous	2003	28"		
2-085	NE Corner of S. Glenwood & W. Karns	Waterous	2003	28"		
2-086	N. Corner of S. Millward & W. Karns	Waterous	2003			
2-087	Mateosky Park on W. Karns	Waterous	1989			
2-088	E. Corner of Clissold & W. Karns	Waterous	1988			
2-089	S. Corner of Flat Creek & W. Karns	Waterous	1994	22"		
2-090	SW Corner of Flat Creek & Snow King	Waterous	1978	22"		
2-091	450 W. Snow King Ave.	Waterous	1990	22"		
2-092	NW Corner of Heritage Arena	Waterous	2005	36"		
2-093	W. Snow King Ave. (Hydrant General)	Waterous	1994			
2-095	E. Snow King Ice Arena (Lower)	Waterous	1990	22"		

2-096	Snow King Ice Arena (Upper)	Waterous	1991	22"		
2-097	330 E. Snow King Ave.	Waterous	2000			
2-098	E. Corner of S Willow & E. Snow King	Waterous	2000			
2-099	E. Corner of S. King & E. Snow King	Waterous	2000			
2-100	NE Corner of S. Cache & E. Snow King	Waterous	1999			
2-101	E. Corner of Flat Creek & 465 Pine	Waterous	2005			
2-102	575 Pine Dr.	Waterous	2005			
2-103	595 Pine Dr.	Waterous	2006			
2-104	625 Pine Dr.	Waterous	2006			
2-105	665 Pine Dr.	Waterous	2005			
2-106	695 Pine Dr.	Waterous	2005			
2-107	540 Pine Dr.	Waterous	2006			
2-109	415 Wister Ave.	Waterous	1978			
2-110	280 Pine Dr.	Waterous	2005			
2-111	SW Corner of S. Millward & Pine	Waterous	2005			
2-112	210 Spruce Drive	Waterous	1977			
2-135	60 Pine Dr	Waterous	2010			
2-094	S. Cache & Aspen Dr.	Waterous	1992			
2-113	E. Corner of S. Glenwood & W. Snow King	Waterous	2010			
2-146	640 S GlenWood	Waterous	2010			
2-114	E. Corner of S. Millward & W. Snow King	Waterous	1999			
2-117	739 Rodeo Dr.	Waterous	1999			
2-118	731 Rodeo Dr.	Waterous	1999			
2-119	724 Rodeo Dr.	Waterous	1999			
2-120	714 Rodeo Dr.	Waterous	1999			
2-121	704 Rodeo Dr.	Waterous	1999			
2-122	741 Rodeo Dr.	Waterous	1999			
2-123	Rodeo Dr. & Lariat Loop	Waterous	1999			
2-124	610 Rodeo Dr.	Waterous	1999			
2-126	Flat Creek Dr. & Aspen Dr.	Waterous	1979			
2-127	460/440 Aspen Dr.	Waterous	2006			
2-128	320 Aspen Dr.	Waterous	1984			
2-129	SW Corner of S. Millward & Aspen	Waterous	2001			
2-130	75 East Aspen Drive	Waterous	2006			

Town of Jackson Fire Hydrant Log Zone 3 Year:_____ Season: 9/19

Hydrant	Physical Address	Type	Year	Barrel Length	Date Flushed	Condition
3-001	705 Snow King Ave. (SE Corner of Virginian Campground)	Waterous	2002	34"		
3-002	795 Snow King Ave. (SW Corner of Virginian Campground)	Waterous	2002	34"		
3-003	NE Corner Virginian Resturant & S Broadway	Waterous	1989	22"		
3-004	862 W. Broadway @ Gunbarrel Steakhouse	Waterous	1989	22"		
3-005	Virginian Ln. @ First Interstate Bank	Waterous	2001	22"		
3-006	55 Virginian Ln (Entrance to Apts)	Waterous	1993	28"		
3-007	125 Virginian Ln. @ TC library entrance	Waterous	1996	22"		
3-011	465 Stacey Ln.	Waterous	1978	22"		
3-013	930 E. Broadway Wyoming Inn	Waterous	1989	22"		
3-014	920 W Broadway & Scott Lane	Waterous	1979	22"		
3-015	NW Corner of Scott Ln. & Alpine Ln.	Waterous	1979	22"		
3-016	Alpine Ln. & May Way	Waterous	1984	22"		
3-017	East Corner of May Way & Smith Ln.	Waterous	2010	28"		
3-018	915 Simon Ln & Scott Ln	Waterous	1979	22"		
3-019	970 Maple Way (SW corner of Clusters Property)	Waterous	1978	22"		
3-022	NE Corner of Powderhorn Ln. & Maple Way	Waterous	1978	34"		
3-023	Powderhorn Ln. NW Corner of Cluster 6	Waterous	1978	22"		
3-024	Alpine Ln. @ Pizza Hut	Mueller	1977	n/a		
3-025	Powderhorn Ln. @ Teton Motors	Waterous	1978	22"		
3-032	1135 Maple Way	Waterous	1982	22"		
3-033	50 Buffalo Way @ Jackson State Bank	Waterous	1982	22"		
3-035	Teton Science School Booster Pump	Waterous	2003	28"		
3-041	155 Buffalo Way (Albertson's entrance)	Waterous	1984	22"		
3-040	On US 89 btwn Albertson's & Rendezvous Bistro	Waterous	1982	22"		
3-039	180 US 89 AT&T Buiding	Waterous	1999	28"		
3-038	NW Corner of Albertsons Building	Waterous	1982	22"		
3-042	1225 Maple Way	Waterous	1982	22"		
3-043	420 S US 89 (Off Maple Wy by Shervin's)	Waterous	1982	10"		
3-045	500 S US 89 & Maple Wy	Waterous	1982	22"		
3-050	1100 Meadowlark Lane & Powerhorn Ln.	Waterous	1976	22"		
3-051	105 Crabtree Ln.	Waterous	2006	34"		
3-052	205/206 Crabtree Ln.	Waterous	2005	34"		
3-054	315 Crabtree Ln.	Waterous	2005	22"		
3-057	1200 Meadowlark Ln.	Waterous	1978	22"		
3-058	Meadowlark Ln. @ Motel 6 Entrance	Waterous	1978	22"		
3-059	600 South US 89 Motel 6	Waterous	1979	22"		
3-222	S Hwy 89 & Meadowlark	Waterous	1976	22"		
3-060	750 South US 89 Meridian Trust	Waterous	1982	22"		
3-063	1055 South US 89 Teton Rental	Waterous	1981	22"		
3-064	1155 South US 89 Whole Grocer	Waterous	1982	22"		
3-065	1350/1400 South US 89 Motor Mart	Waterous	1996	22"		
3-067	1190 South US 89 (Rons Towing)	Waterous	2009	36"		
3-068	2035 Hidden Ranch Loop	Waterous	1992	34"		
3-069	2018/2020 Hidden Ranch Loop	Waterous	1992	28"		
3-070	2128/2127 Hidden Ranch Ln.	Waterous	1992	34"		
3-071	2118/2116 Hidden Ranch Ln.	Waterous	1992	34"		
3-072	2006 Hidden Ranch Loop	Waterous	1989	22"		
3-073	2000 Hidden Ranch Loop & Stellaria Ln.	Waterous	1978	28"		
3-074	1084 South US 89 & Stellaria Ln.	Waterous	1978	22"		
3-075	1050.1060 South US 89 (adventure rentals)	Waterous	1982	22"		
3-076	988 South US 89 & Huff Ln. (Napa)	Waterous	1998	34"		
3-077	Urgent Care of Jackson Hole	Waterous	2001	22"		
3-078	SE Corner of Smith's	Waterous	2001	22"		

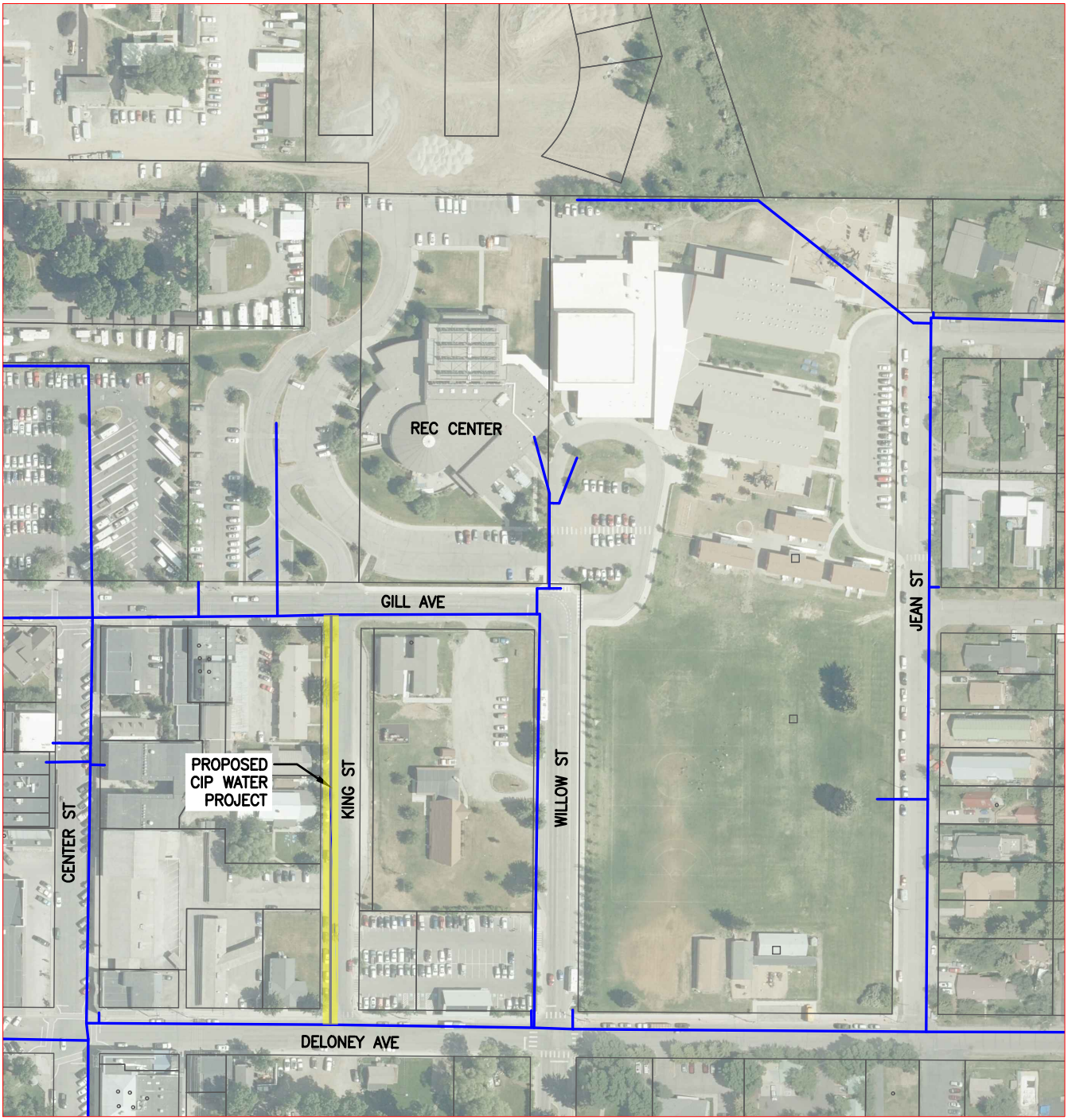
3-079	SW Corner of Smith's	Waterous	2001	34"		
3-083	1655 High School Rd. MEP	Waterous	1988	22"		
3-084	1650/1670 Berger Ln. (Canvas Unlimited)	Waterous	1986	pav.		
3-085	1550 Berger Ln. Westbank	Waterous	1973	22"		
3-086	1250 Carol Ln. auto and Diesel	Waterous	1986	22"		
3-087	1560/1540 Martin Ln. Watchguard	Waterous	1994	28"		
3-088	1525/1545 Martin Ln.	Waterous	1994	28"		
3-089	1645 Martin Ln.	Waterous	1994	28"		
3-090	Gregory Ln. Across from Webers	Waterous	1984	22"		
3-091	1700 martin Ln. & Gregory Ln.	Waterous	1984	22"		
3-092	1170 Gregory Ln. Alan's Welding	Waterous	1994	22"		
3-093	1022 Gregory Ln. (Dusty Acers Ln.)	Waterous	1981	22"		
3-094	South Park Loop Rd. & Gregory Ln. Electrical Wholesale	Waterous	1998	28"		
3-095	Entrance to Maveric off US 89	Waterous	1999	28"		
3-096	Entrance to Maverick off South Park Loop	Waterous	1998	28"		
3-097	1075/1085 Gregory Ln.	Waterous	1980	22"		
3-098	1205 Gregory Ln. @ NPT	Waterous	1984	22"		
3-100	NE Corner of Flat Creek Business Park	Waterous	1984	22"		
3-102	NW Corner of Gregory ln & Highschool Rd	Waterous	1984	22"		
3-103	1910 Highschool Rd (East entrance to JHHS)	Waterous	2001	22"		
3-113	South side of Jackson Middle School	Waterous	1990	22"		
3-114	West side of Jackson Middle School	Waterous	1990	34"		
3-116	SE Corner of South Park & Middle School	Waterous	1991	28"		
3-117	1160 South Park Loop Rd.	Waterous	1991	28"		
3-118	1100 South Park Loop Rd.	Waterous	1991	28"		
3-119	1090 South Park Loop Rd.	Waterous	1980	22"		
3-120	1048 South Park Loop Rd.	Waterous	1984	22"		
3-121	1020 South Park Loop Rd.	Waterous	1984	22"		
3-122	1251 South Park Loop Rd. Presbyterian Church	Waterous	1998	28"		
3-123	890 Whitehouse Dr.	Waterous	1994	34"		
3-124	850 Whitehouse Dr.	Waterous	1994	34"		
3-125	800 Whitehouse Dr. & Seneca Ln.	Waterous	1994	34"		
3-126	700 Tribal Trail	Waterous	1994	34"		
3-127	615 Lakota Ln.	Waterous	1994	34"		
3-128	639 Lakota Ln.	Waterous	1994	34"		
3-129	675 Lakota Ln.	Waterous	1994	34"		
3-130	465/475 Trails End	Waterous	1994	34"		
3-131	525/535 Trails End	Waterous	1994	34"		
3-132	465 Arapahoe Ln.	Waterous	1994	34"		
3-133	365 Arapahoe Ln.	Waterous	1994	34"		
3-223	Trails End on bike path	Waterous				
3-134	811 Seneca Ln.	Waterous	1994	34"		
3-135	830 Seneca Ln.	Waterous	1994	34"		
3-136	865/875 Seneca Ln.	Waterous	1994	34"		
3-137	925 Seneca Ln.	Waterous	1994	28"		
3-224	S. Josephine	Waterous	2005	28"		
3-225	E. Josephine	Waterous	2005	28"		
3-226	SW Corner of Josephine Development	Waterous	2004	28"		
3-227	NW Corner of Josephine Development	Waterous	2004	28"		
3-148	1512 Hayden Dr	Waterous	2005	36"		
3-149	1809/1811 Ellingwood Ln	Waterous	2005	36"		
3-150	1503 Sublette Dr.	Waterous	1994	28"		
3-151	1513 Sublette Dr.	Waterous	1994	28"		
3-155	3055 White house Dr. #1	Waterous	1990	22"		
3-154	3051 Whitehouse Dr.	Waterous	1990	34"		

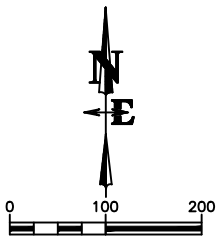
3-157	3070 Rangeview Dr.	Waterous	1990	22"		
3-158	3084/3088 Rangeview Dr.	Waterous	1990	22"		
3-159	3098/3088 Rangeview Dr.	Waterous	1990	22"		
3-160	3004 Corner of Rangeview & Alpine View	Waterous	1990	22"		
3-161	3012/3014 Alpine View Ln.	Waterous	1990	22"		
3-162	3012 Range View & Alpine View Ln.	Waterous	1990	22"		
3-163	3017 Rangeview Dr./Canyon Dr.	Waterous	1990	22"		
3-164	3030 Rangeview Dr.	Waterous	1990	22"		
3-165	3038.3040 Rangeview Dr.	Waterous	1994	22"		
3-166	3045/3051 Mountainview Dr.	Waterous	1990	22"		
3-167	3050/3052 Rangeview Dr.	Waterous	1990	22"		
3-168	Entrance Phase I Cottonwood	Waterous	1982	22"		
3-169	Cottonwood Park Community Center	Waterous	1982	22"		
3-170	2060 Corner Creek Ln.	Waterous	1981	22"		
3-171	Cedar Loop	Waterous	1988	22"		
3-172	2083/2087 Lilac Ln.	Waterous	1989	22"		
3-173	2120/2125 Lilac Ln.	Waterous	1988	22"		
3-174	2153/2160 Corner Creek Ln.	Waterous	1988	22"		
3-176	2090 Corner Creek Ln. # B	Waterous	1988	22"		
3-175	2130 Corner Creek Ln.	Waterous	1988	22"		
3-178	2177 Corner Creek Ln.	Waterous	1984	22"		
3-179	2196 Branch Court	Waterous	1982	22"		
3-232	High School Rd & Church entrance	Waterous	2013	36"		
3-180	Highschool Rd & S. Park Loop Rd.	Waterous	2002	22"		
3-181	Boyles Hill Rd. & Creamery Ln.	Waterous	1996	28"		
3-184	Entrance to Indian Spring Subdivision	Waterous	1998	28"		
3-185	NE Corner of Boyles Hill Rd & Ely Springs Rd	Waterous	1996	28"		
3-186	S. Park Loop & Red house Rd.	Waterous	2004	28"		
3-187	Entrance Cody Creek Dr.	Waterous	2004	28"		
3-188	S. End # Creeks Ranch	Waterous	2004	28"		
3-189	3 Creeks Maintanence	Waterous	2004	28"		
3-190	3 Creek Employee housing	Waterous	2004	28"		
3-191	35-36 Cody Creek Dr.	Waterous	2004	28"		
3-192	37/38 Cody Creek Dr.	Waterous	2004	28"		
3-193	Codycreek & Water Cress	Waterous	2004	28"		
3-194	Lot 155 Water Cress Ln.	Waterous	2004	28"		
3-195	Lot 156 Water Cress Ln.	Waterous	2004	28"		
3-196	Snowshoe & Cody Crfeek	Waterous	2004	28"		
3-197	Lot 111 of Snow Shoe Ln.	Waterous	2004	28"		
3-198	Lot 22/23 Rabbit Brush Ln.	Waterous	2004	28"		
3-199	Lot 24/25 Rabbit Brush Ln.	Waterous	2004	28"		
3-200	Lott 27 Rabbit Brush Ln.	Waterous	2004	28"		
3-201	Intersection at Gody Creek & 3 Creek Roads	Waterous	2004	28"		
3-202	2617 Spring Water Ln.	Waterous	2004	28"		
3-203	Intersection at Spring Water Ln. & 3 Creeks	Waterous	2004	28"		
3-204	Lot # 98 Otter Ln.	Waterous	2004	28"		
3-205	Intersection at Ranchhouse & 3 Creeks Rd.	Waterous	2004	28"		
3-206	3 Creeks Club house	Waterous	2004	28"		
3-207	2790 Silver Fox Ln.	Waterous	2004	28"		
3-208	Intersection at Sliver Fox & 3 Creeks Rd.	Waterous	2004	28"		
3-209	Intersection Marsh Hawk & Blue Crane	Waterous	2004	28"		
3-210	Intersection Bluecrane & Kingfisher	Waterous	2004	28"		
3-211	Intersection Blue Crane & Ibis	Waterous	2004	28"		
3-212	Intersection of Blue Crane & Trumpeter Swan	Waterous	2004	28"		
3-213	Trumperter Swan Cul de Sac	Waterous	2004	28"		

3-214	Intersection of Blue Crane & Pin Tail	Waterous	2004	28"		
3-215	Northend of Blue Crane Dr. Lot 6	Waterous	2004	28"		
3-216	2820 Ibis	Waterous	2004	28"		
3-217	2765 Rapter View	Waterous	2004	28"		
3-218	2795 Marsh Hawk	Waterous	2004	28"		
3-219	2725 Peregrine	Waterous	2004	28"		
3-220	Intersection of Blue Crane & Redtail Hawk	Waterous	2004	28"		
3-221	3 Creeks Main Entrance	Waterous	2004	28"		

APPENDIX D

Water Project Exhibits





DRAWING NO: EXHIBIT 1	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – KING ST	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
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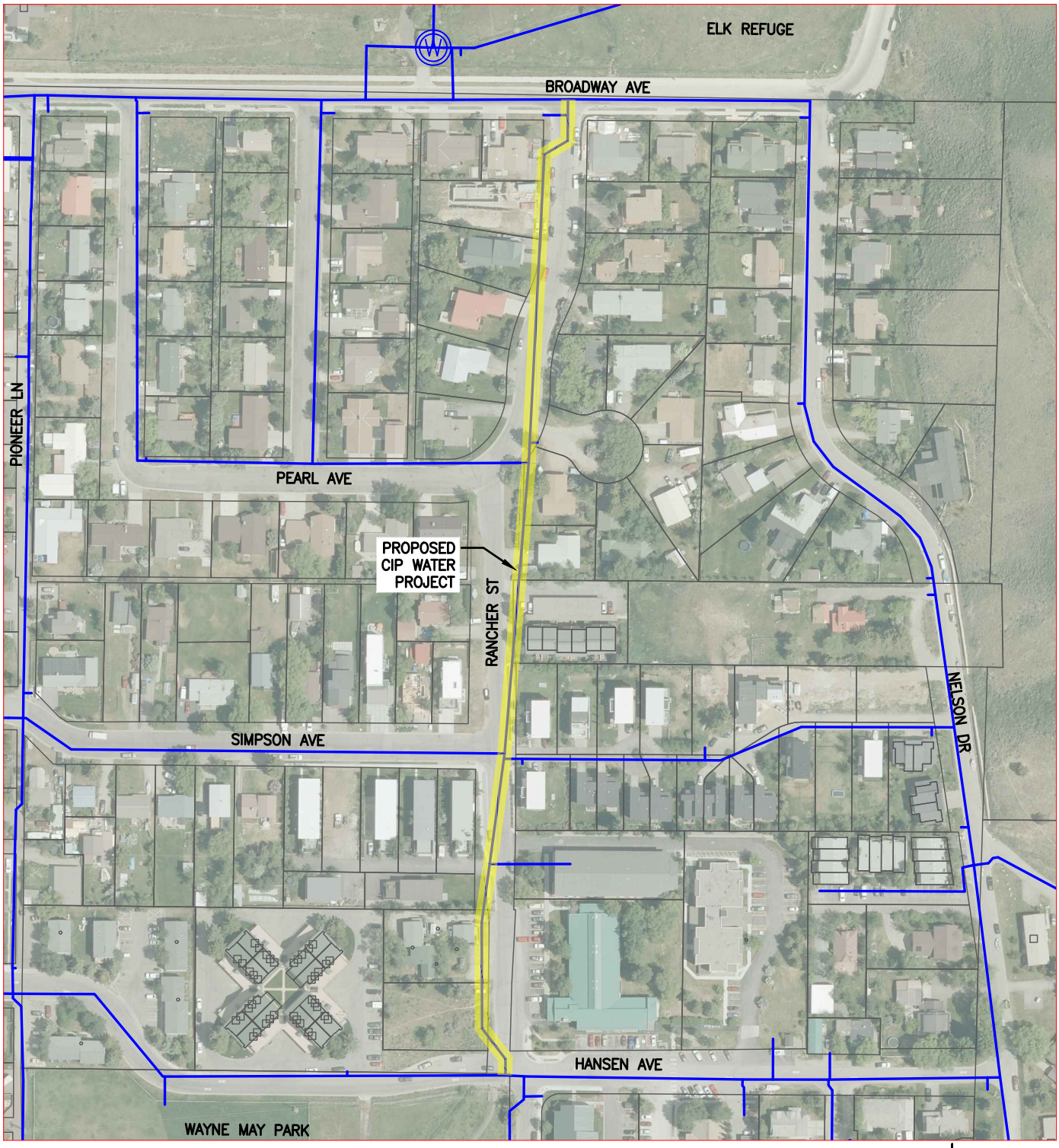
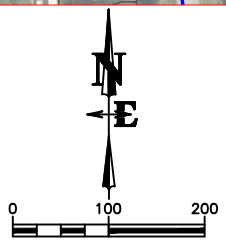
			CHECKED	MB	
			APPROVED	MB	





