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City of Rigby Wastewater Facilities Planning Study

KA Project No. 218049-000

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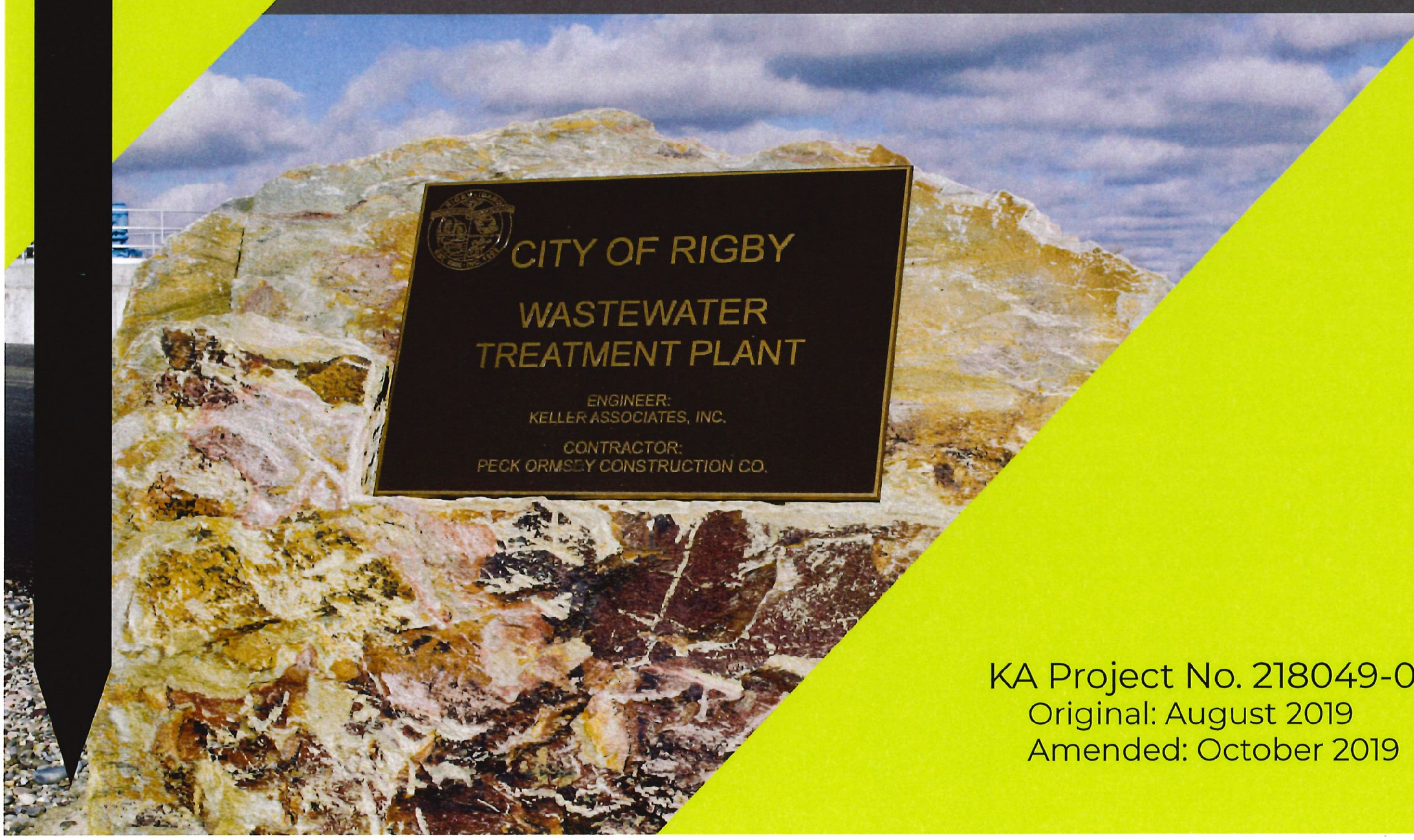
City of Rigby Wastewater Facilities Planning Study