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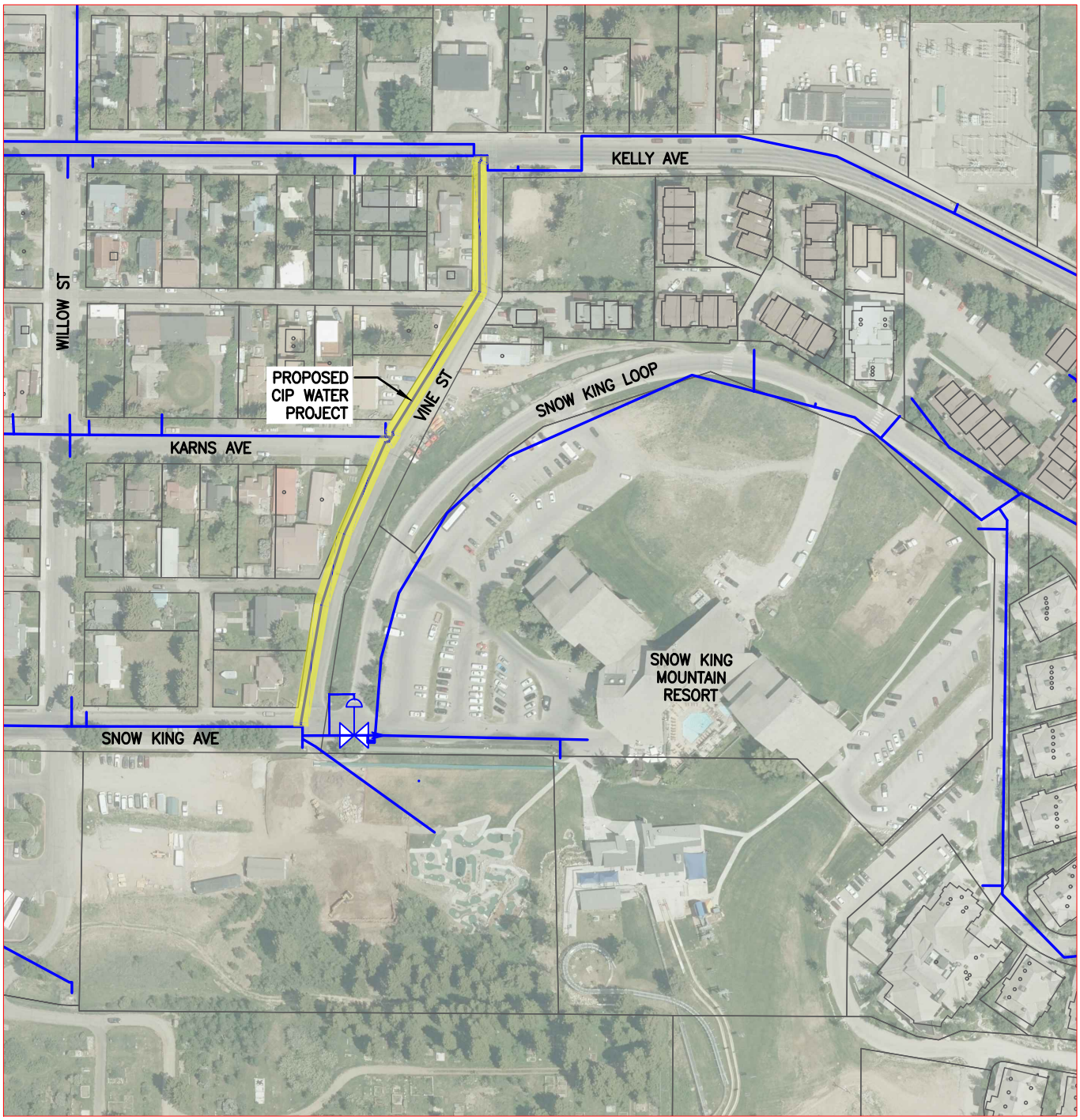
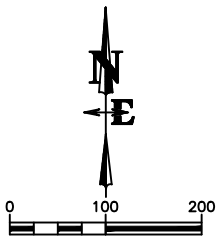
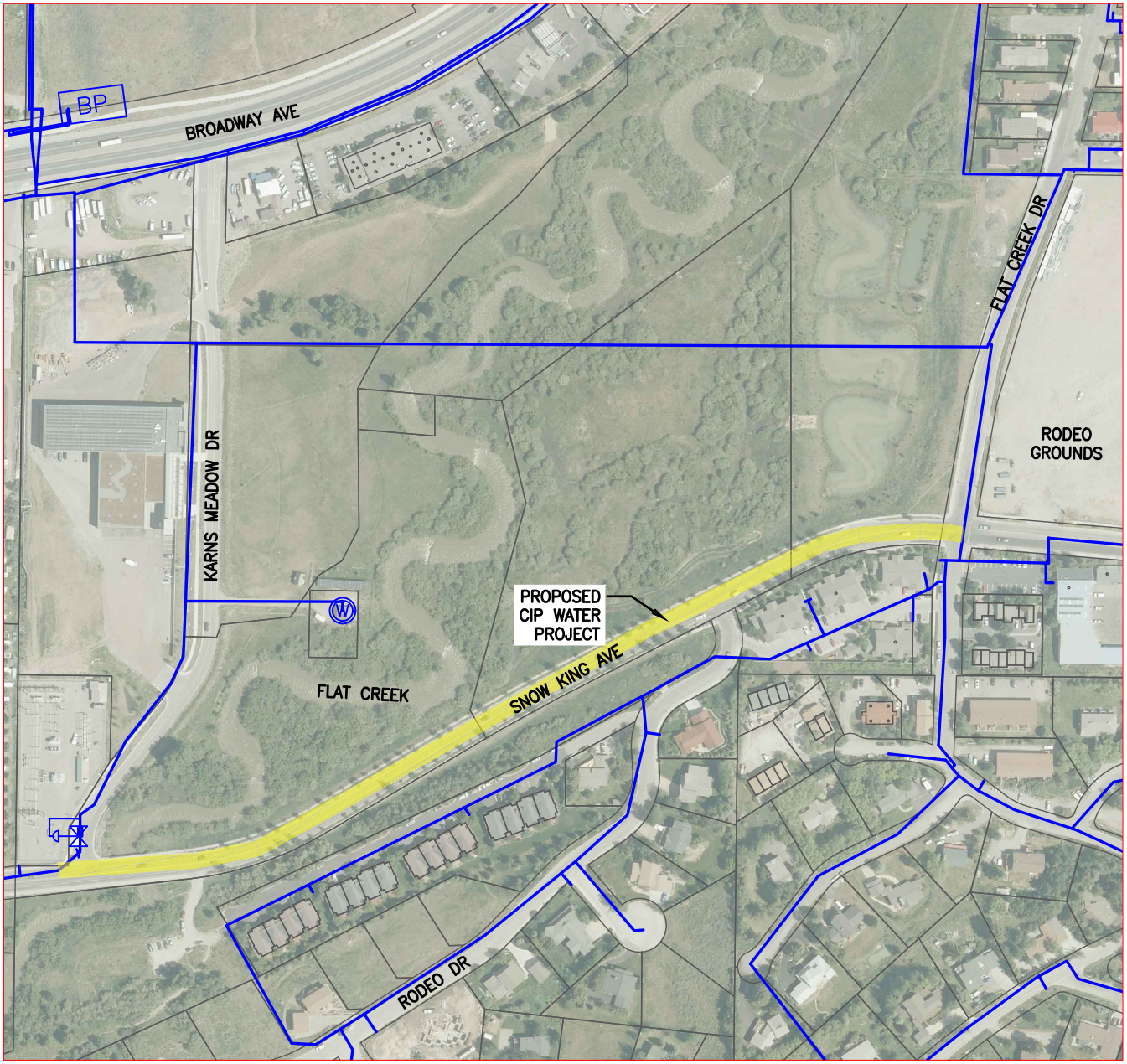
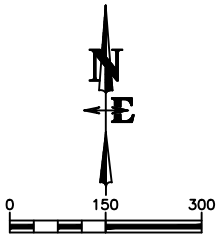




DRAWING NO: EXHIBIT 3	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – VINE ST	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 3 VINE ST> - Feb 12 2020 01:29:12 pm PLOTTED BY: lagerman DWG FORMAT: 23.0





DRAWING NO: EXHIBIT 4	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – SNOW KING AVE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
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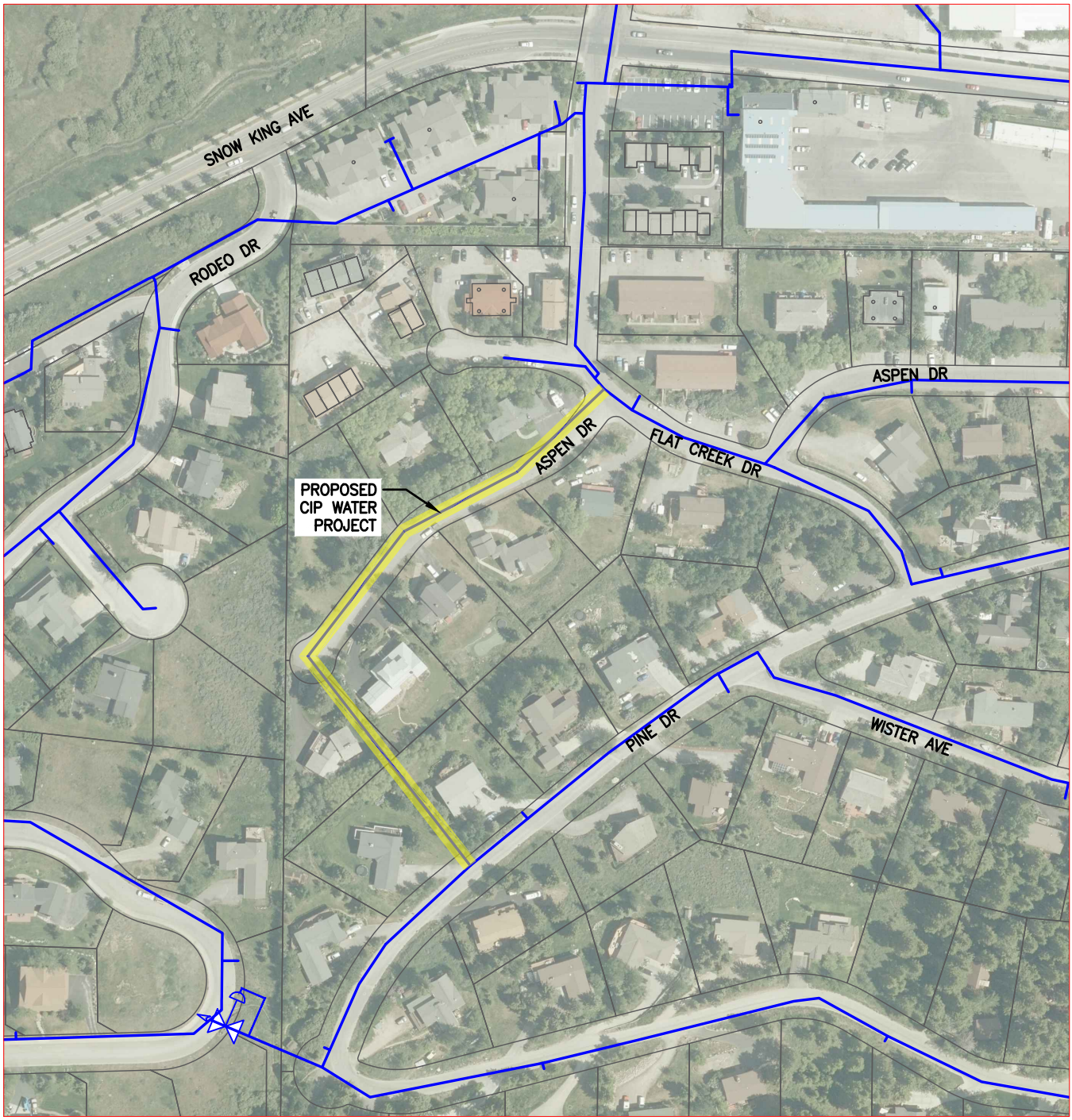

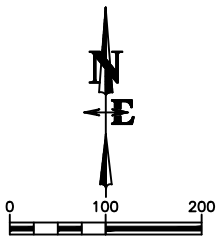

DRAWING NO: EXHIBIT 5	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – WEST ASPEN DR	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
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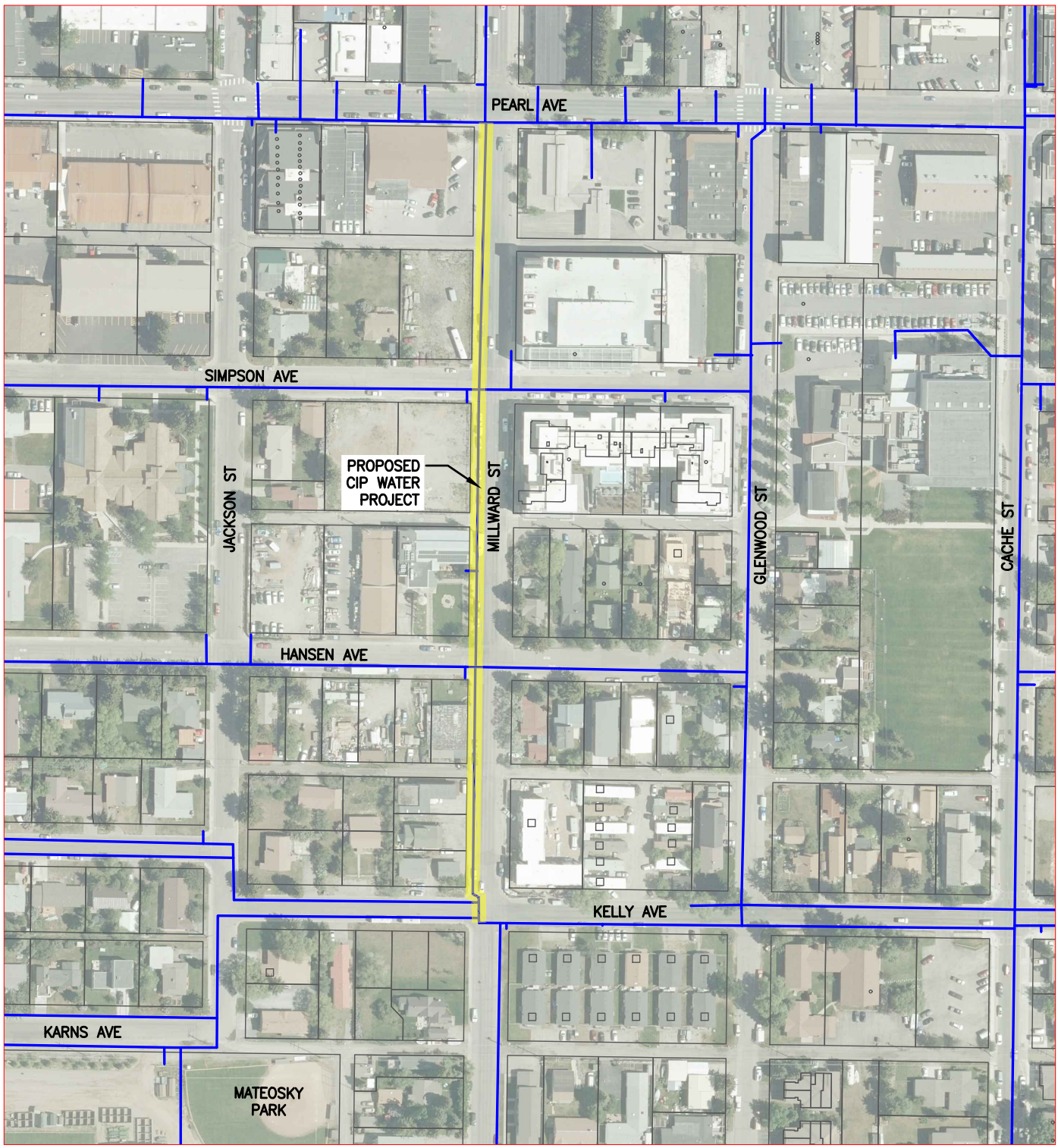

DRAWING NO: EXHIBIT 6	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – SOUTH MILLWARD ST	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
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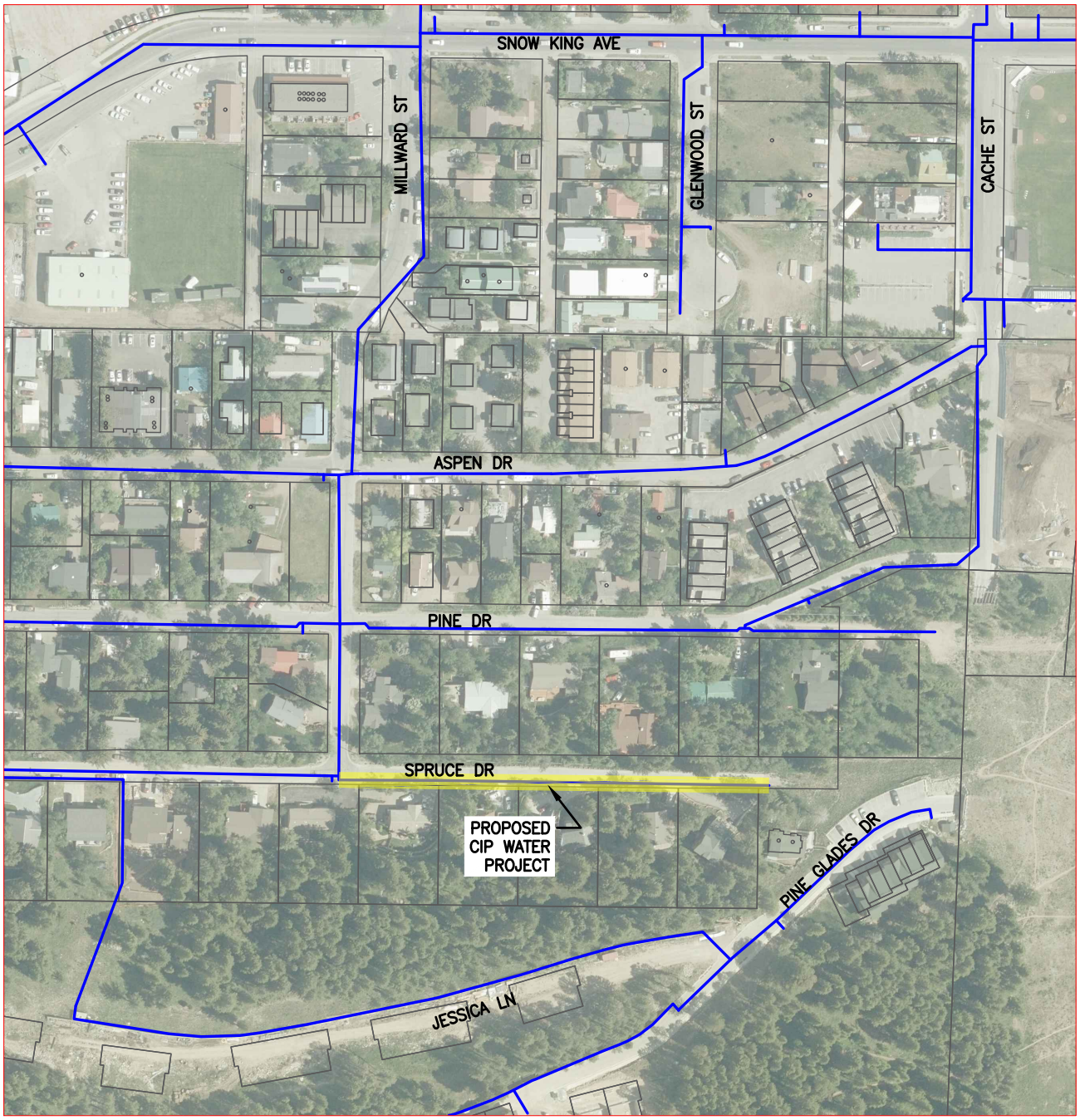
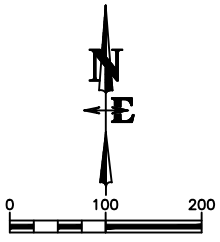
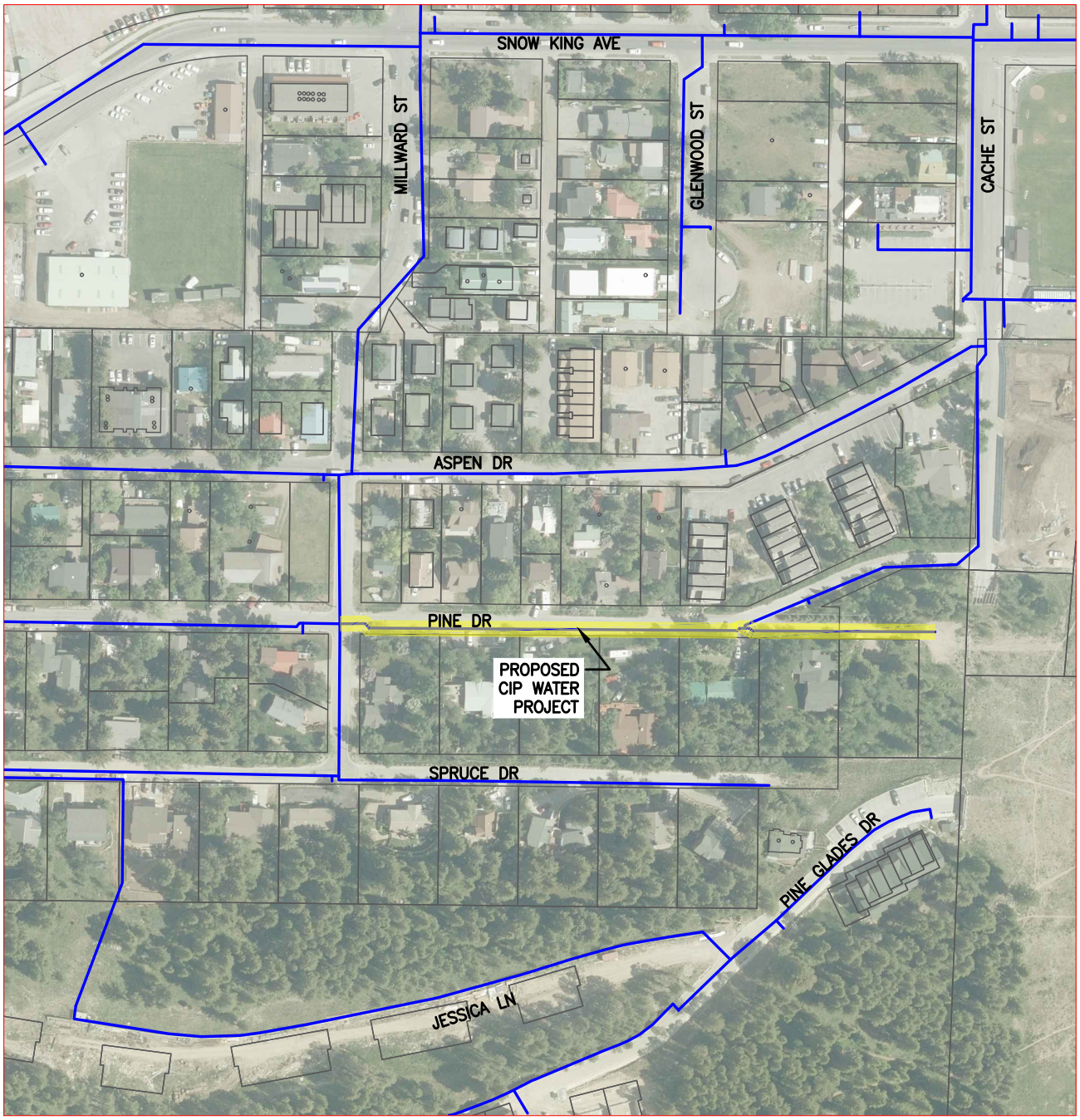
			CHECKED	MB	
			APPROVED	MB	

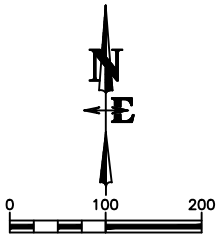
S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 6 MILLWARD ST> - Feb 12 2020 01:29:37 pm PLOTTED BY: lagerman DWG FORMAT: 23.0



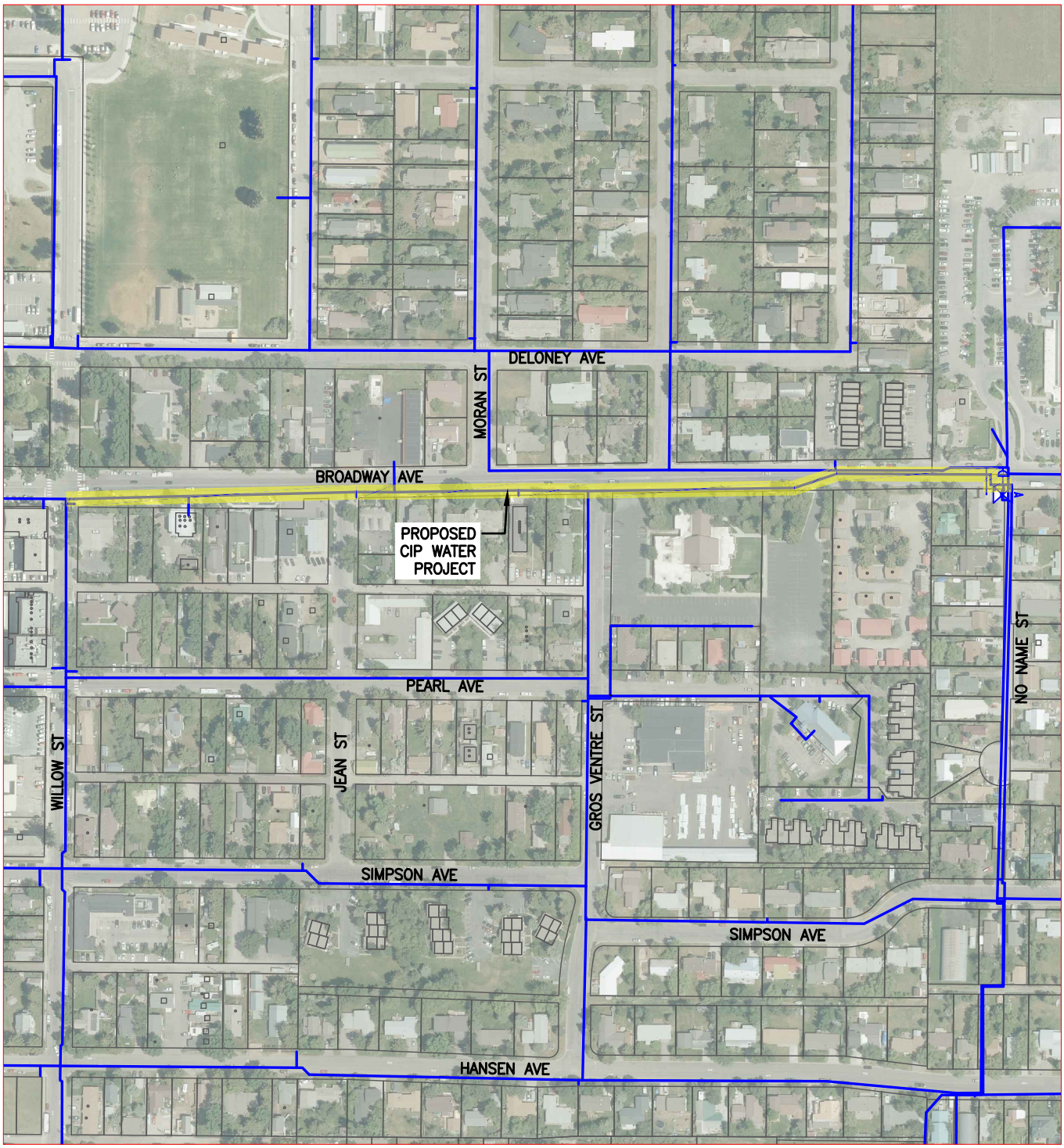


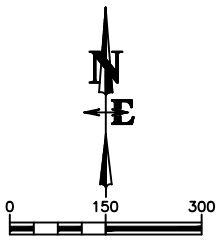
DRAWING NO: EXHIBIT 7	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATELINE REPLACEMENT – SPRUCE DR	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	



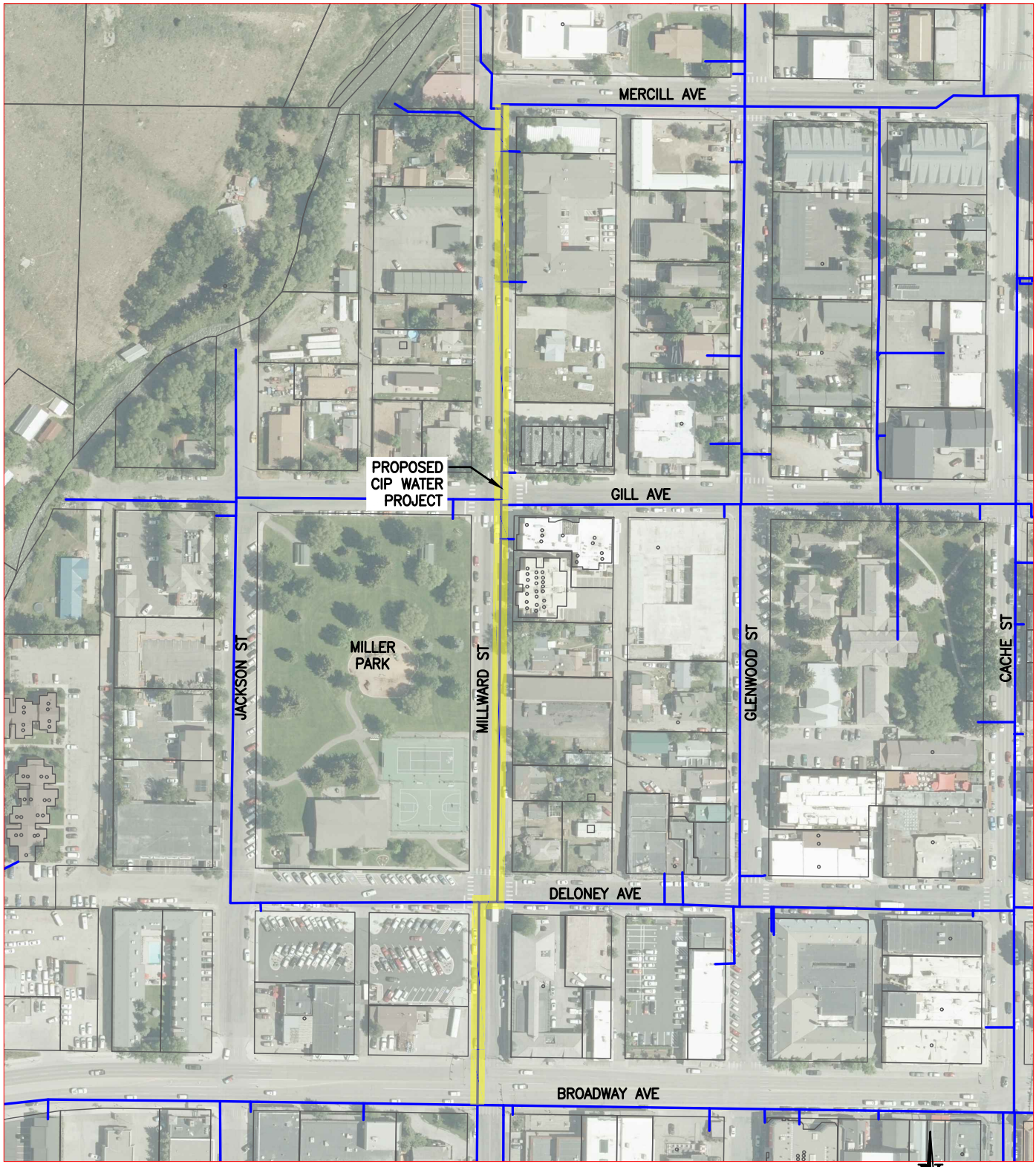


DRAWING NO: EXHIBIT 8	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – PINE DR	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	



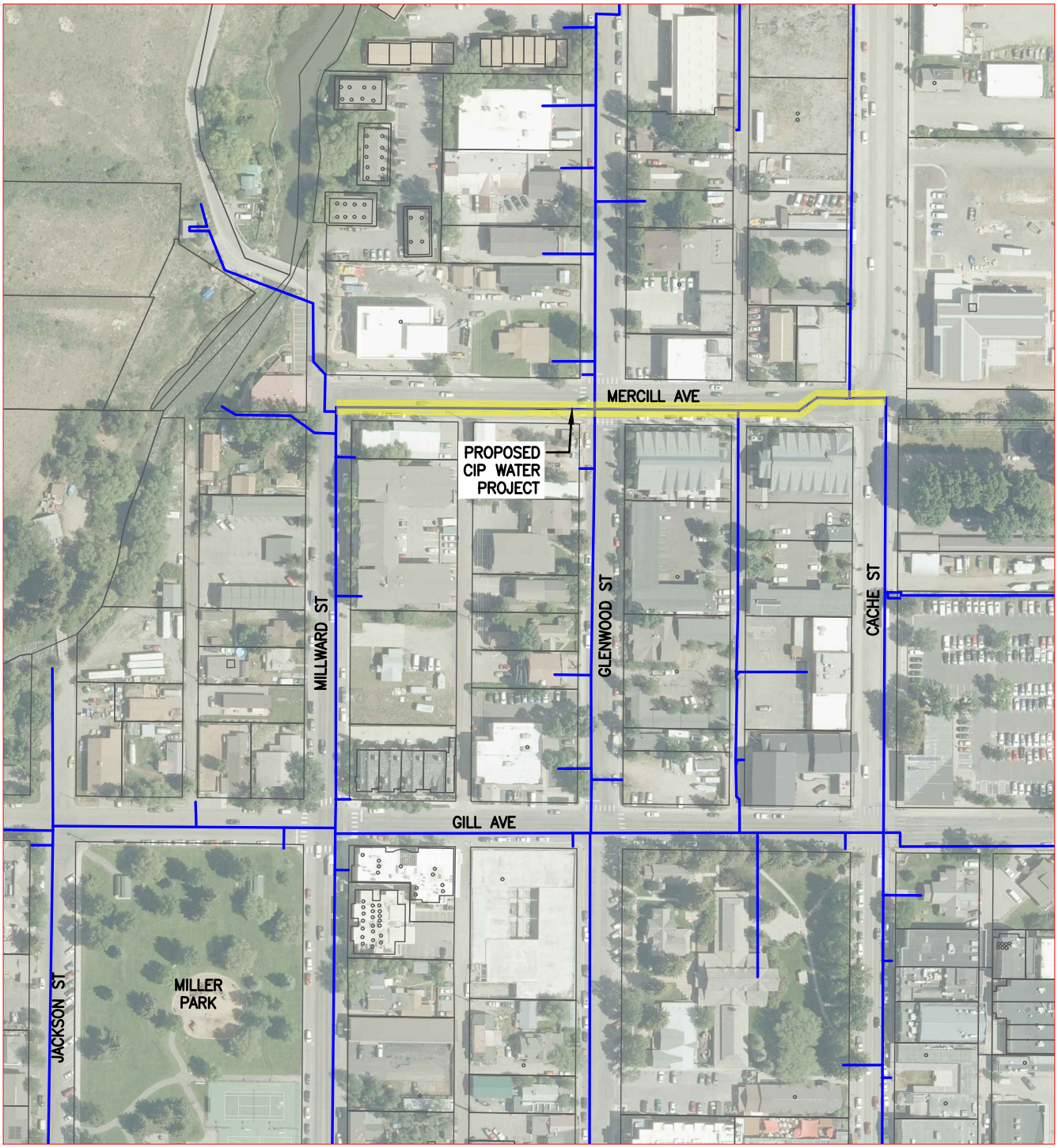


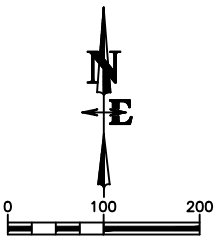
DRAWING NO: EXHIBIT 9	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – BROADWAY AVE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	



S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 10 N. MILLWARD ST> - Feb 12 2020 01:29:57 pm PLOTTED BY: lagerman DWG FORMAT: 23.0

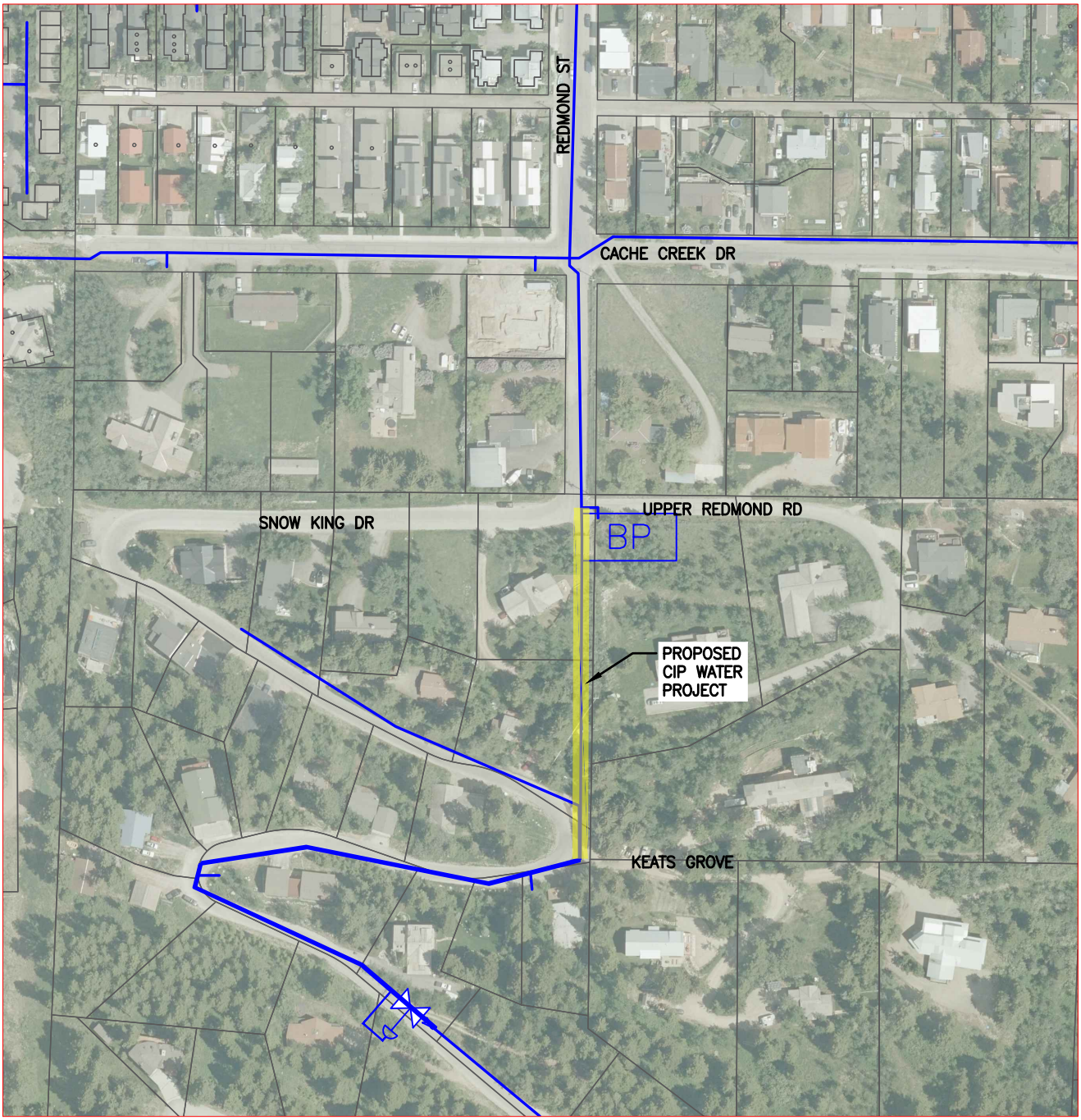
DRAWING NO: EXHIBIT 10	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – NORTH MILLWARD ST	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

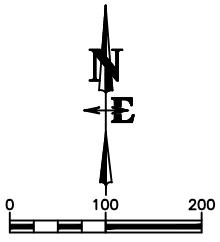




DRAWING NO: EXHIBIT 11	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – MERCILL AVE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

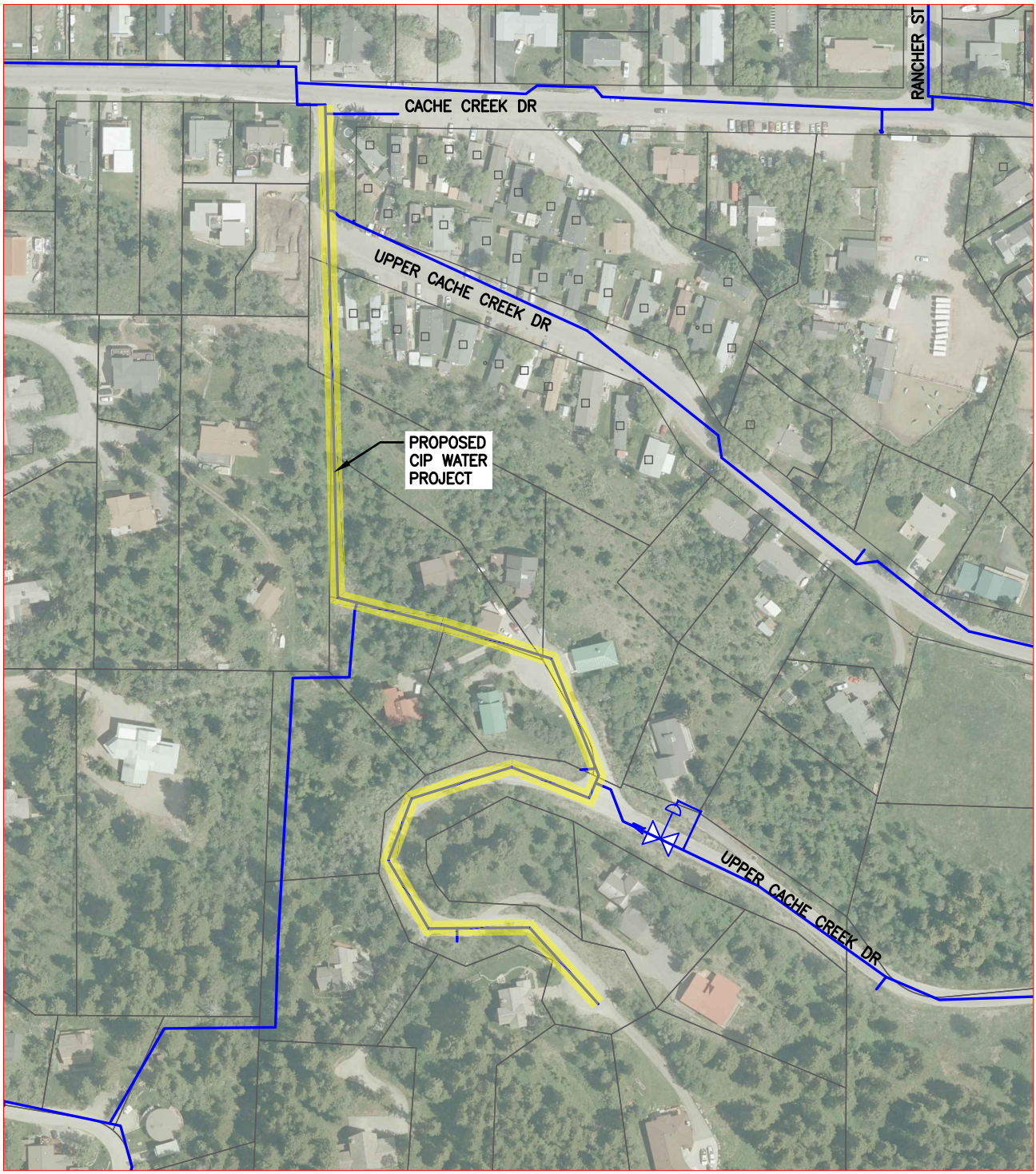
S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 11 MERCILL AVE> - Feb 12 2020 01:30:02 pm PLOTTED BY: lagerman DWG FORMAT: 23.0





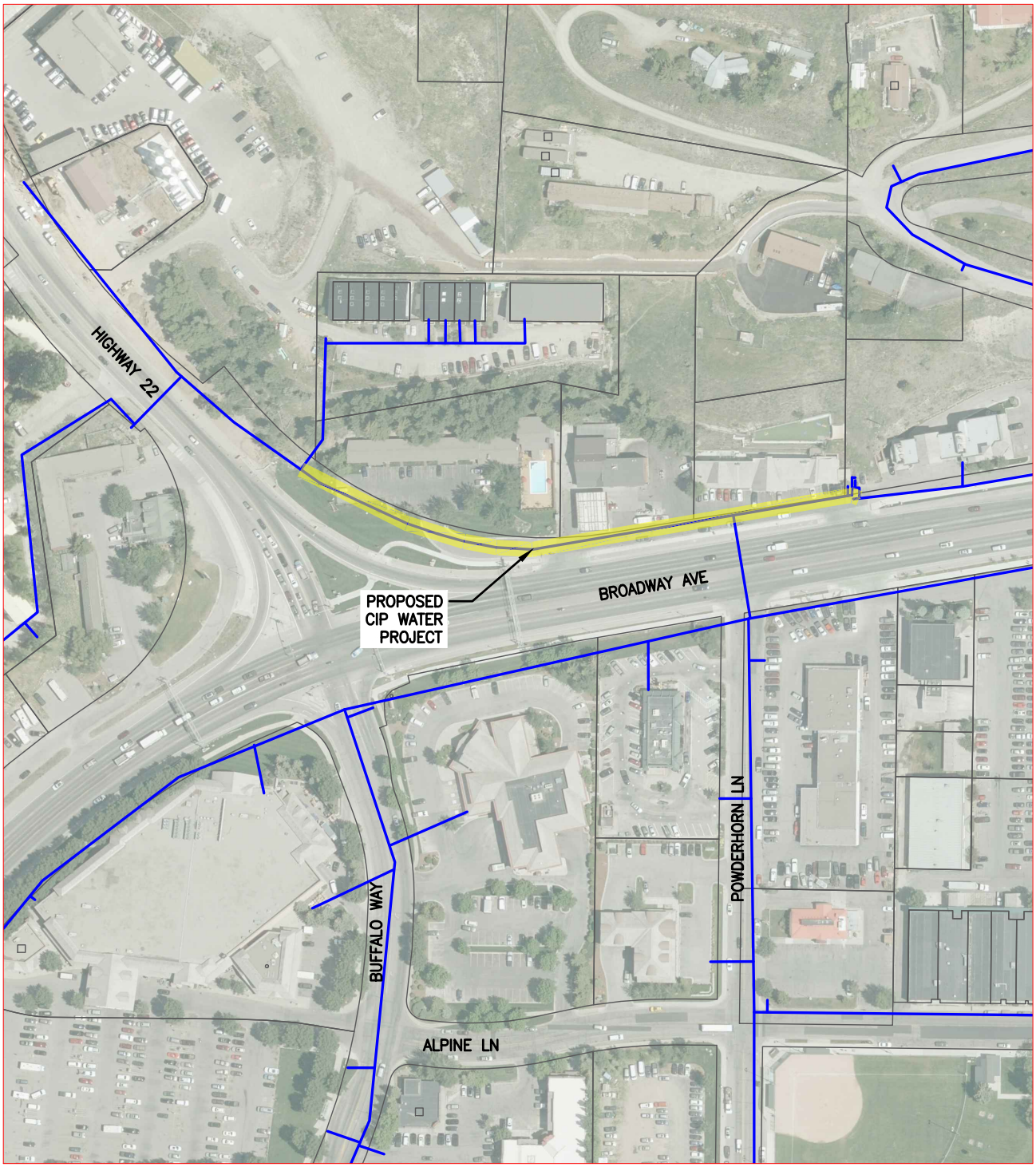
DRAWING NO: EXHIBIT 12	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT – REDMOND ST	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 12 SNOW KING DRIVE> - Feb 12 2020 01:30:07 pm PLOTTED BY: lagerman DWG FORMAT: 23.0