KA Project No. 218049-000
Original: August 2019
Amended: October 2019

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EXECUTIVE SUMMARY

On January 1, 2017, the City of Rigby's new NPDES Permit No. ID0020010 became effective. The new permit included a limit for Total Ammonia of 0.65 mg/L during the winter months with a compliance schedule requiring the City to meet the new limit by August 1, 2023. The City of Rigby has also recently seen a marked increase in new development and home building. The combination of these two factors motivated the need for a wastewater facilities planning study to evaluate the City's wastewater treatment plant and identify alternatives that would bring the treatment plant into compliance with the new permit requirements.

In 2018, the City of Rigby, Idaho contracted with Keller Associates, Inc. to complete a wastewater facility planning study for the City's wastewater treatment plant. This section summarizes the major findings of the facility planning study, including brief discussions of alternatives considered and recommendations.

ES.1 PLANNING CRITERIA

Regulatory requirements, engineering best practices, and City-defined goals and objectives formed the basis for evaluation in the planning study. Applicable regulatory requirements include the National Pollutant Discharge Elimination System (NPDES) permit, State Water Quality Standards, Recycled Water (Reuse) Regulations, and Land Use and Comprehensive Plan Requirements. The City has a compliance schedule in the NPDES permit to meet ammonia discharge limits by August 1, 2023.

ES.2 DESIGN CONDITIONS

ES.2.1 Study Area and Land Use

The planning area for this study encompasses about 11,300 acres, of which 95% has been classified as "Prime farmland if irrigated" by the US Department of Agriculture's Natural Resources Conservation Service. It is likely that any development discussed in this plan will take place at the existing WWTP and would not affect prime farmland. Although there are some wetlands nearby along the Dry Bed Creek, these are not likely to be disturbed.

ES.2.2 Demographics

The City's population has recently been increasing. Table ES -1 shows the historical populations from 1950 to 2010. In order to be conservative and plan for continued growth, the City has elected to assume a 3.25% growth rate for the planning horizon of this study. This results in a future population of 8,236 people in 20 years (Table ES -2).

Table ES -1 Historical Populations

Year	Population	Average Annual Growth Rate
1950	1,826	
1960	2,281	2.25%
1970	2,324	0.19%
1980	2,624	1.22%
1990	2,681	0.22%
2000	2,998	1.12%
2010	3,945	2.78%
20-Year Average		1.37%
40-Year Average		1.11%

Table ES -2 Projected Populations

Year	Population
2018	4,075
2020	4,344
2025	5,098
2030	5,981
2035	7,019
2040	8,236

ES.2.3 Wastewater Flows

The wastewater flows from 2013-2018 were analyzed. The City elected to use the planning criteria flows as shown in Table ES -3 (see Chapter 1 for further details).

Table ES -3 Projected Influent Flow Planning Criteria

Parameter	Planning Baseline[1] Flow (MGD)	Planning Baseline Peaking Factors[2]	Planning Criteria Projected Flow (MGD)[3]					2040 Unit Flow (gpcd)
Year	***2017-2018[4]***	**-**	***2020***	***2025***	***2030***	***2035***	***2040***	***2040***
Population	*4069 avg.*	-	*4,344*	*5,098*	*5,981*	*7,019*	*8,236*	*8,236*
AADF	0.66	1.00	0.68	0.76	0.85	0.95	1.07	130
ALF	0.40	0.60	0.41	0.46	0.51	0.58	0.65	79
AHF	1.23	1.88	1.28	1.42	1.59	1.79	2.01	245
MMF	1.48	2.26	1.54	1.71	1.91	2.15	2.42	294
PDF	1.80	2.74	1.88	2.08	2.32	2.61	2.94	357
PHF	2.00	3.05	2.08	2.31	2.58	2.90	3.27	397

1 - The average value for these two years was used for AADF, ALF, and AHF. The highest value was used for MMF, PDF, PHF.

2 - The peaking factor is equal to the parameter of interest divided by the AADF.