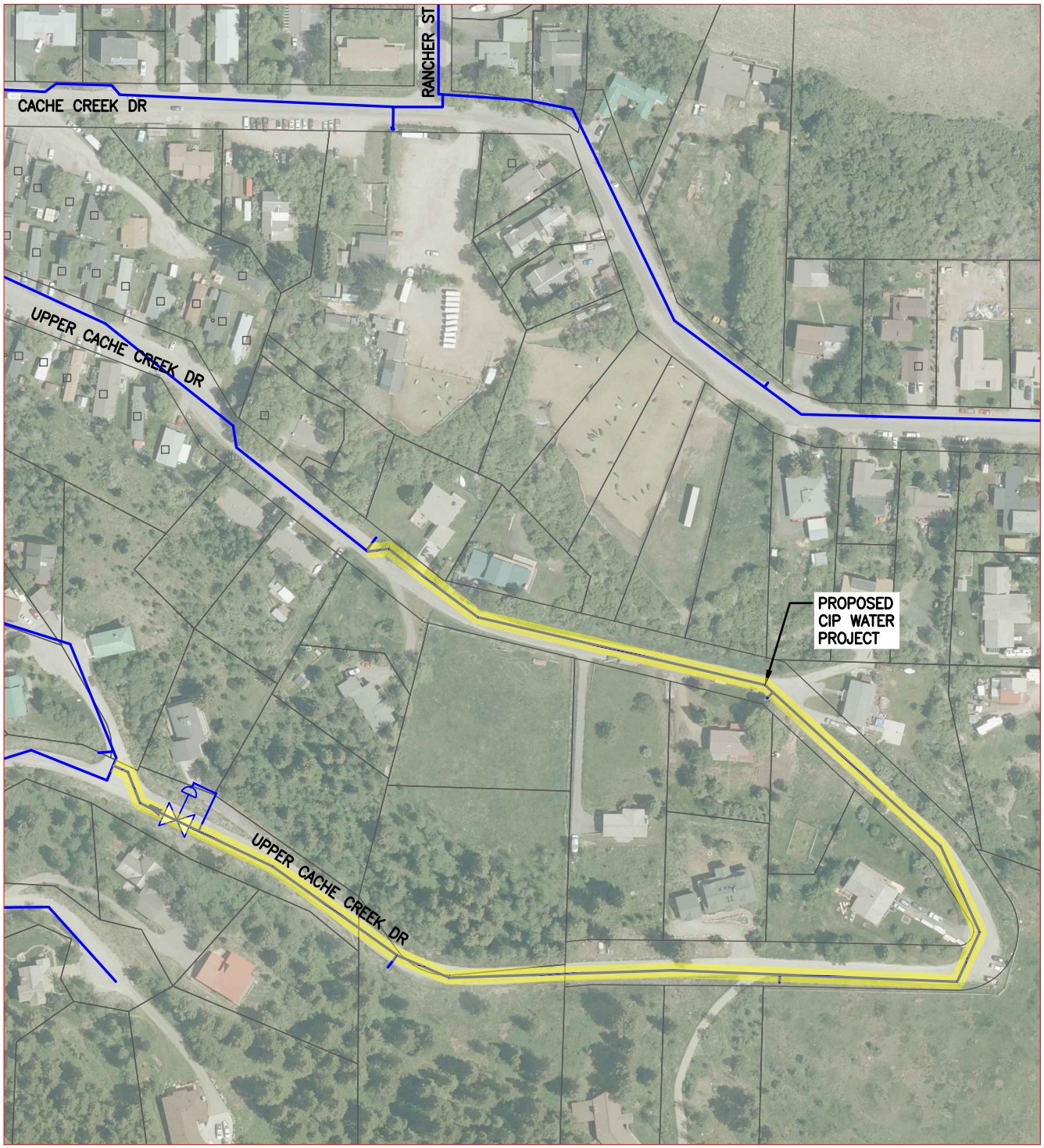
DRAWING NO: EXHIBIT 13	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT UPPER CACHE CREEK DR, PH 1	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 13 UPPER CACHE CREEK DRIVE> - Feb 12 2020 01:30:12 pm PLOTTED BY: lagerman DWG FORMAT: 23.0



DRAWING NO: EXHIBIT 14	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT WEST BROADWAY AVE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	SLL	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 14 BROADWAY-HWY 22> - Feb 12 2020 01:30:17 pm PLOTTED BY: lagerman DWG FORMAT: 23.0

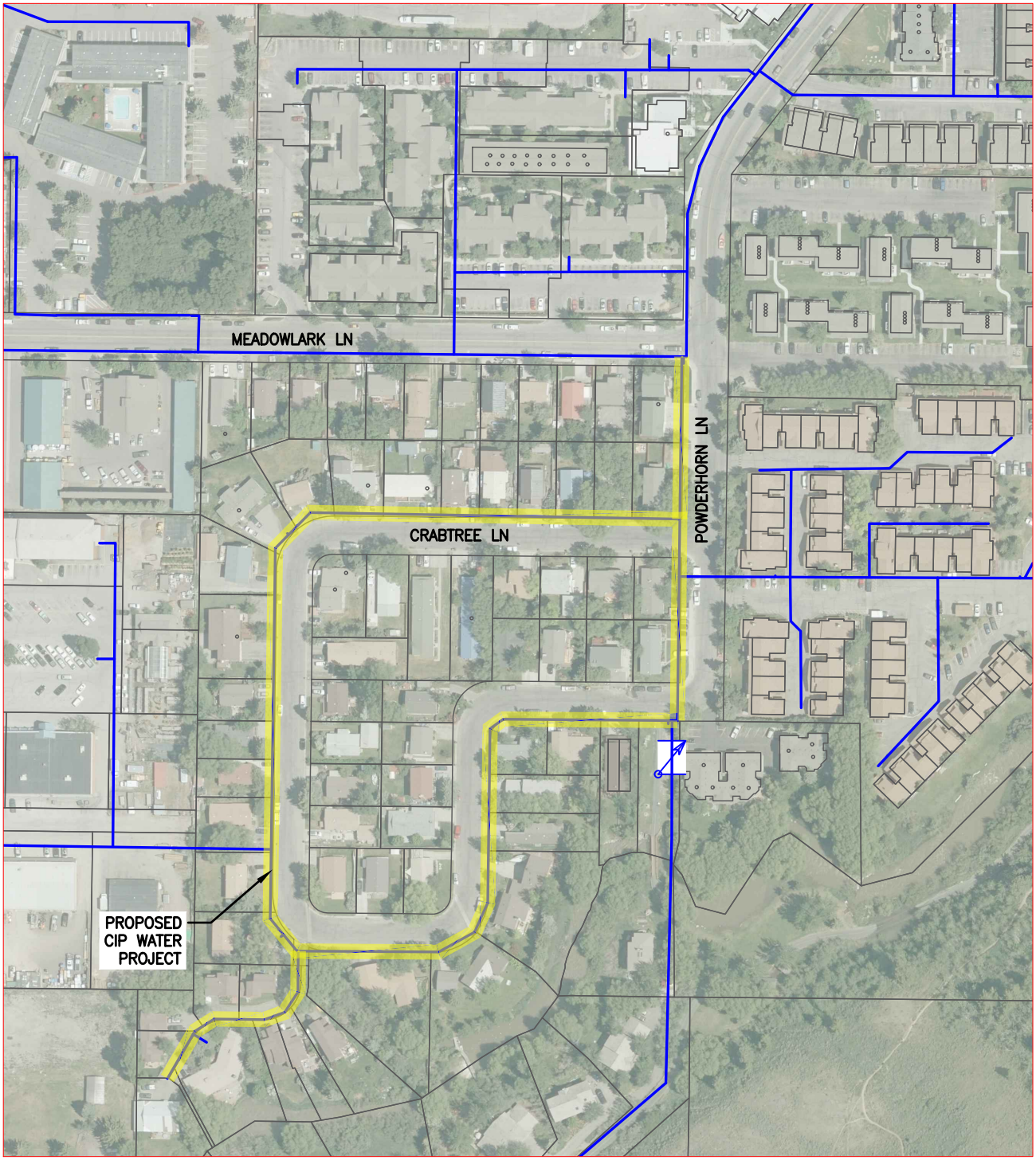


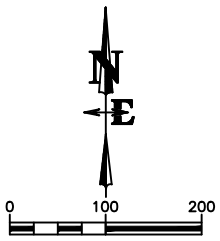
N
E

0 100 200

DRAWING NO: EXHIBIT 15	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT UPPER CACHE CREEK DR, PH 2	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	SLL	
			CHECKED	MB	
			APPROVED	MB	

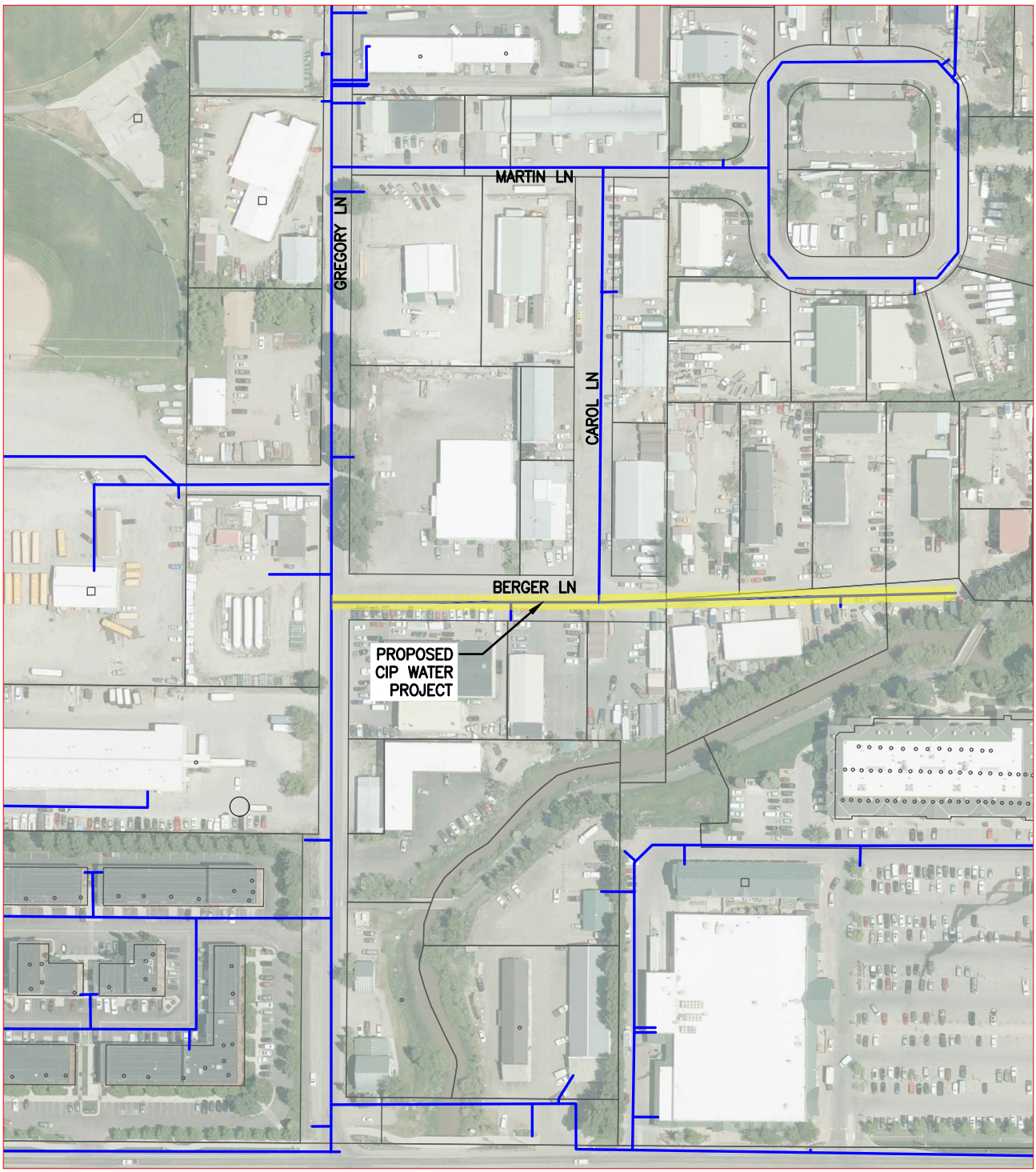
S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 15 UPPER CACHE CREEK DRIVE> - Feb 12 2020 01:30:27 pm PLOTTED BY: lagerman DWG FORMAT: 23.0





DRAWING NO: EXHIBIT 16	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT CRABTREE LN	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	SLL	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 16 CRABTREE LN> - Feb 12 2020 01:30:31 pm PLOTTED BY: lagerman DWG FORMAT: 23.0

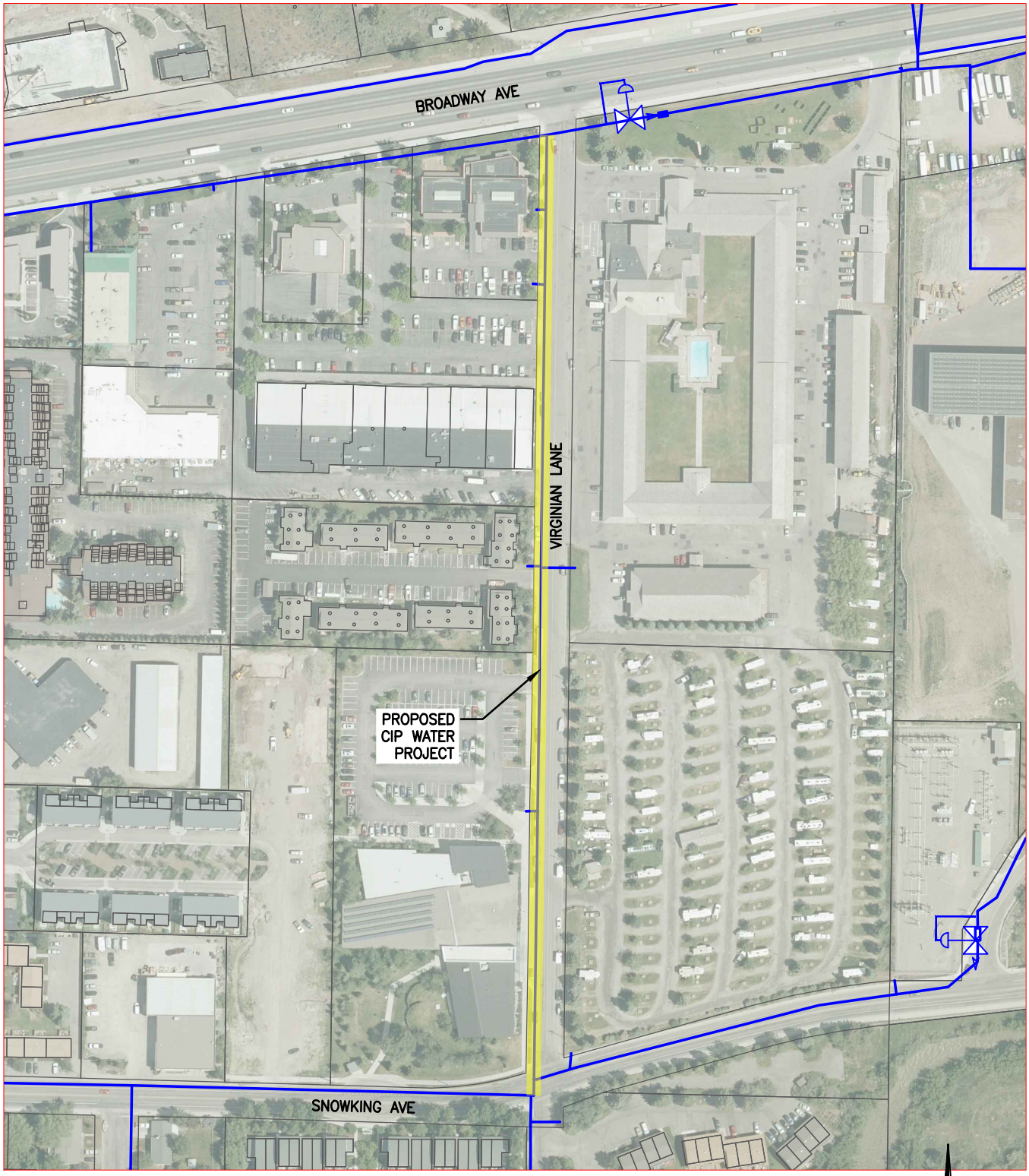


N
E

0 100 200

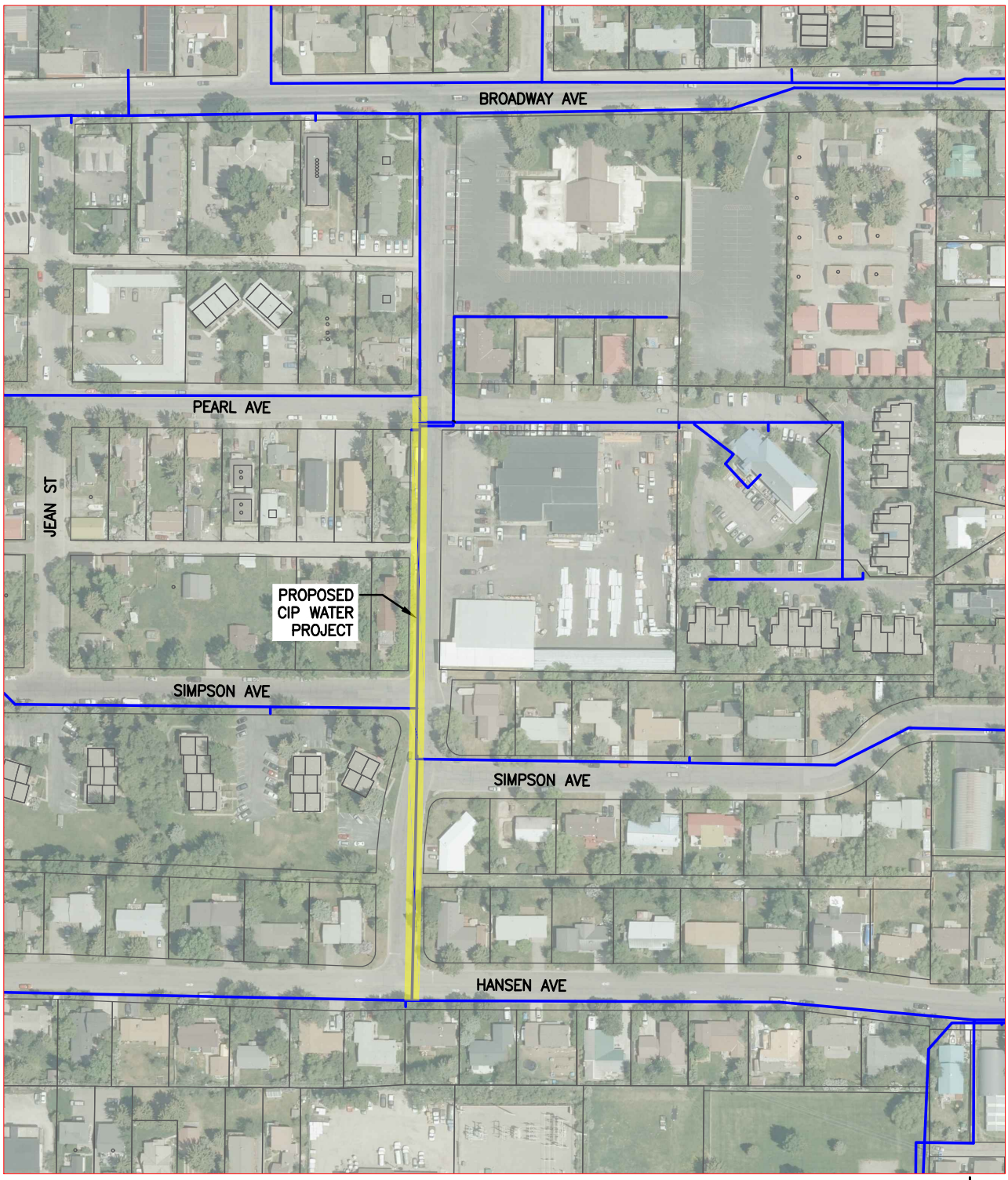
DRAWING NO: EXHIBIT 17	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT BERGER LN	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	SLL	
			CHECKED	MB	
			APPROVED	MB	

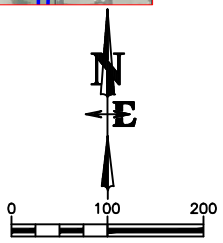
S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 17 BERGER LN> - Feb 12 2020 01:30:41 pm PLOTTED BY: tagerman DWG FORMAT: 23.0



DRAWING NO: EXHIBIT 18	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT VIRGINIAN LANE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	SLL	
			CHECKED	MB	
			APPROVED	MB	

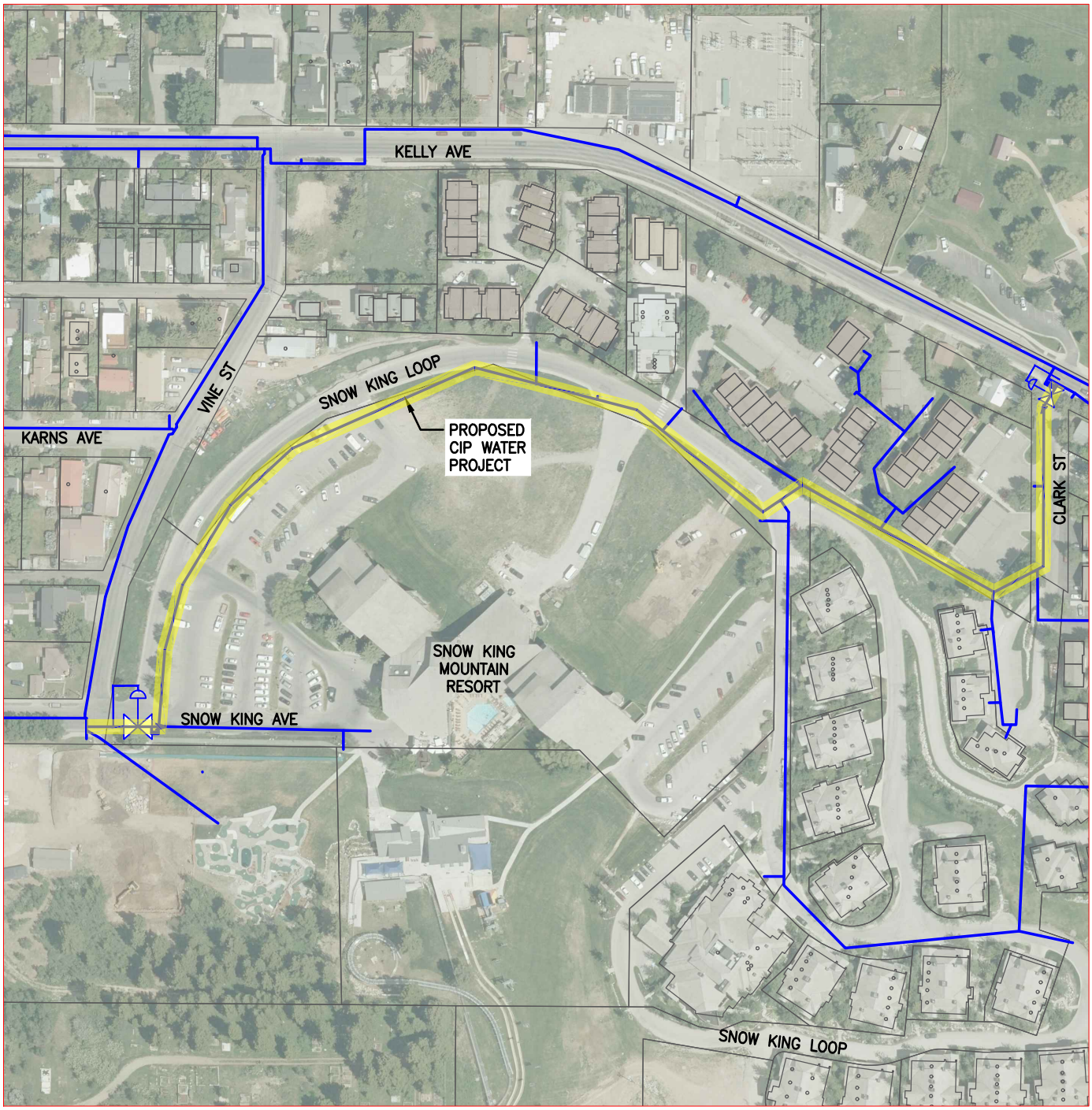
S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 18 VIRGINIAN LANE> - Feb 12 2020 03:12:33 pm PLOTTED BY: green DWG FORMAT: 23.0

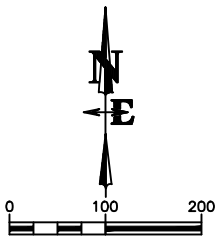




DRAWING NO **EXHIBIT 19** JOB NO 19-336-01	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT SOUTH GROS VENTRE ST	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 19 GROS VENTRE ST> - Feb 12 2020 03:21:08 pm PLOTTED BY: green DWG FORMAT: 23.0





DRAWING NO EXHIBIT 20 JOB NO 19-336-01	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED WATERLINE REPLACEMENT SNOW KING LOOP	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	1/30/2020	REV.
			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Water CIP Exhibits.dwg <EX 20 SNOW KING LOOP> - Feb 12 2020 03:34:19 pm PLOTTED BY: green DWG FORMAT: 23.0

APPENDIX E

Sewer System Inventory Logs

NELSON ENGINEERING since 1964
Professional Engineers & Land Surveyors
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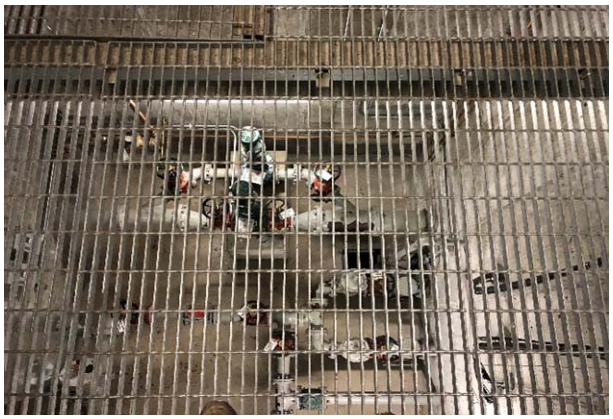
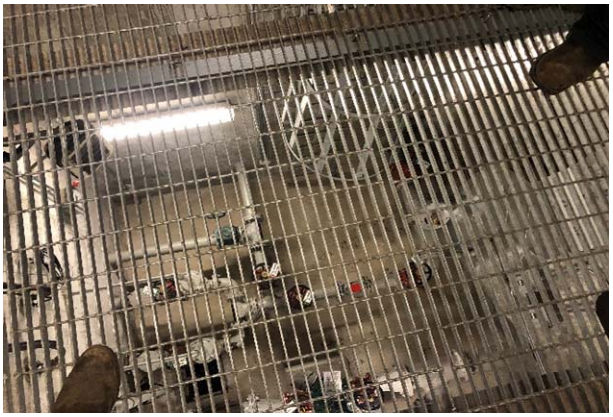
Town of Jackson Asset Evaluation
Sewer System Inventory

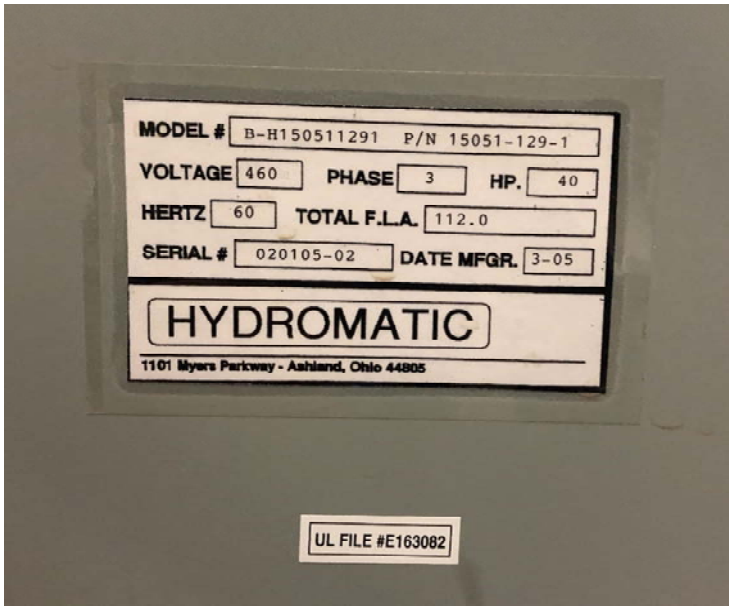
Date 11/5/2019 **Observer** MB

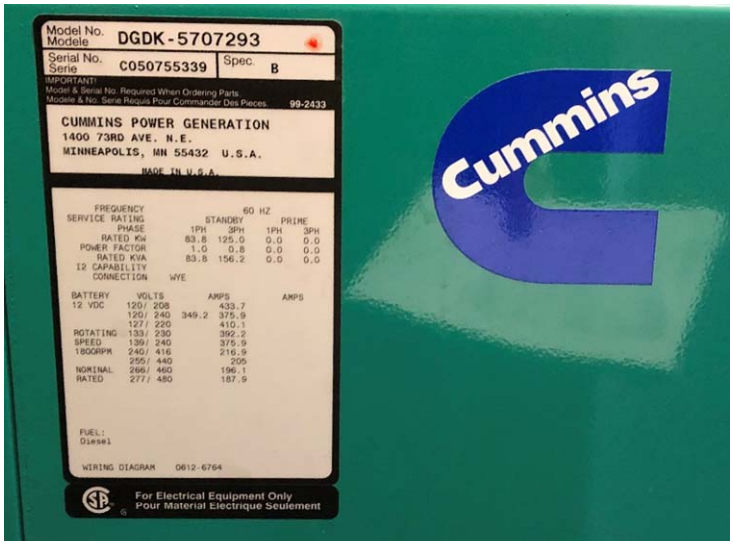
Feature	Lift Station / 3 Creek A Lift Station
Description: Building with wet and dry wells, controls above ground.	
Location	3 Creek Maintenance Yard
Model	Manufacturer: 3 phase
Flows	Range High:_____ Low:_____
Pumps	Size: 40 HP Flow Rate:
	Condition: Built in 2006, good shape
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
Large separate wet well and dry well.	
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Has a generator, pumps to be replaced in 2020. Dewatering pump needs repair. Needs to be	
connected to the SCADA system. Has grinder pumps.	
Photo Notes: See Photos	

Sketch / Additional Notes






MODEL # B-H150511291 P/N 15051-129-1
VOLTAGE 460 PHASE 3 HP. 40
HERTZ 60 TOTAL F.L.A. 112.0
SERIAL # 020105-02 DATE MFGR. 3-05
HYDROMATIC
1101 Myers Parkway - Ashland, Ohio 44805
UL FILE #E163082


Model No. Modele DGDK-5707293
Serial No. Serie C050755339 Spec. B
IMPORTANT!
Model & Serial No. Required When Ordering Parts.
Modele & No. Serie Requis Pour Commander Des Pieces. 99-2433
CUMMINS POWER GENERATION
1400 73RD AVE. N.E.
MINNEAPOLIS, MN 55432 U.S.A.
MADE IN U.S.A.
FREQUENCY 60 HZ
SERVICE RATING STANDBY PRIME
PHASE 1PH 3PH 1PH 3PH
RATED KW 83.8 125.0 0.0 0.0
POWER FACTOR 1.0 0.8 0.0 0.0
RATED KVA 83.8 156.2 0.0 0.0
I2 CAPABILITY
CONNECTION WYE
BATTERY VOLTS AMPS AMPS
12 VDC 120/ 208 433.7
120/ 240 349.2 375.9
127/ 220 410.1
ROTATING 133/ 230 392.2
SPEED 139/ 240 375.9
1800RPM 240/ 416 216.9
255/ 440 205
NOMINAL 266/ 460 196.1
RATED 277/ 480 187.9
FUEL:
Diesel
WIRING DIAGRAM 0612-6764
For Electrical Equipment Only
Pour Material Electrique Seulement
Cummins


Power Generation

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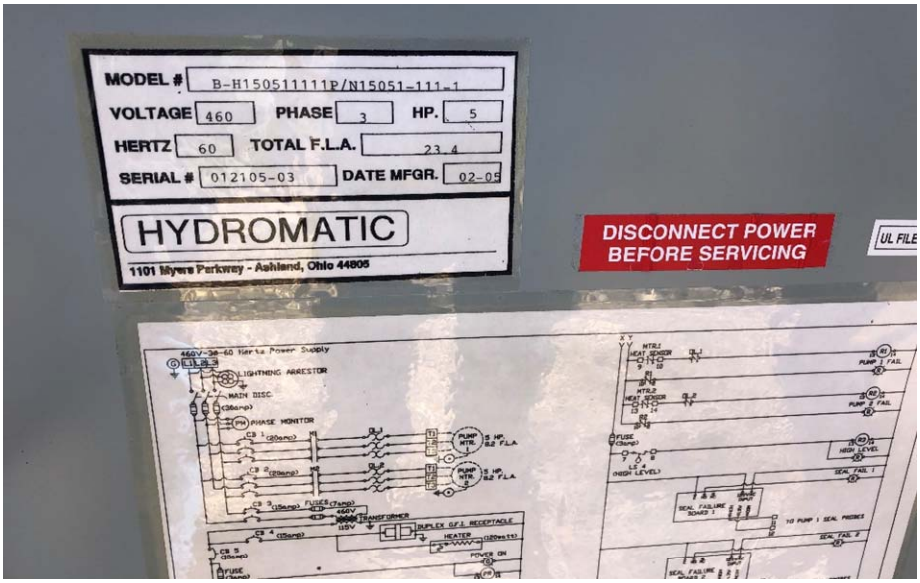
Town of Jackson Asset Evaluation
Sewer System Inventory

Date 11/5/2019 **Observer** MB

Feature	Lift Station / 3 Creek B Lift Station	
Description: Wet well lift station with piping in additional vault and H panel		
Location	3 Creek Subdivision in Teton County	
Model	Manufacturer: Hydromatic	3 phase
Flows	Range High:_____ Low:_____	
Pumps	Size: 5 HP Duplex	Flow Rate:
	Condition: Pumps are to be replaced in 2020	
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:	
Separate wet well manhole and manhole with piping.		
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years	
No generator, recieves very little flow. No dialer, needs fixed. Piping in separate		
vault is an issue.		
Photo Notes: See Photos		

Sketch / Additional Notes


MODEL # B-H150511111P/N15051-111-1
VOLTAGE 460
PHASE 3
HP. 5
HERTZ 60
TOTAL F.L.A. 23.4
SERIAL # 012105-03
DATE MFGR. 02-05
HYDROMATIC
1101 Myers Parkway - Ashland, Ohio 44805
DISCONNECT POWER BEFORE SERVICING

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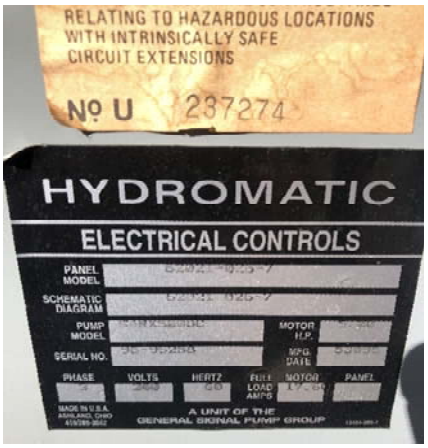
Town of Jackson Asset Evaluation
Sewer System Inventory

Date 11/5/2019 **Observer** MB

Feature	Lift Station / Berger Lane
Description: Wet well lift station with piping in additional vault and H panel	
Location	Berger Lane
Model	Manufacturer: Hydromatic 3 phase
Flows	Range High:_____ Low:_____
Pumps	Size: 5 HP Duplex Flow Rate:
	Condition: pumps and wiring to be replaced in 2020.
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
Separate wet well manhole and manhole with piping.	
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
No generator, receives very little flow. Needs replacement.	
Photo Notes: See Photos	

Sketch / Additional Notes



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Town of Jackson Asset Evaluation
Sewer System Inventory

Date 11/5/2019 **Observer** MB

Feature	Lift Station / Cottonwood Flat
Description: Wet well with a duplex package system, piping above ground in shelter	
Location	Cottonwood Flat
Model	Manufacturer: Gorman Rupp 3 phase
Flows	Range High:_____ Low:_____
Pumps	Size:6.2 HP Duplex Flow Rate:
	Condition: pumps and wiring to be replaced in 2019 with Homa Pumps.
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
Large wet well with generator and davit crane. Built in 2010.	
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Pumps are new, system is not 10 years old.	
Photo Notes: See Photos	

Sketch / Additional Notes

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Town of Jackson Asset Evaluation
Sewer System Inventory

Date 11/5/2019 **Observer** MB

Feature	Lift Station / Cottonwood Park
Description: Wet well with a duplex package system, piping above ground in shelter	
Location	Cottonwood Park
Model	Manufacturer: Gorman Rupp 3 phase
Flows	Range High:_____ Low:_____
Pumps	Size:6.2 HP Duplex Flow Rate:
	Condition: pumps and wiring to be replaced in 2019 with Homa Pumps.
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
Large wet well with generator and davit crane. Built in 2010.	
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Pumps are new, system is not 10 years old.	
Photo Notes: See Photos	

Sketch / Additional Notes


HOMA
PUMP 1
Install: 8/20/19
AMX446-240/6.2T/C FM
Model Number
6.2
Horsepower
394695
Pump Serial Number
460
Voltage
9
FL Amps
For assistance contact your local HOMA Pump dealer:
APE
Dealer Name
Phone
HOMA
PUMP 2
Install: 8/26/19
AMX446-240/6.2T/C FM
Model Number
6.2
Horsepower
394696
Pump Serial Number
460
Voltage
9
FL Amps
For assistance contact your local HOMA Pump dealer:
APE
Dealer Name
Phone

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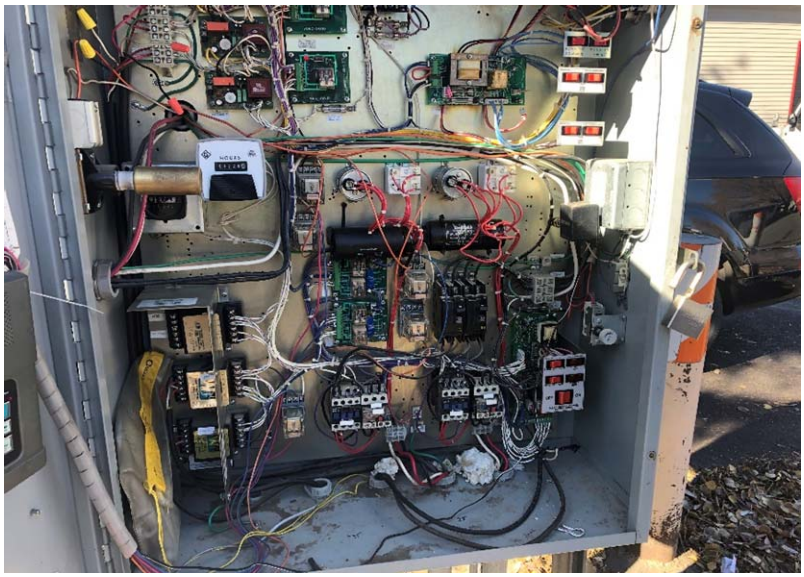
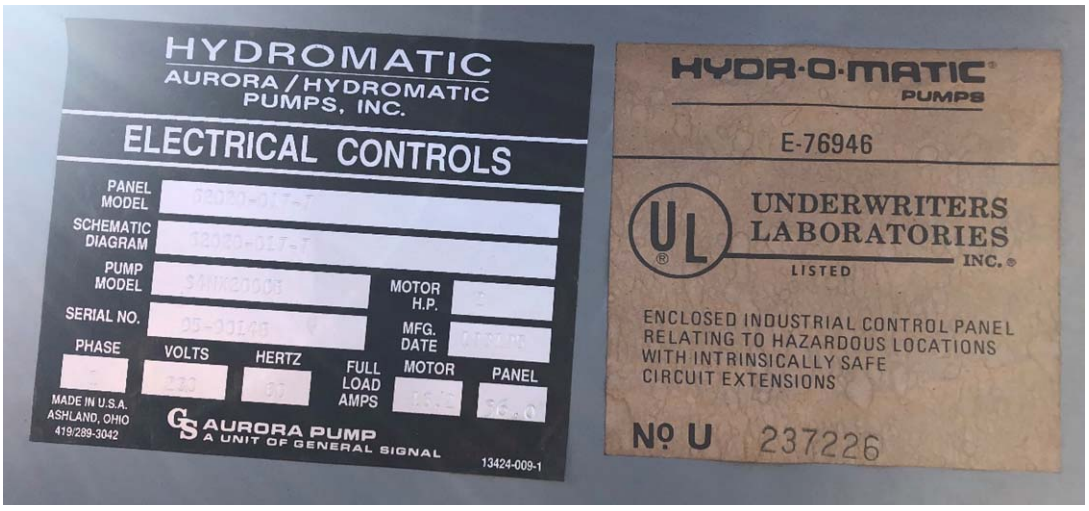
Town of Jackson Asset Evaluation
Sewer System Inventory

Date 11/5/2019 **Observer** MB

Feature	Lift Station / Martin Lane
Description: Wet well lift station with piping in additional vault and H panel	
Location	Martin Lane
Model	Manufacturer: Hydromatic 1 phase
Flows	Range High:_____ Low:_____
Pumps	Size: 2 HP Duplex Flow Rate:
	Condition: pumps and wiring to be replaced in 2020.
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
Separate wet well manhole and manhole with piping.	
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
No generator, receives very little flow. Needs replacement.	
Vault is an issue.	
Photo Notes: See Photos	

Sketch / Additional Notes




HYDROMATIC
AURORA / HYDROMATIC
PUMPS, INC.
ELECTRICAL CONTROLS
PANEL MODEL
SCHEMATIC DIAGRAM
PUMP MODEL
SERIAL NO.
MOTOR H.P.
MFG. DATE
PHASE
VOLTS
HERTZ
FULL LOAD AMPS
MOTOR
PANEL
MADE IN U.S.A.
ASHLAND, OHIO
419/289-3042
AURORA PUMP
A UNIT OF GENERAL SIGNAL
13424-009-1
HYDR-O-MATIC
PUMPS
E-76946
UNDERWRITERS LABORATORIES INC.
LISTED
ENCLOSED INDUSTRIAL CONTROL PANEL
RELATING TO HAZARDOUS LOCATIONS
WITH INTRINSICALLY SAFE
CIRCUIT EXTENSIONS
Nº U 237226

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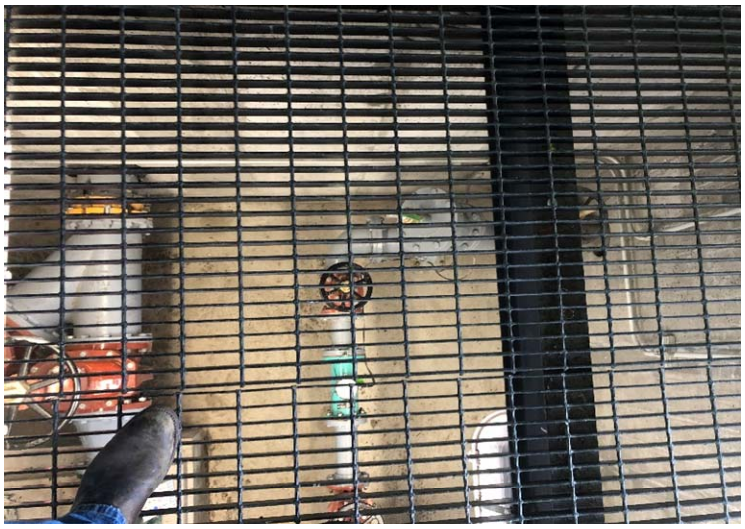
Town of Jackson Asset Evaluation
Sewer System Inventory

Date 11/5/2019 **Observer** MB

Feature	Lift Station / Spring Gulch
Description:	Building with wet and dry wells, controls above ground.
Location	Spring Gulch and Highway 22
Model	Manufacturer: 3 phase
Flows	Range High:_____ Low:_____
Pumps	Size: Flow Rate:
	Condition: Built in 2018, good shape
Wet Well	MH / Vault / Cover / Collar / Riser / Valve Box / Marker Post / Notes:
	Large separate wet well and dry well.
Needed Repairs	Service Life Remaining: 0 / 1-10 / 10-20 / 20+ years
Has a generator, only lift station on SCADA. Grinder pumps and generator. Brand new system.	
Photo Notes: See Photos	

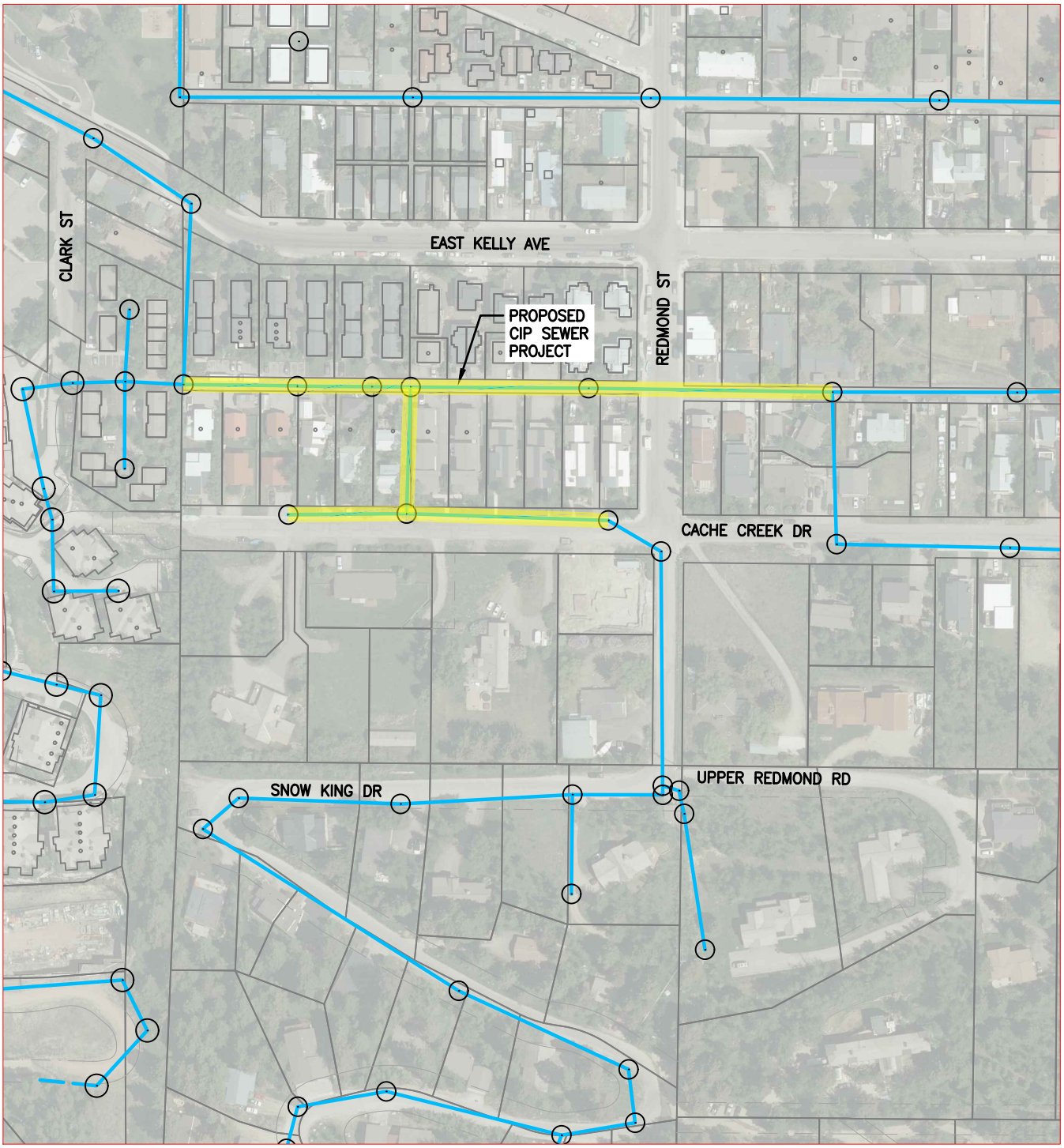
Sketch / Additional Notes

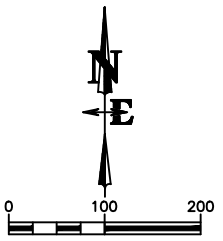



Model No. DSGAB – 1806105
Modèle
Serial No. C180339642
Série
Spec M
IMPORTANT!
Model & Serial No. Required When Ordering Parts.
Modèle & No. Serie Requis Pour Commander Des Pièces.
99-2433
CUMMINS POWER GENERATION
1400 73RD AVE. N.E.
MINNEAPOLIS, MN 55432 U.S.A.
MADE IN U.S.A.
FREQUENCY 60 HZ
SERVICE RATING STANDBY PRIME
PHASE 1PH 3PH 1PH 3PH
RATED KW 125.0 125.0 0.0 0.0
POWER FACTOR 1.0 0.8 0.0 0.0
RATED KVA 125.0 156.2 0.0 0.0
I2 CAPABILITY 8pct
CONNECTION WYE
BATTERY VOLTS AMPS AMPS
12 VDC 120/ 208 433.7
120/ 240 520.8 375.9
127/ 220 410.1
ROTATING 133/ 230 392.2
SPEED 139/ 240 375.9
1800RPM 240/ 416 216.9
240/ 480 260.4
NOMINAL 255/ 440 205
RATED 266/ 460 196.1
277/ 480 187.9
INSUL:
CLASS H
AMB 40C
FUEL: MAX FLOW
Diesel 106 L/hr (28 gal/hr)
WIRING DIAGRAM