3 - Projected Flow = Baseline Flow + 100 gpcd/1,000,000 gal x Population Increase x Peaking Factor

4 - 2017 and 2018 were used as the baseline years due to a marked increase in flows these two years.

ES.2.4 Wastewater Composition

Plant influent data from the DMRs for January 2013 through December 2018 was evaluated to determine annual average and maximum month loads (pounds per day). The pounds per day loading data was used to calculate the pounds per capita per day (ppcd) for the corresponding populations; these values were used to estimate the 2040 design year loadings using the 2040 population of 8,236 (see Chapter 1 for further details).

ES.3 WWTP ASSESSMENT

Wastewater from the entire collection system is combined and pumped to the WWTP through a 12-inch line which transitions to a 14-inch line for the last 650 feet prior to discharging to the WWTP. Septage is periodically allowed at the WWTP and is dumped into a box with a bar screen near where the 14-inch line discharges into the WWTP. The wastewater flows by gravity through the WWTP. The headworks consists of a Parshall flume with ultrasonic level sensor for influent flow measurement, one fine screen with a backup bar screen in a bypass channel, a vortex grit chamber with a grit classifier, and a composite sampler. The screened and degritted wastewater is then combined with the return activated sludge (RAS) in the splitter box prior to flowing to one of the two oxidation ditches.

The wastewater is aerated and mixed by surface aerators in the oxidation ditches. The treated wastewater is then split and sent to one of the two secondary clarifiers. Solids in the secondary clarifiers are removed and either returned to the influent splitter box by the RAS pumps or sent to the solids treatment system by a waste activated sludge (WAS) pump. The clarified effluent is combined at the filter basins. Cloth filters were originally installed at the WWTP, but the filters have since been removed and all that is left is the basin walls. The effluent is then disinfected by the UV system, which deactivates bacteria, viruses, and other microorganisms to permissible levels for discharge. The effluent flow is measured and then discharged through an 18-inch pipe into Dry Bed Creek.

Solids are pumped by the WAS pumps to a sludge holding tank. The solids are mixed and aerated to keep the sludge from becoming septic. The solids are then pumped to the gravity belt thickener portion of the belt filter press for thickening. The thickened sludge is pumped to the aerobic digesters for treatment. Following sludge treatment, the sludge is dewatered using the belt filter press. To identify potential hydraulic and treatment capacity issues, each plant component was evaluated. The capacities are summarized in Table ES -4.

Table ES -4 Plant Capacity Summary (MGD)

Component	Governing Flow	Capacity Provided[1]	Current Capacity Needed	2040 Capacity Needed	Limiting Factor
Influent Screens	PHF	3.0	2.00	3.27	Capacity
Grit Removal	PHF	2.5	2.00	3.27	Capacity
Oxidation Ditches	MMF	0.65	1.48	2.42	Basin Volume
Secondary Clarifiers	MMF	1.4	1.48	2.42	Solids Loading and Redundancy
UV Disinfection	PHF	1.3	2.00	3.27	Capacity and Redundancy

1 – Redundancy discussed in Chapter 3.

ES.4 WWTP IMPROVEMENTS

The recommended treatment plant improvements are discussed in Chapter 2 and Appendix C.

ES.5 CAPITAL IMPROVEMENT PLAN

The 20-Year Capital Improvement Plan (CIP) is shown in Table ES -5 for the IFAS and Similar Oxidtion Ditch Alternatives. Costs shown are planning-level estimates (Class 5 cost opinion by the Association for the Advancement of Cost Engineering) and can vary depending on market conditions. For the most part the project line items in the CIP include the project costs including estimated construction costs with markups of 10% for general conditions, a contingency of 30%, 15% contractor overhead and profit (OH&P), and engineering services including construction of 25% (based on total construction cost). These costs should be updated and a decision made between the IFAS and Similar Oxidation Ditch alternatives as the projects are further refined in the pre-design and design phases. It is recommended that Priority 1 items be implemented in the next five years. The timeline for the Priority 2 improvements should be updated as growth dictates and budget allows.