APPENDIX F

Sewer Project Exhibits





DRAWING NO **EXHIBIT 1** JOB NO 19-336-01	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT WEST CACHE CREEK DRIVE	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
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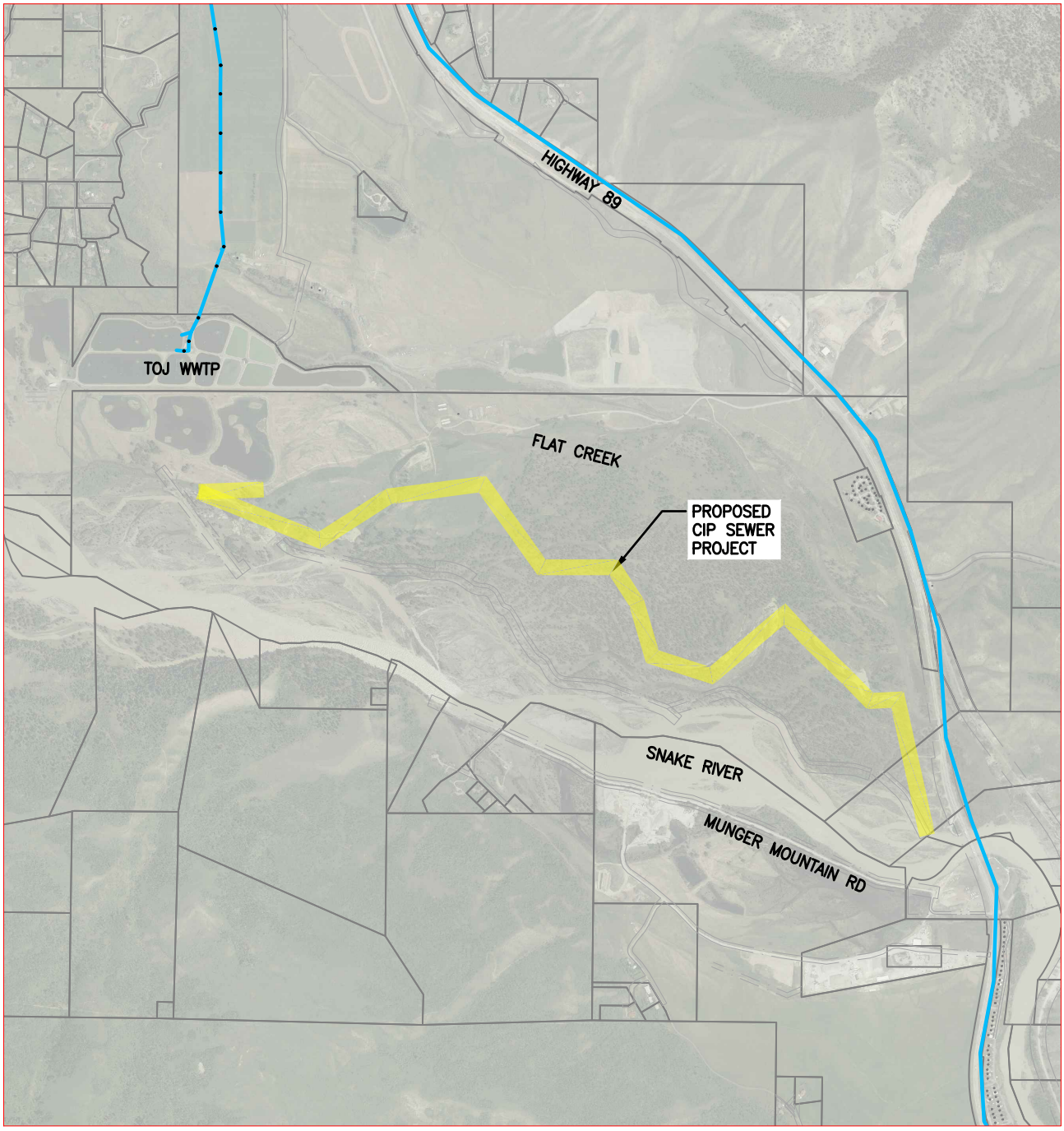
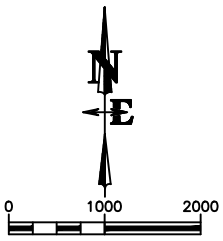
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	





DRAWING NO: EXHIBIT 2	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT WWTP WETLAND UPGRADES	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

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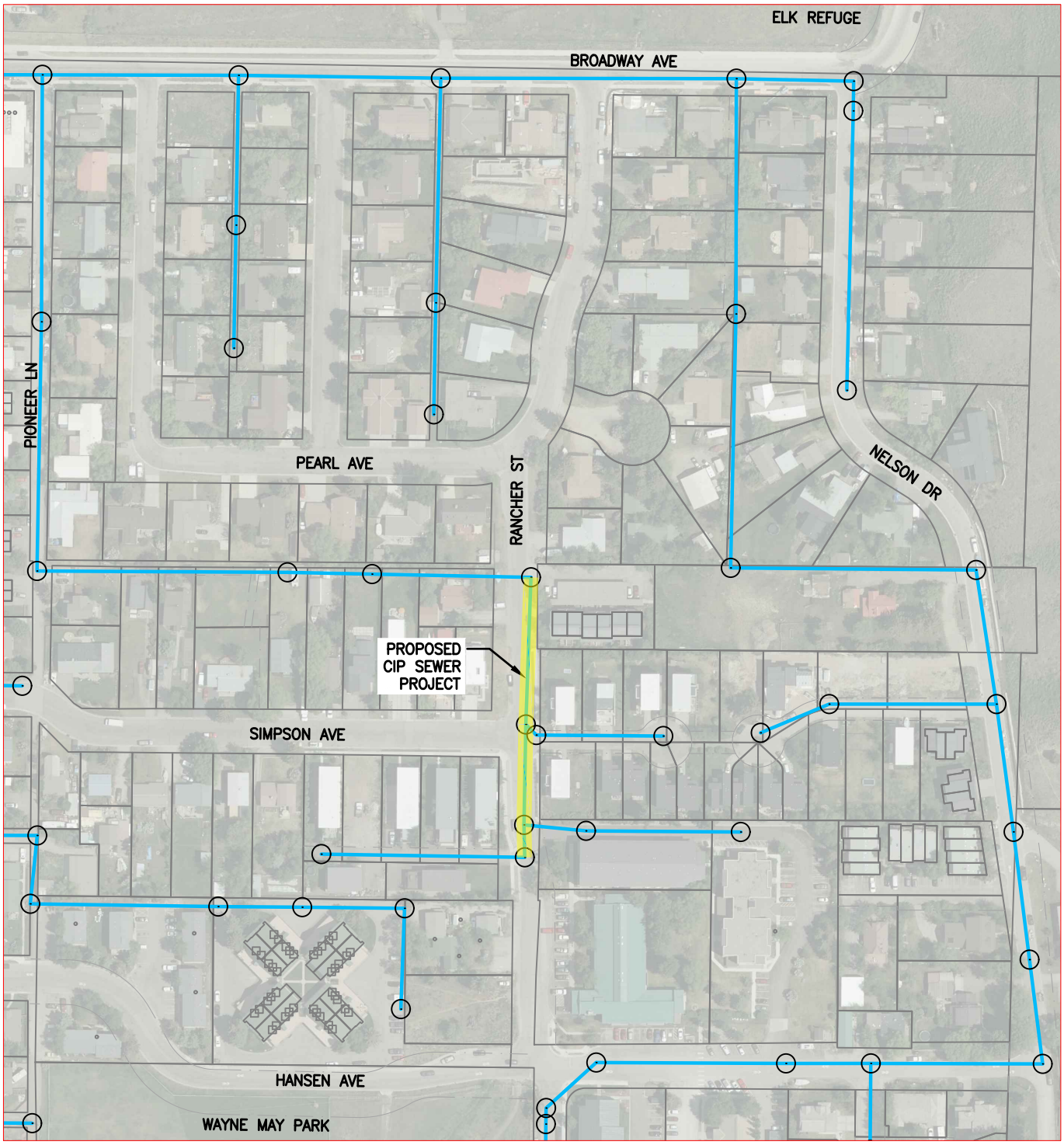

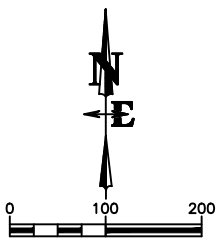

DRAWING NO **EXHIBIT 3**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT RANCHER STREET	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	-	
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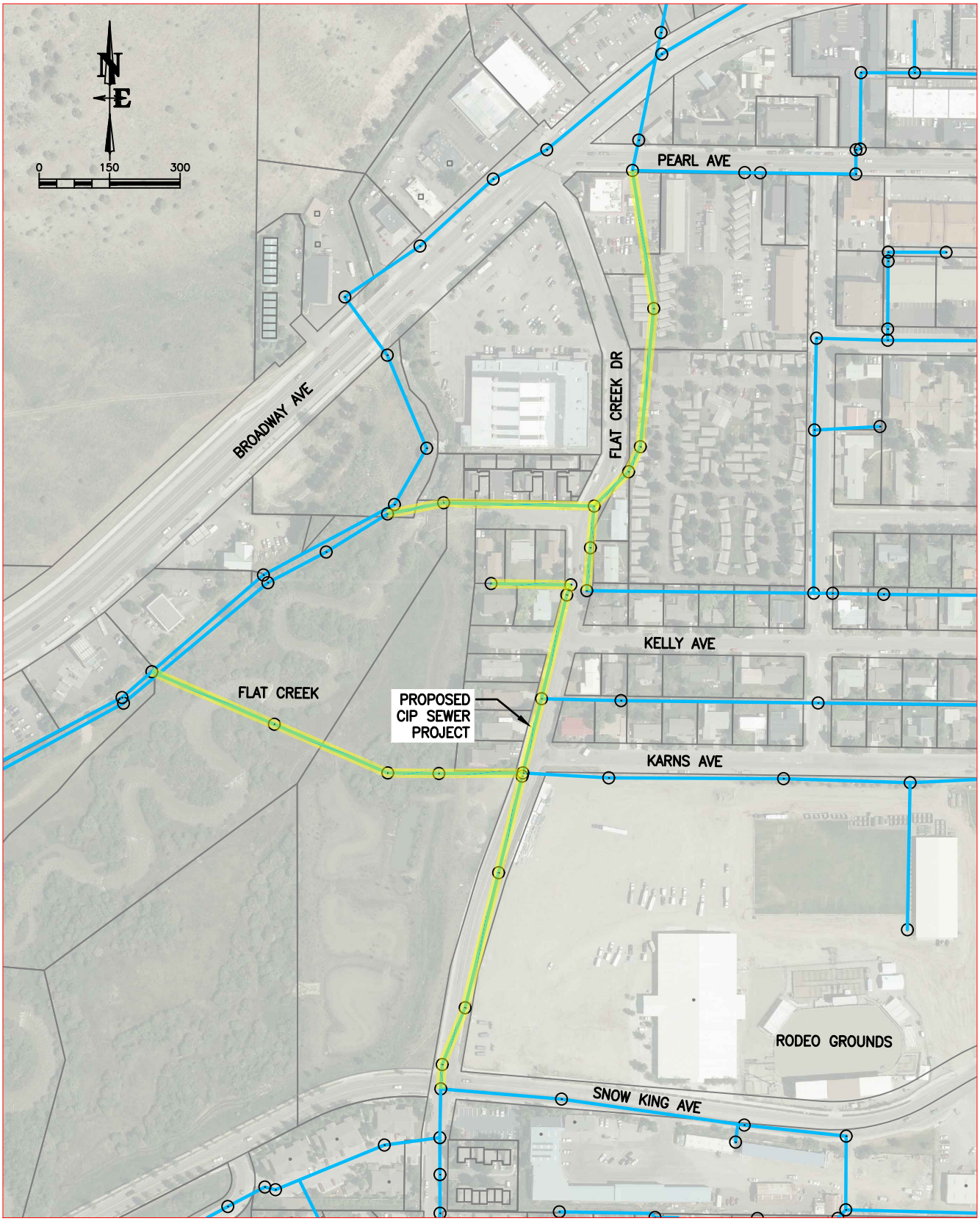
			CHECKED	MB	
			APPROVED	MB	



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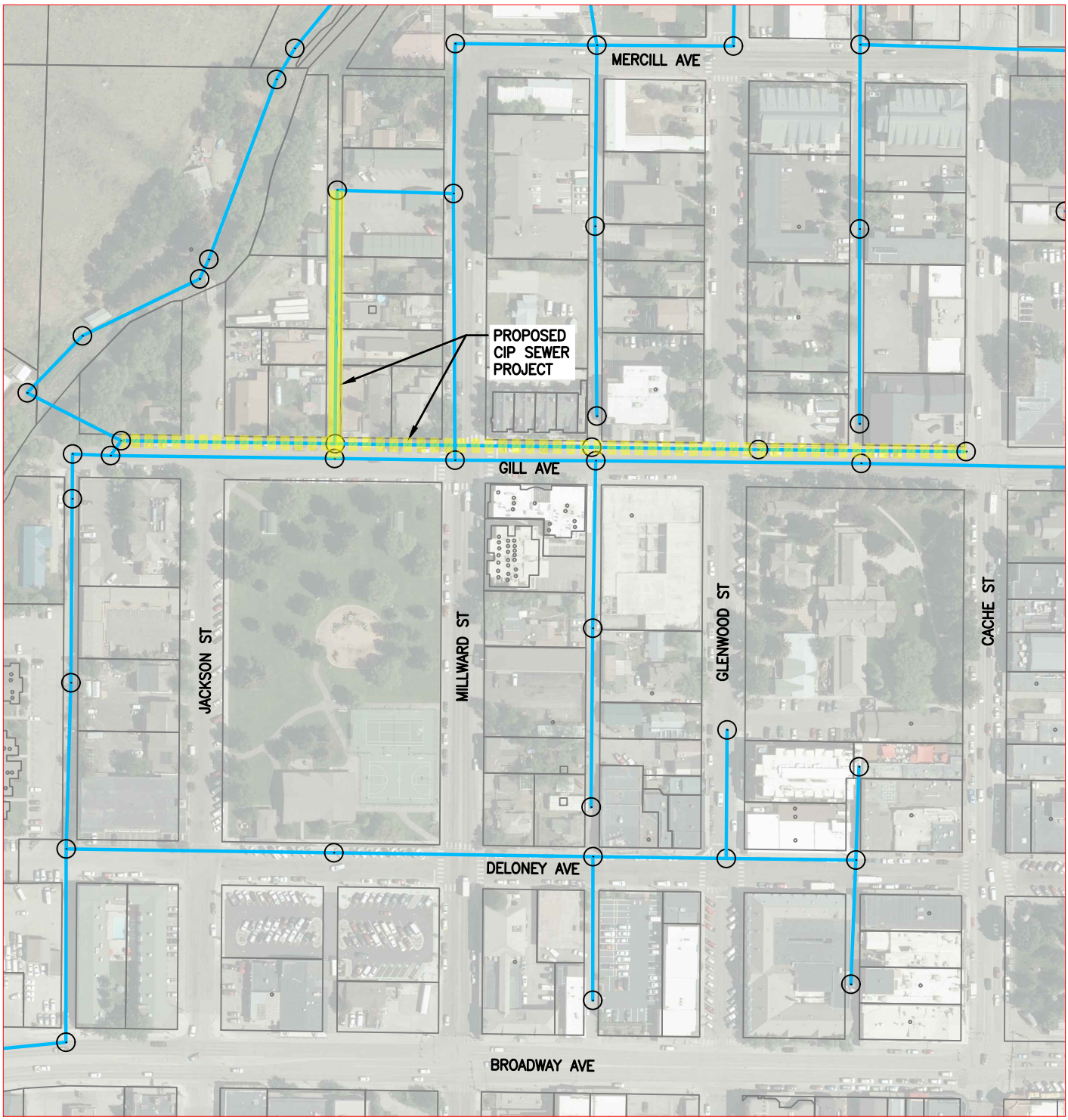
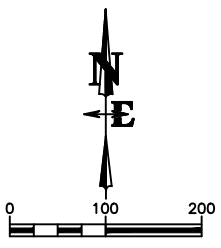
DRAWING NO: EXHIBIT 4	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT FLAT CREEK	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	





DRAWING NO **EXHIBIT 5**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT & ABANDONMENT – GILL AVENUE	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	–	
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			CHECKED	MB	
			APPROVED	MB	

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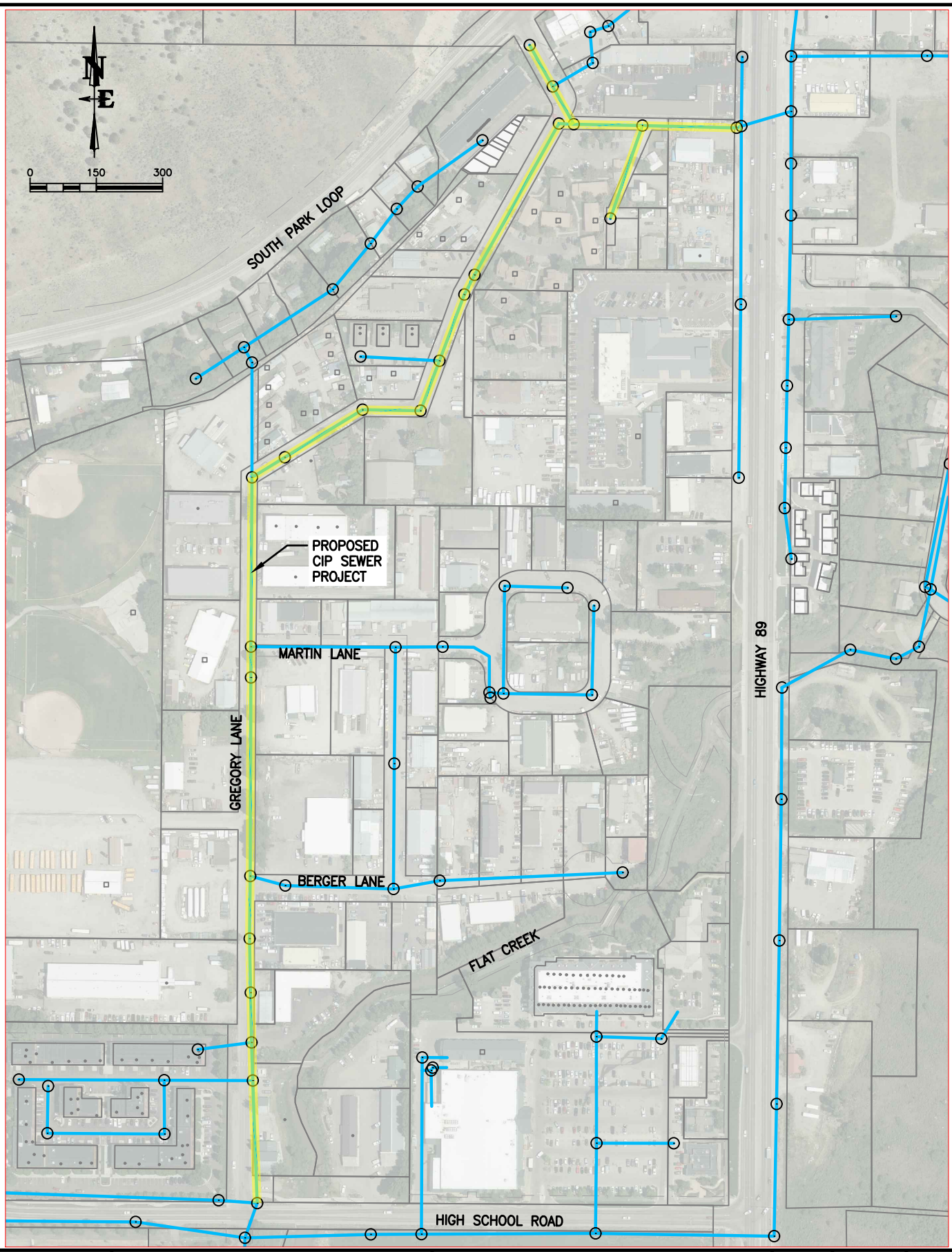

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DRAWING NO: EXHIBIT 6	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT GREGORY LANE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
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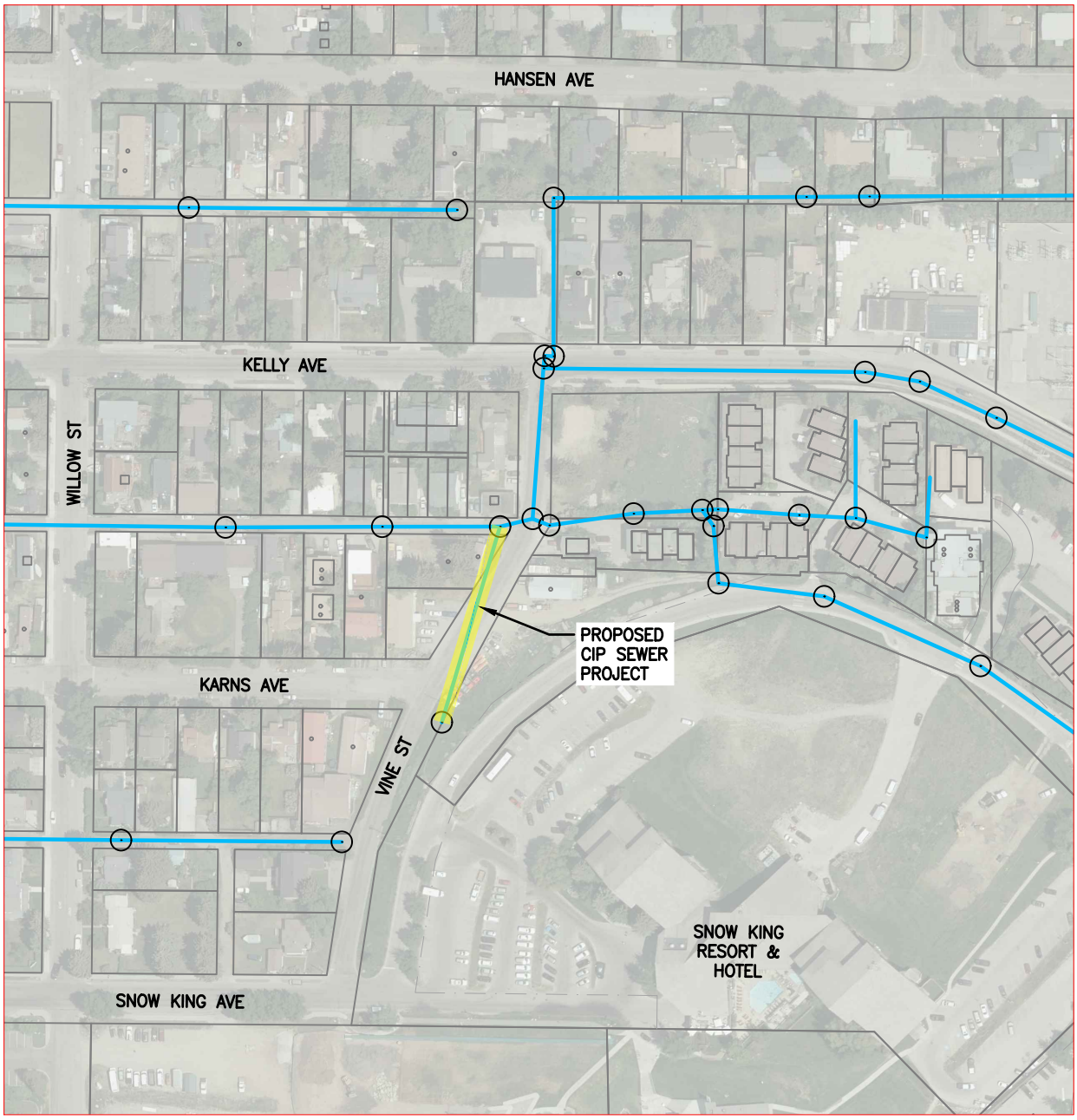

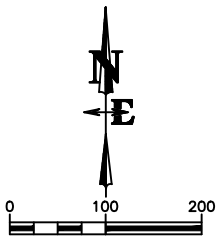

DRAWING NO: EXHIBIT 7	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT VINE STREET	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
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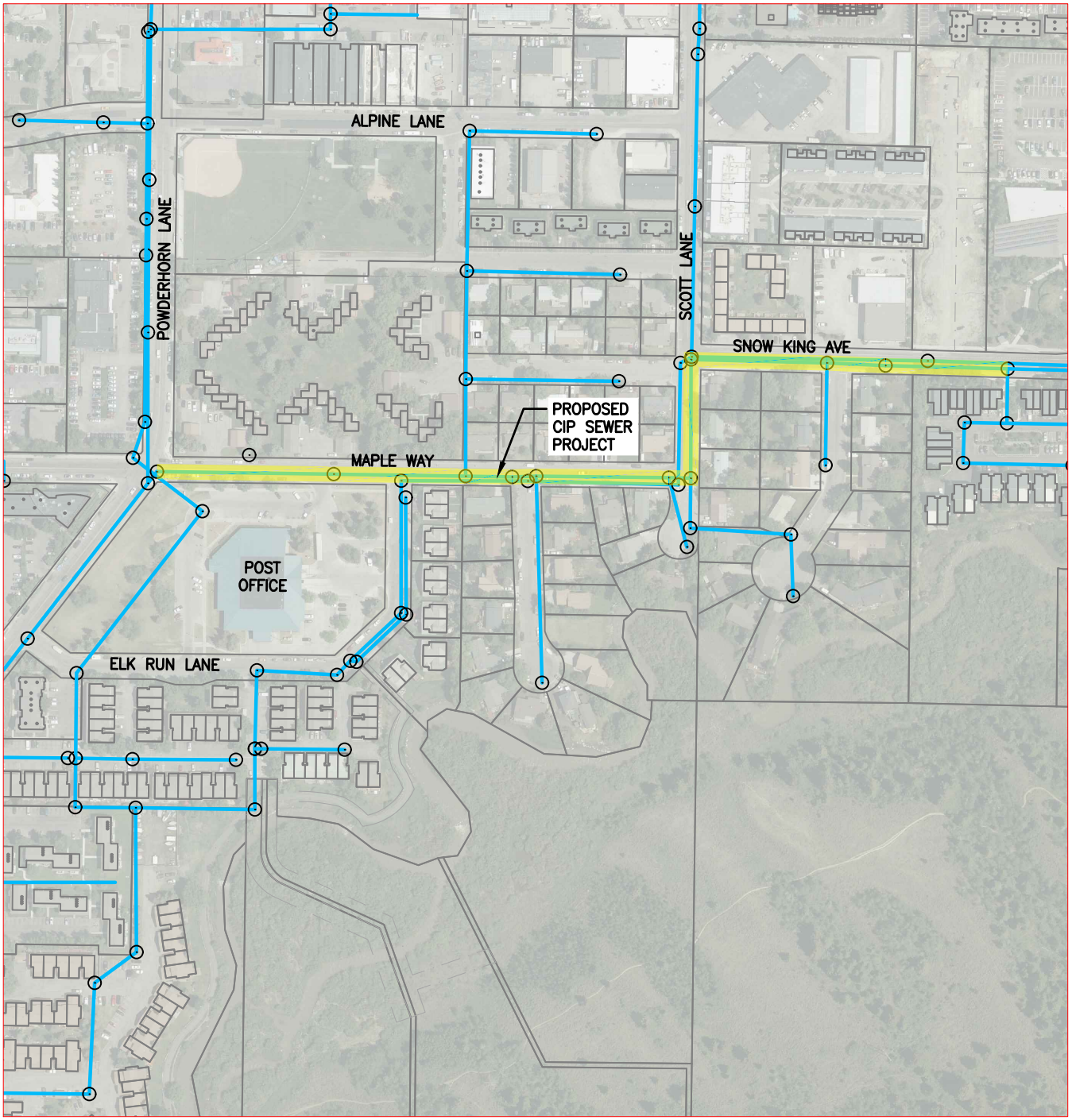

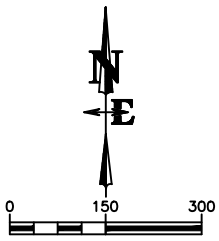

DRAWING NO **EXHIBIT 8**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT SNOW KING AVENUE & MAPLE WAY	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

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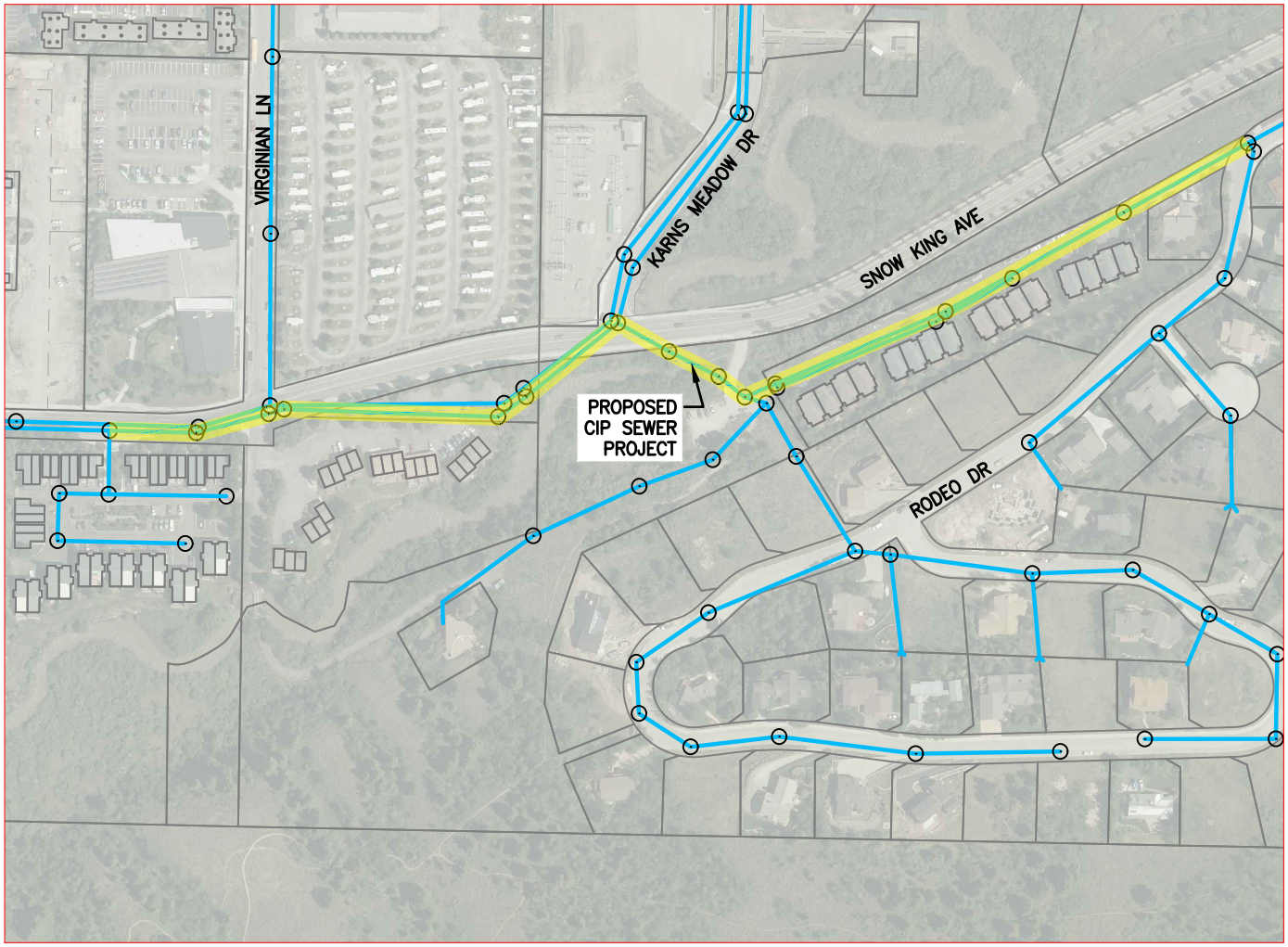

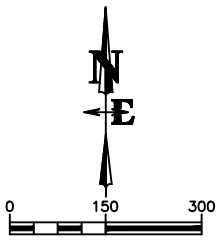

DRAWING NO **EXHIBIT 9** JOB NO 19-336-01	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT HILLSIDE TOWNHOME & SNOW KING AVE.	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

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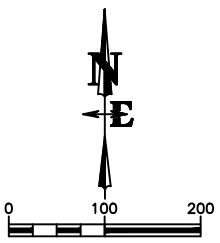
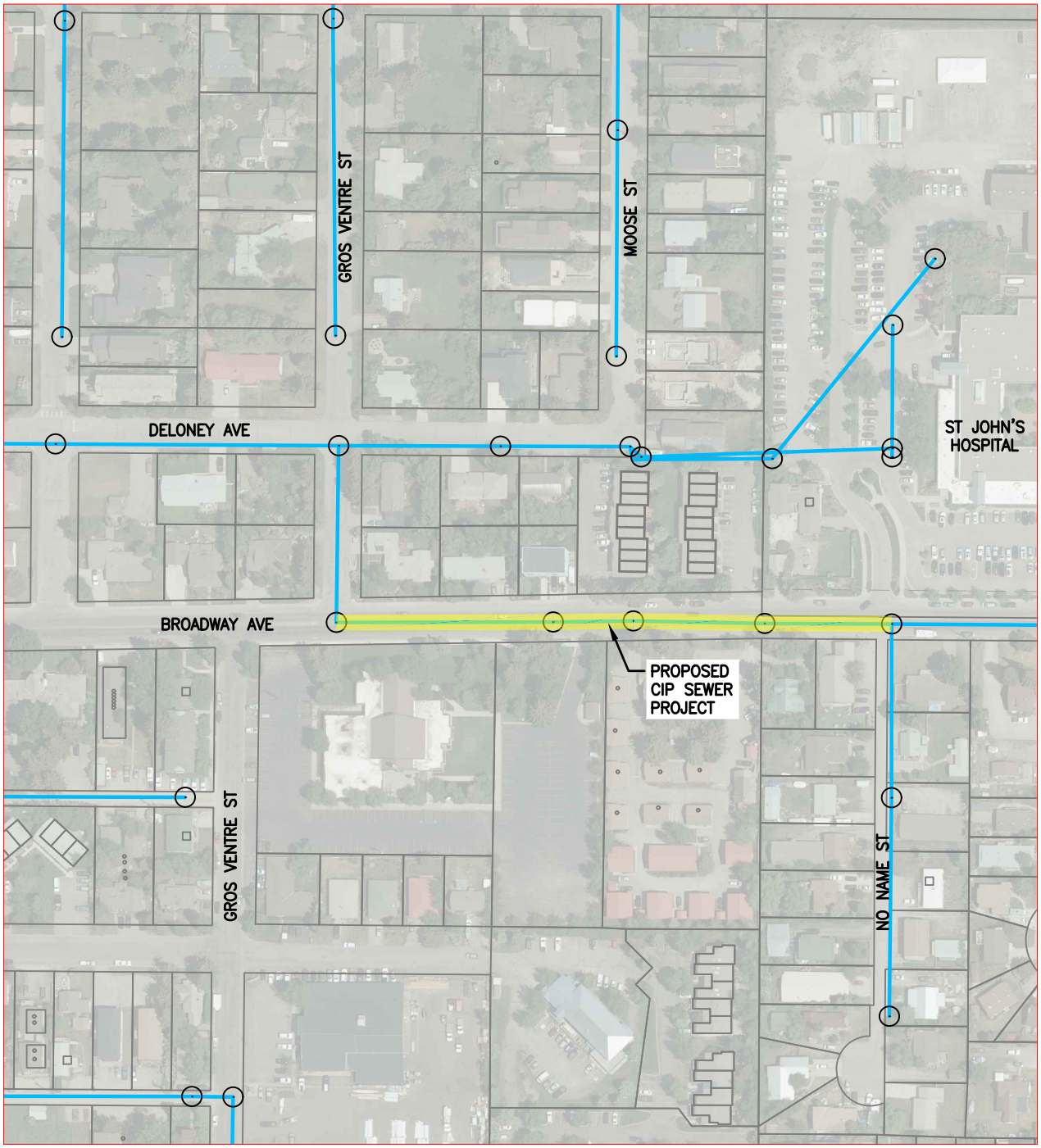
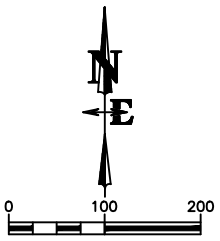


DRAWING NO **EXHIBIT 10** JOB NO 19-336-01	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT HALPIN PROPERTY	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Sewer CIP Exhibits.dwg <EX.10 HALPIN PROPERTY> - Feb 13 2020 09:05:08 am PLOTTED BY: green DWG FORMAT: 23.0





DRAWING NO: EXHIBIT 11	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT EAST BROADWAY AVE	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
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			CHECKED	MB	
			APPROVED	MB	

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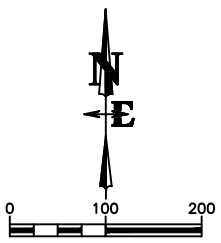

DRAWING NO **EXHIBIT 12**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT LES JONES ALLEY	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

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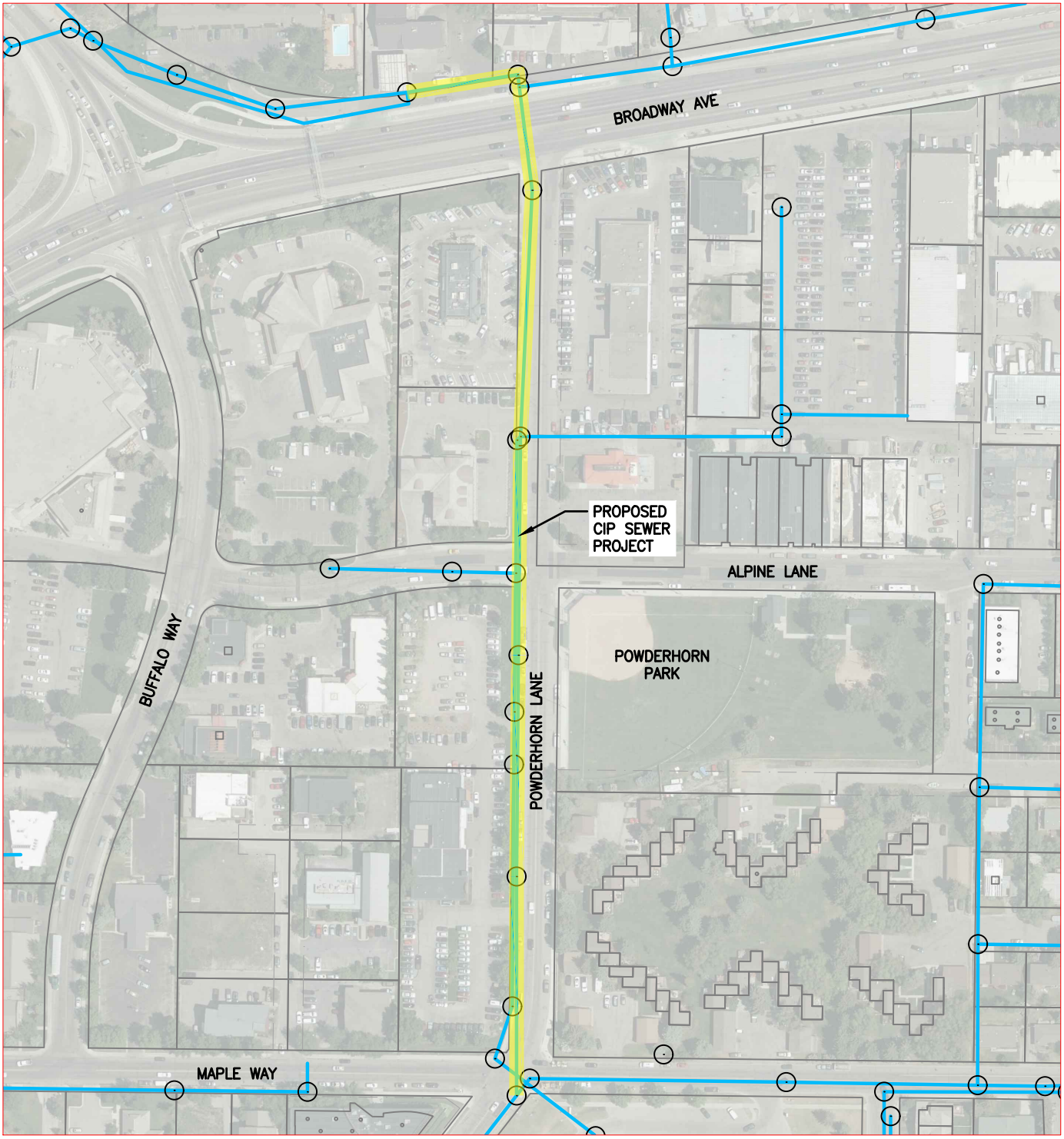
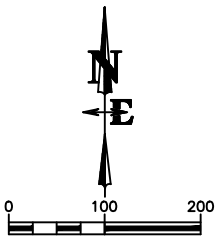
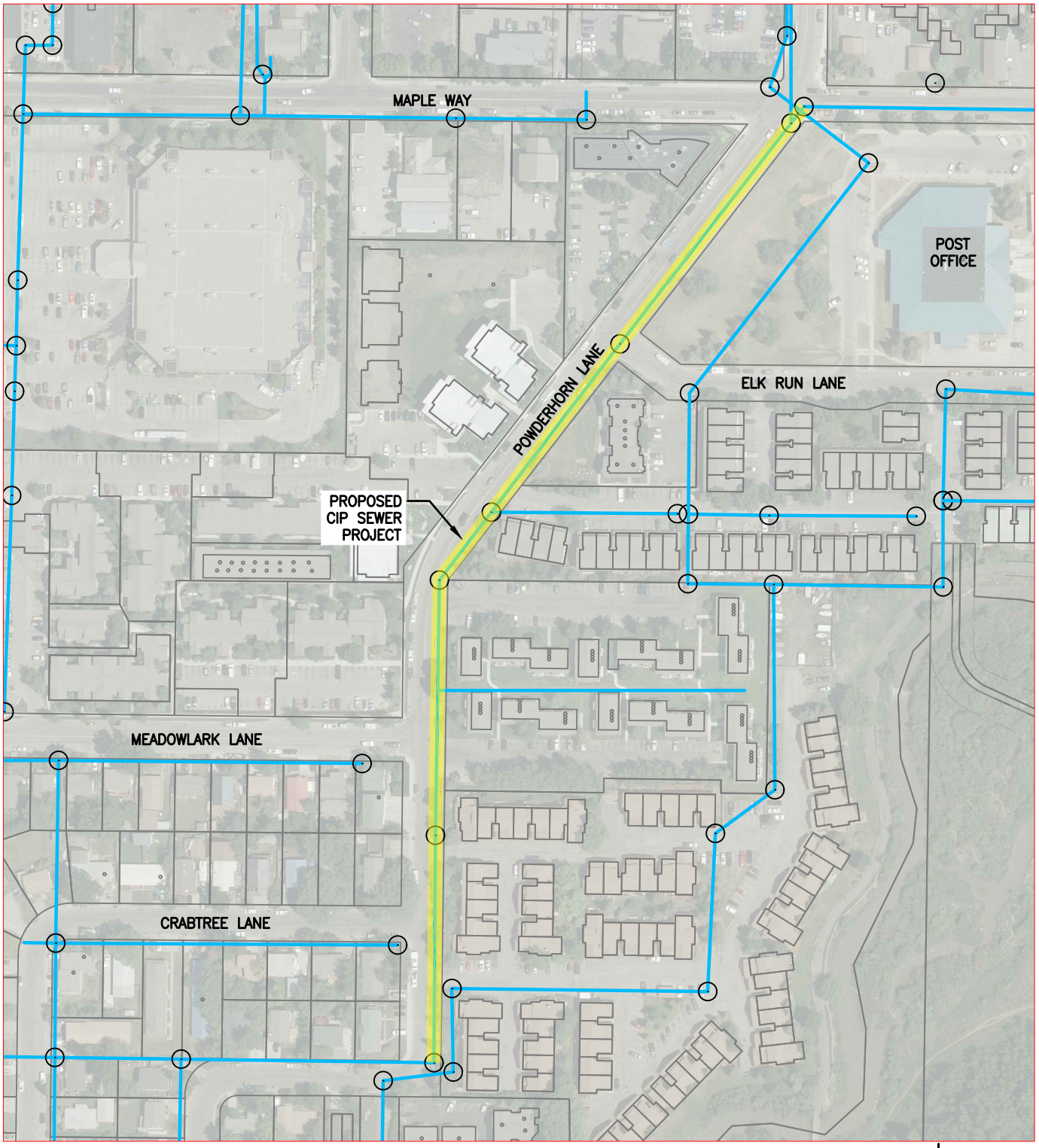




DRAWING NO: EXHIBIT 13	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT POWDER HORN LANE PHASE 1	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Sewer CIP Exhibits.dwg <EX.13-PDWDERHORN LANE PHASE 1> - Feb 13 2020 09:05:23 am PLOTTED BY: green DWG FORMAT: 23.0



DRAWING NO: EXHIBIT 14	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT POWDER HORN LANE SOUTH	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
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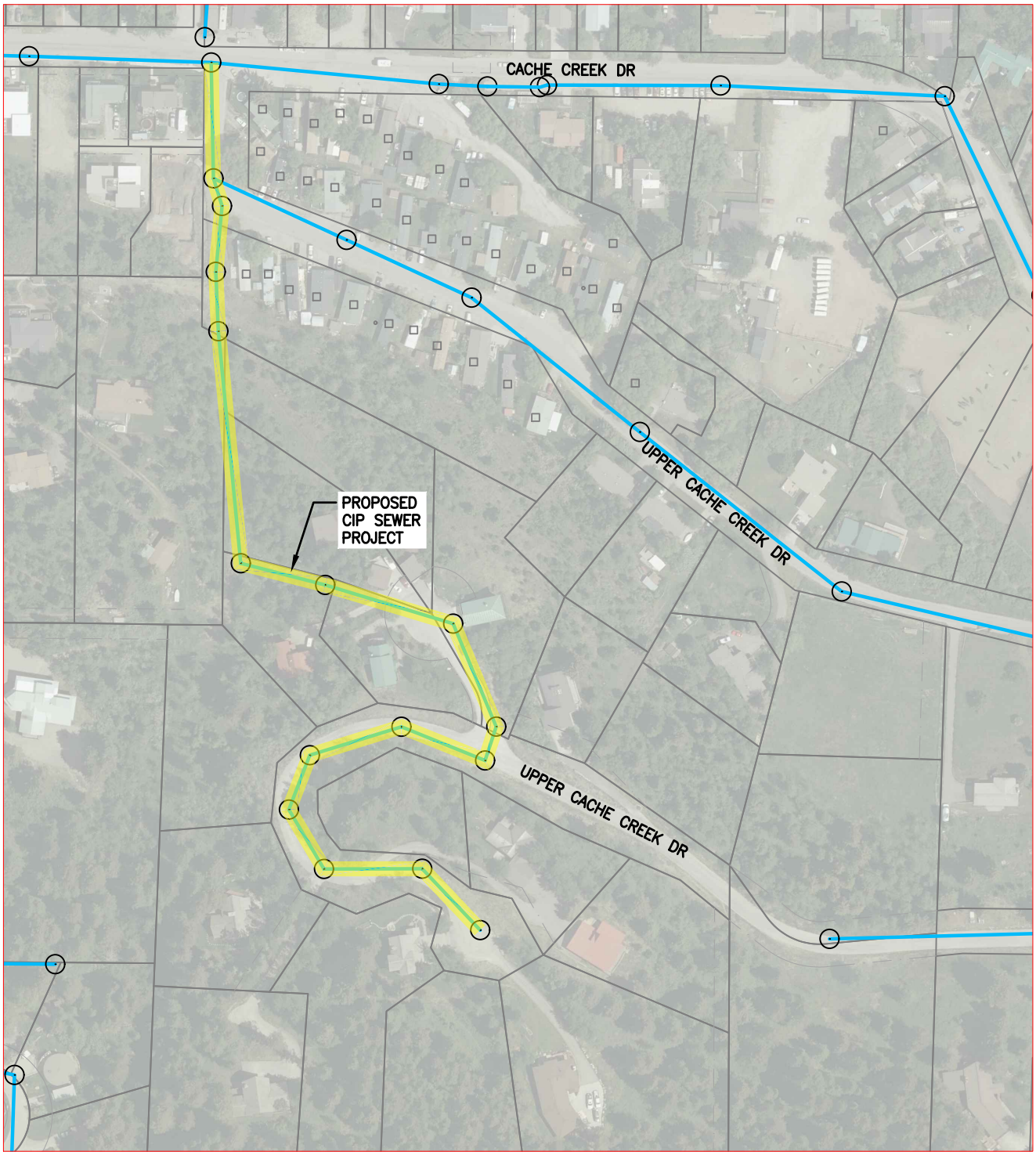