Table ES -5 20-Year Capital Improvement Plan

ID#	Item	Primary Purpose(s)	IFAS Alternative Total Estimated Cost (2019)	Similar Oxidation Ditch Total Estimated Cost (2019)
Priority 1 Improvements (2020-2025)				
1.1	Influent Channel Improvements	Operations, Permit Compliance	$ 124,000	$ 124,000
1.2	Critical Spares and Lab Equipment	Operations, Redundancy	$ 39,000	$ 39,000
1.3	Dewatering Improvements	Capacity, Operations	$ 2,370,000	$ 2,370,000
1.4	Biosolids Management Plan	Operations, Permit Compliance	$ 25,000	$ 25,000
1.5	Ammonia Removal Improvements	Capacity, Permit Compliance	$ 9,750,000	$ 12,030,000
1.6	UV Improvements	Cost Savings, Permit Compliance	$ 1,620,000	$ 1,620,000
1.7	Tertiary Filters	Operations	$ 950,000	$ 950,000
1.8	Plant Water Pumps	Capacity, Operations	$ 74,000	$ 74,000
1.9	Electrical Upgrades	Operations, Permit Compliance	$ 434,000	$ 434,000
1.10	SCADA Upgrades	Operations	$ 310,000	$ 310,000
	Total Priority 1 Improvements (rounded)		**$ 15,696,000**	**$ 17,976,000**
Priority 2 Improvements (2030-2040)				
2.1	Headworks Improvements	Capacity, Operations	$ 2,900,000	$ 2,900,000
2.2	Maintenance Building	Operations	$ 840,000	$ 840,000
	Total Priority 2 Improvements (rounded)		**$ 3,740,000**	**$ 3,740,000**
TOTAL WASTEWATER PLANT IMPROVEMENTS COSTS (rounded)			**$ 19,436,000**	**$ 21,716,000**

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2019 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2019 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

An estimated schedule for the next 5 years (including this year) is shown in Table ES - 6.

Table ES - 6 Priority 1 CIP Schedule - IFAS Alternative

ID#	Item	Cost	Opinion of Probable Costs (2019 Dollars)				
			2020	2021	2022	2023	2024
Priority 1 Improvements (2020-2025)							
1.1	Influent Channel Improvements	$ 124,000	Not part of project				
1.2	Critical Spares and Lab Equipment	$ 39,000	Not part of project				
1.3	Dewatering Improvements	$ 2,370,000	$ 80,000	$ 290,000	$ 2,000,000		
1.4	Biosolids Management Plan	$ 25,000			$ 25,000		
1.5	Ammonia Removal Improvements	$ 9,750,000	$ 300,000	$ 1,170,000	$ 4,140,000	$ 4,140,000	
1.6	UV Improvements	$ 1,620,000	$ 50,000	$ 200,000	$ 685,000	$ 685,000	
1.7	Tertiary Filters	$ 950,000		$ 150,000	$ 800,000		
1.8	Plant Water Pumps	$ 74,000		$ 12,000	$ 62,000		
1.9	Electrical Upgrades	$ 434,000	$ 20,000	$ 60,000	$ 177,000	$ 177,000	
1.10	SCADA Upgrades	$ 310,000	$ 10,000	$ 40,000	$ 130,000	$ 130,000	
	Total (rounded)	**$ 15,696,000**	**$ 460,000**	**$ 1,922,000**	**$ 8,019,000**	**$ 5,132,000**	**$ -**

ES.6 FINANCING OPTIONS

The City is examining funding approaches for these improvements. If cash financing is not possible, there are a variety of funding resources exist in both the private and public sector. Financing and incentive options that may assist with implementing the Capital Improvement Plan include: Idaho Department of Environmental Quality State Revolving Fund loans and grants, Department of Commerce and Community Development Block Grants, United States Army Corps of Engineers Section 595 Grants, United States Department of Agriculture-Rural Development loans, Idaho Bond Bank bonds or loans, Idaho Power incentive programs, and local and private sources.