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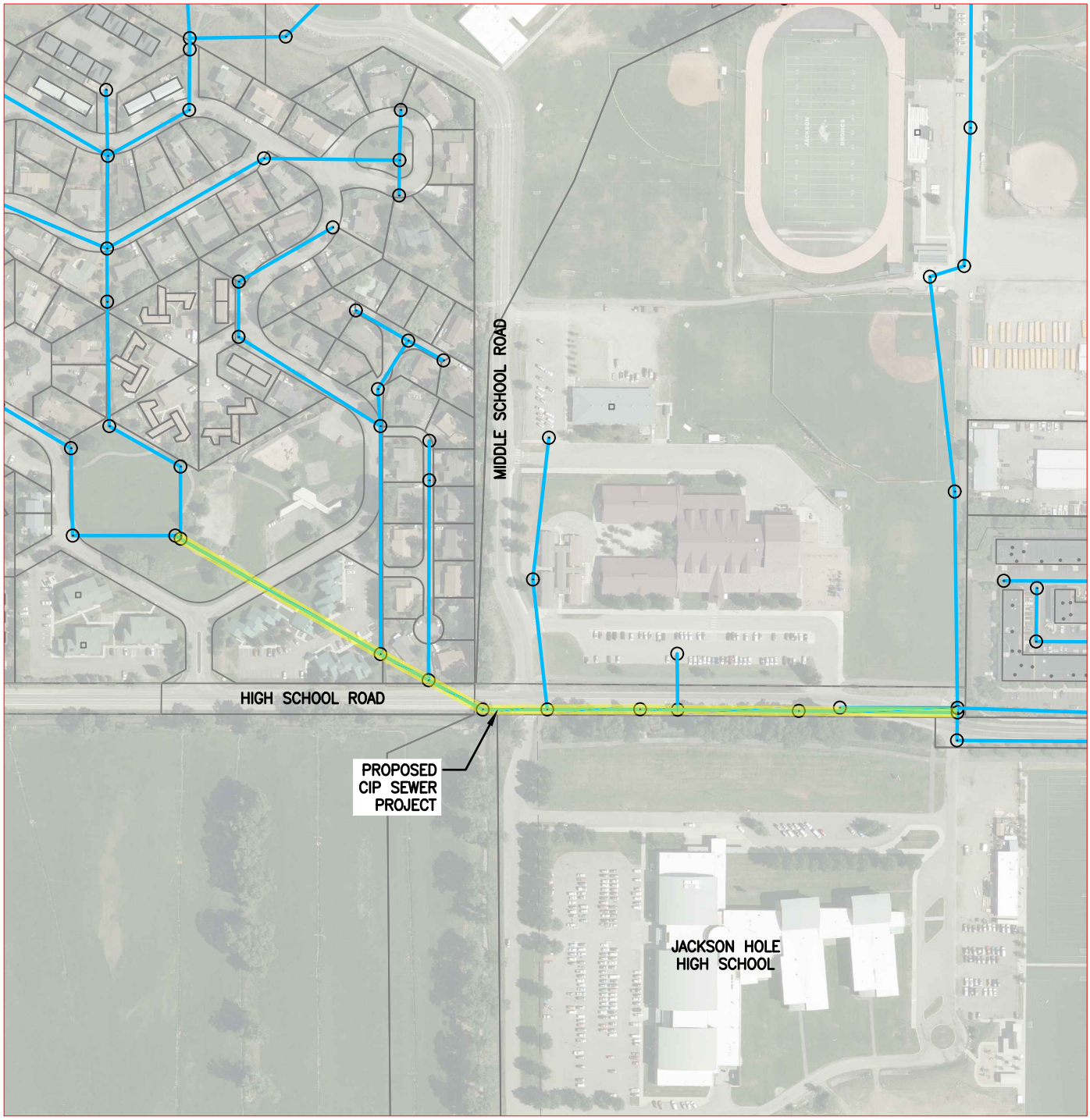
0 100 200

DRAWING NO **EXHIBIT 15**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT UPPER CACHE CREEK DRIVE	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Sewer CIP Exhibits.dwg <EX.15-UPPER CACHE CREEK DR> - Feb 13 2020 09:05:33 am PLOTTED BY: green DWG FORMAT: 23.0



DRAWING NO: **EXHIBIT 16**	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT COTTONWOOD PARK/HIGH SCHOOL RD	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
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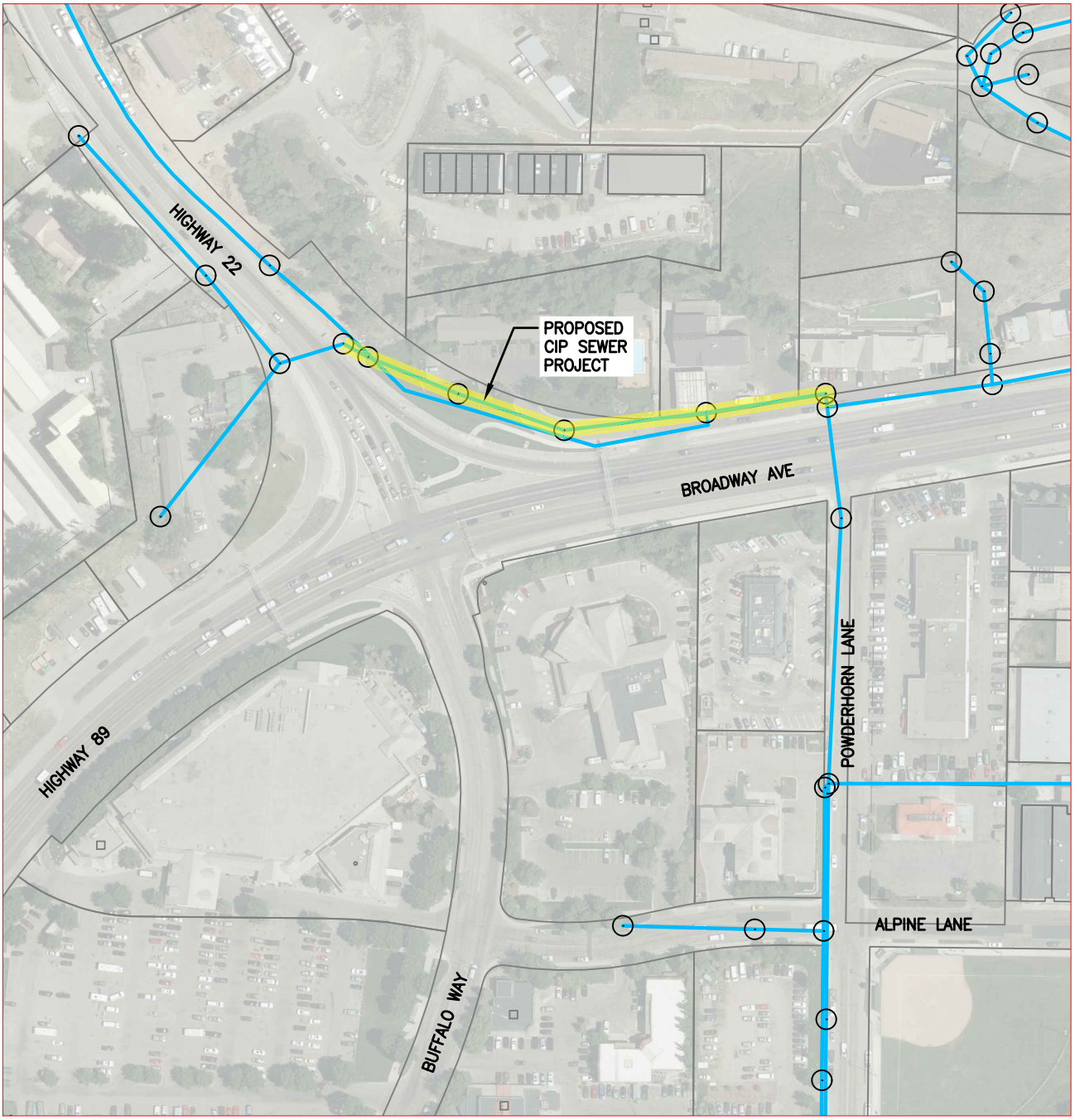
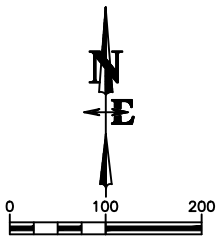
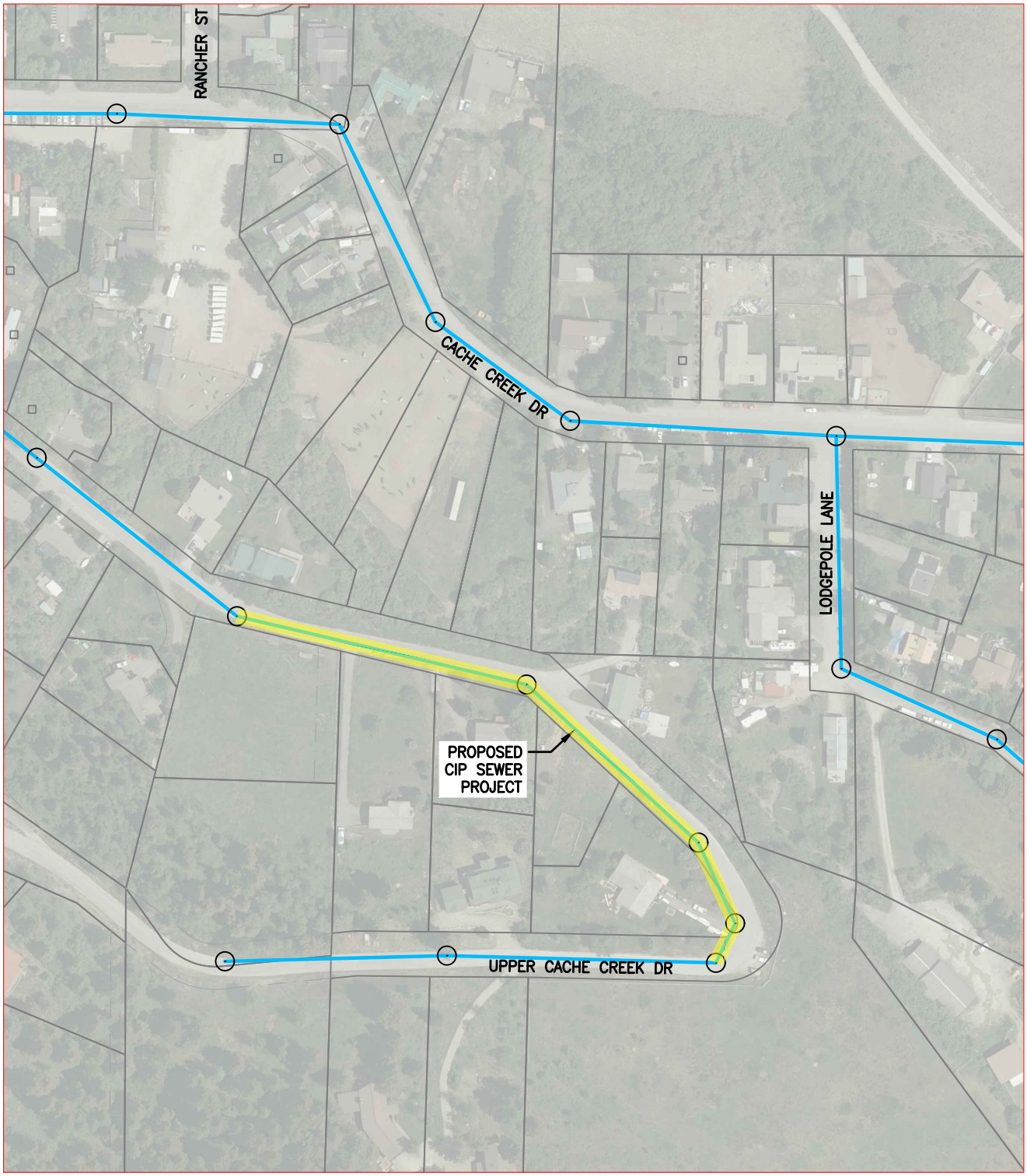
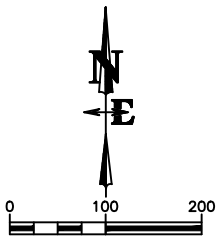




DRAWING NO **EXHIBIT 17**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT BROADWAY AVE – ANIMAL HOSPITAL	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	–	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

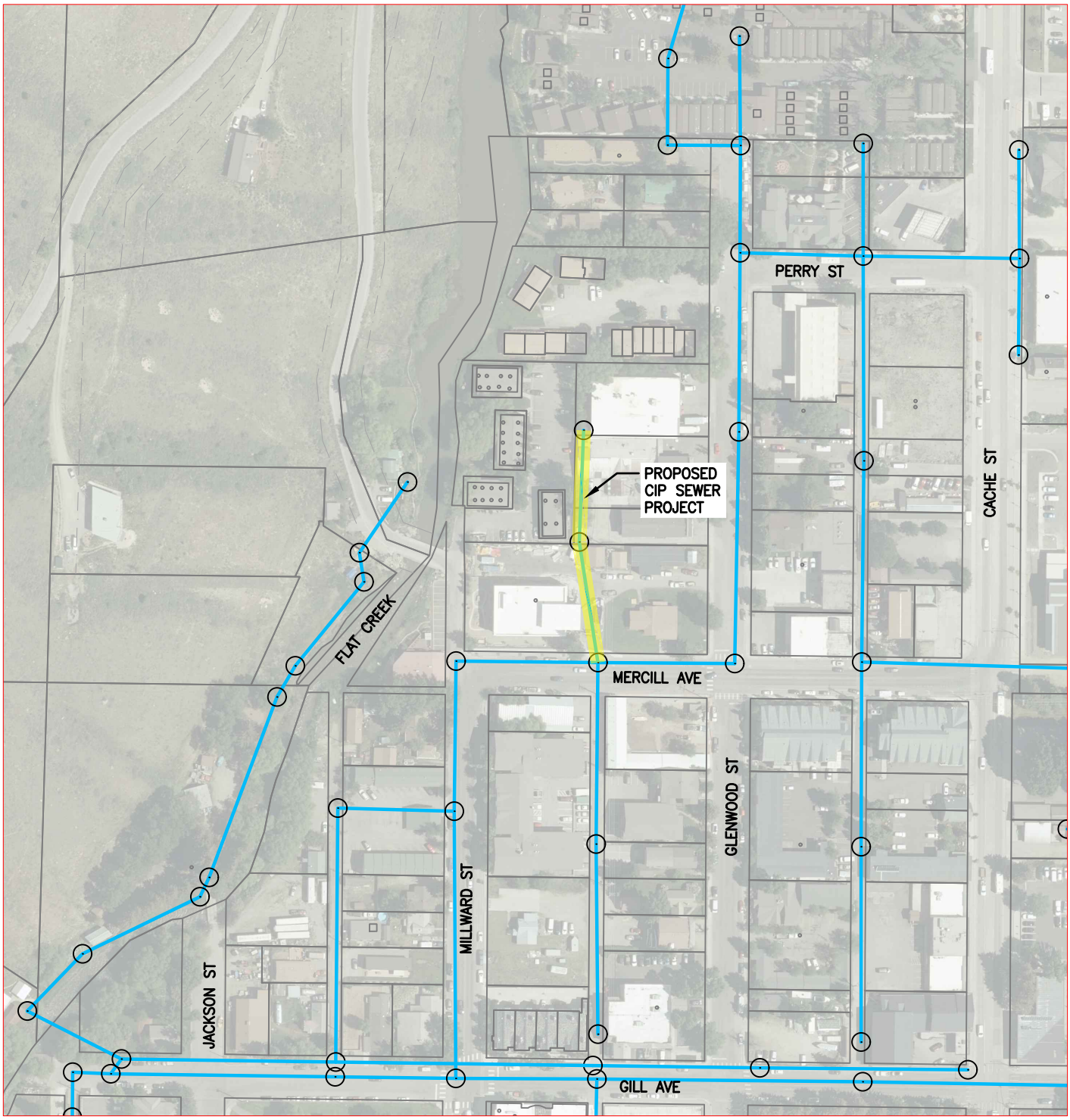
S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Sewer CIP Exhibits.dwg <EX.17-BROADWAY AVE-ANIMAL HOSPITAL> - Feb 13 2020 09:05:43 am PLOTTED BY: green DWG FORMAT: 23.0

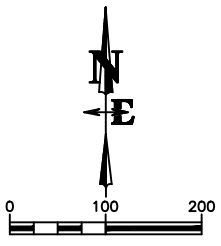




DRAWING NO: EXHIBIT 18	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT UPPER CACHE CREEK DRIVE EAST	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj\2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil)\4 Drawings\Civil\Sewer CIP Exhibits.dwg <EX.18-UPPER CACHE CREEK DR EAST> - Feb 13 2020 09:05:48 am PLOTTED BY: green DWG FORMAT: 23.0





DRAWING NO **EXHIBIT 19** JOB NO 19-336-01	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT HIGH COUNTRY LINEN	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

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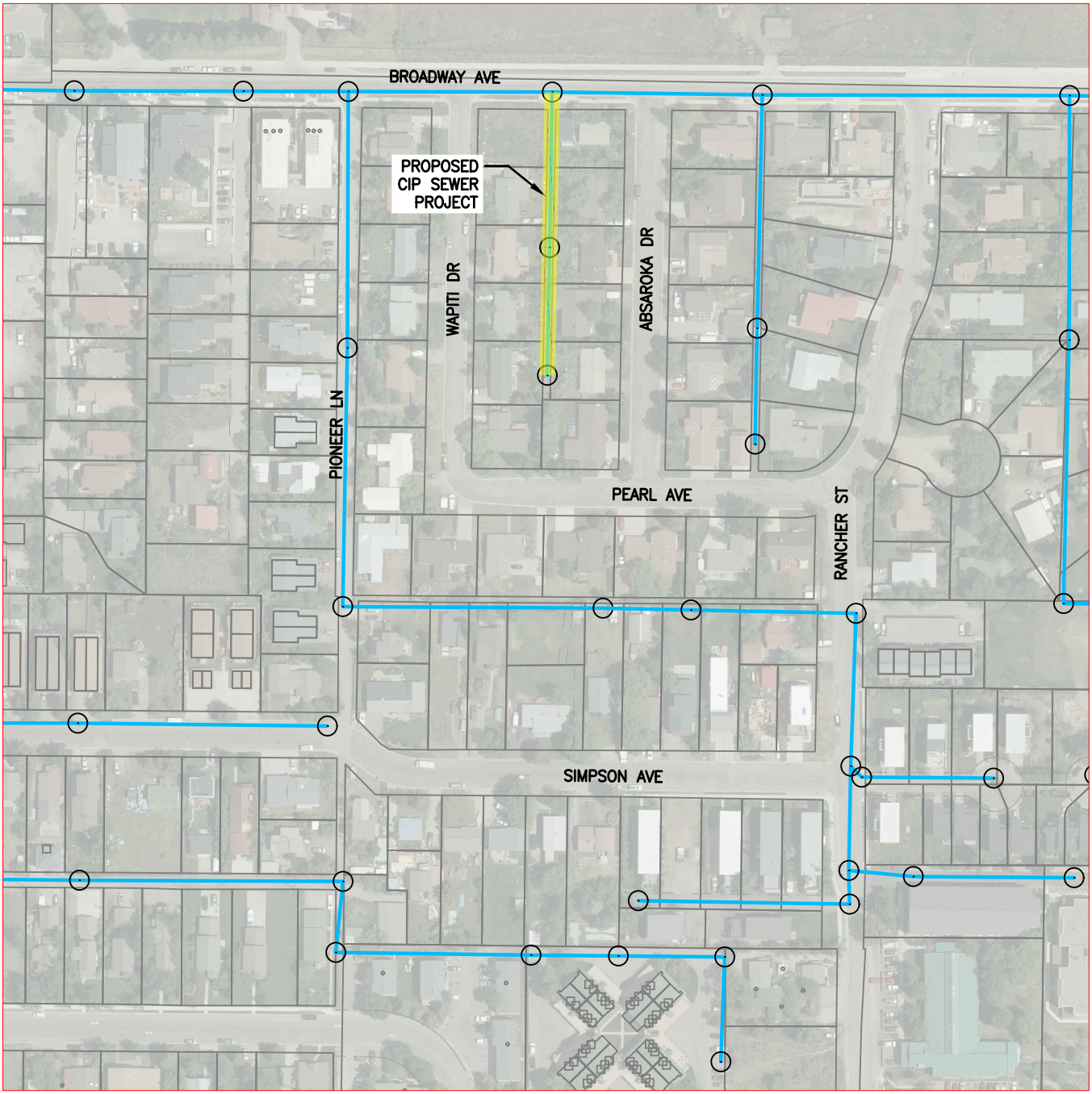
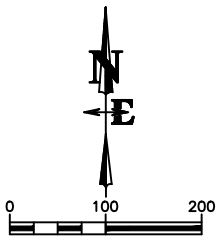
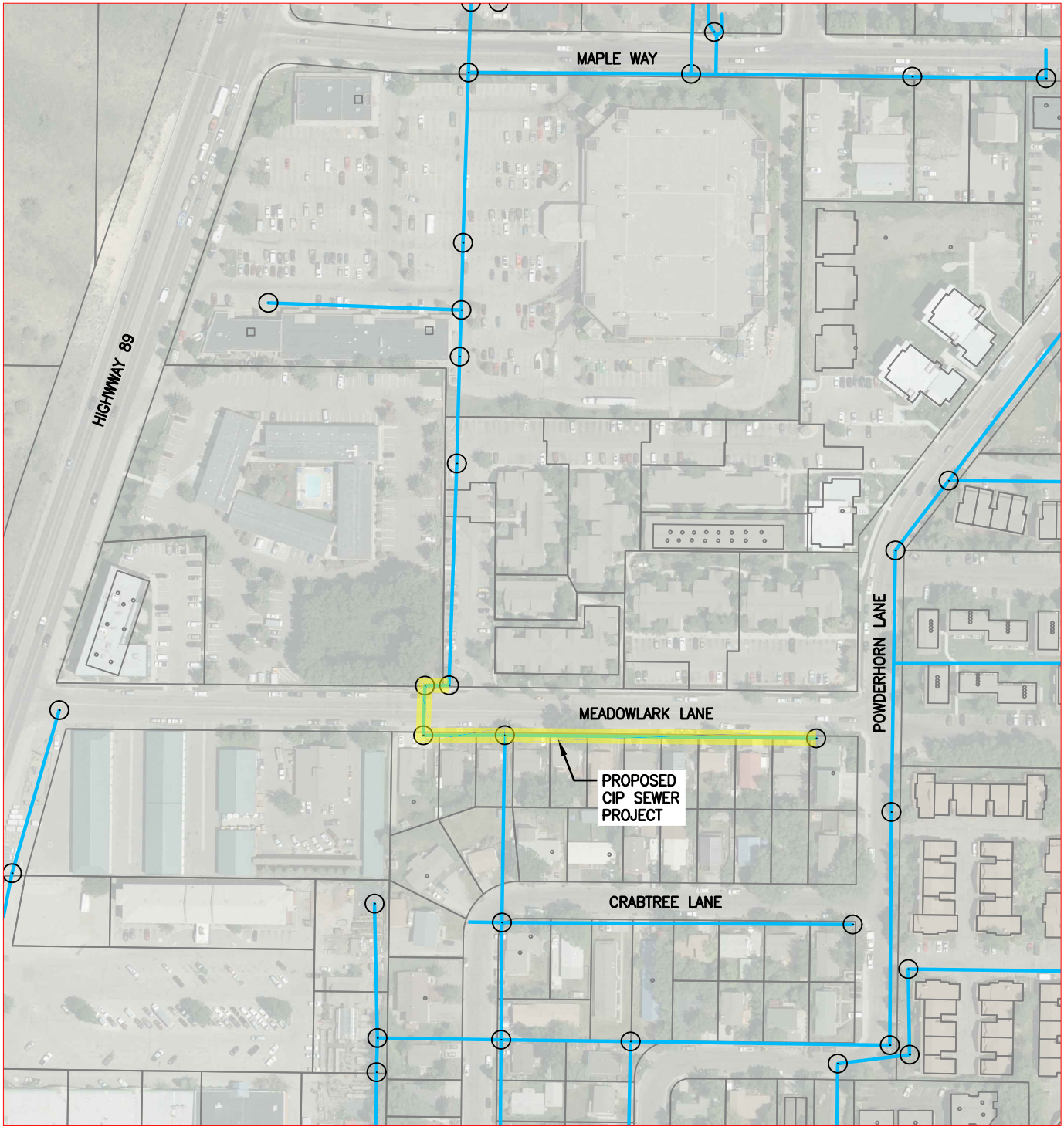
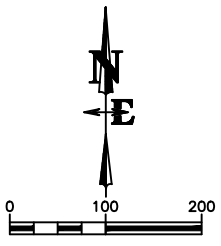




DRAWING NO: EXHIBIT 20	TITLE: TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT SEWER BETWEEN WAPITI AND ABSAROKA	NELSON ENGINEERING P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO: 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

S:\Proj2019\336-01 (Town of Jackson - 2019 Water and Sewer Comprehensive Capacity - Civil\4 Drawings\Civil\Sewer CIP Exhibits.dwg <EX.20-BETWEEN WAPITI-ABSAROKA> - Feb 13 2020 09:05:58 am PLOTTED BY: green DWG FORMAT: 23.0





DRAWING NO **EXHIBIT 21**	TITLE TOJ WATER & SEWER CAPACITY STUDY PROPOSED SEWERLINE REPLACEMENT MEADOWLARK LANE	**NELSON ENGINEERING** P.O. BOX 1599, JACKSON WYOMING (307) 733-2087	DATE	2/11/2020	REV.
JOB NO 19-336-01			SURVEYED	-	
			DRAWN	BJG	
			CHECKED	MB	
			APPROVED	MB	

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