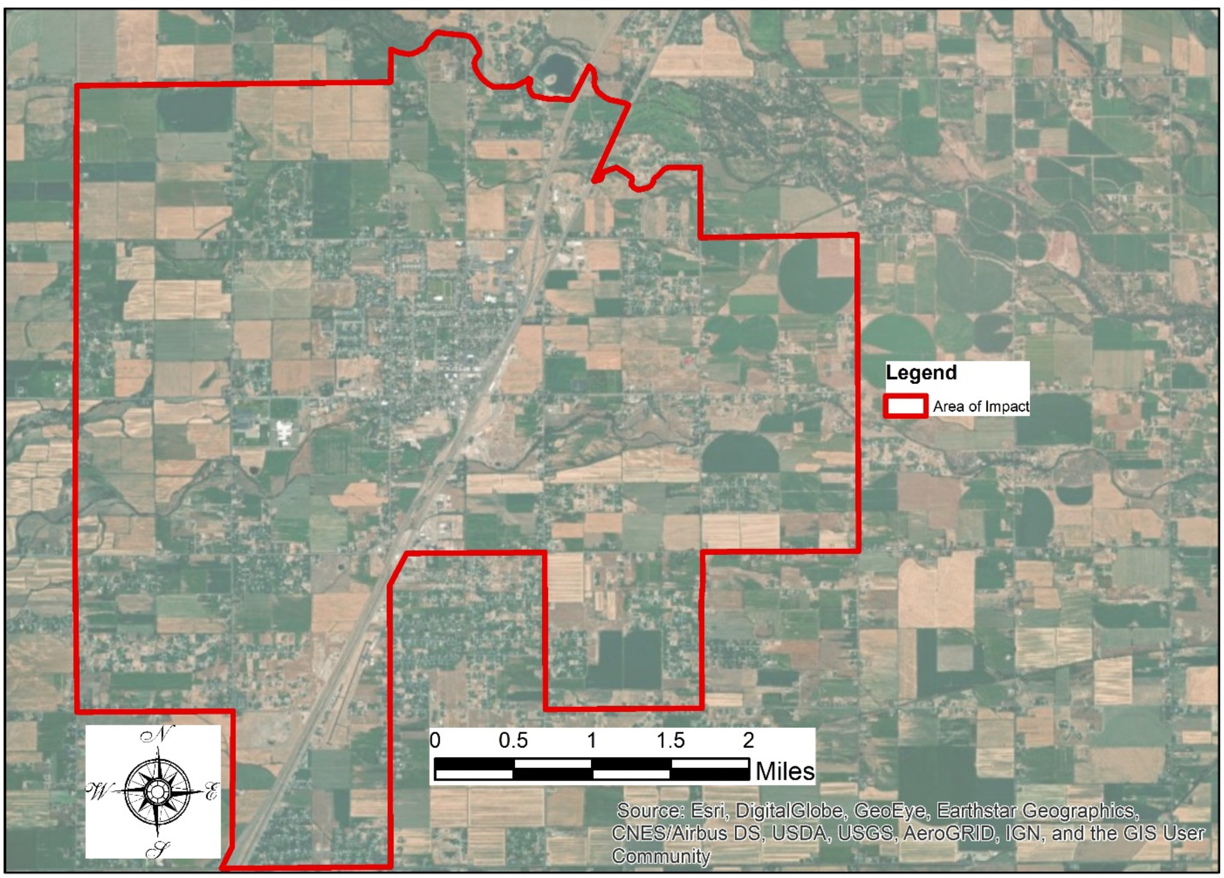
CHAPTER 1 – PROJECT PLANNING

The City of Rigby (City) owns and operates a municipal sewage collection system and wastewater treatment plant (WWTP). The purpose of this study is to determine the needs of the City for wastewater treatment, evaluate if the existing WWTP can meet those needs, assess the feasibility of reusing wastewater in addition to or in place of the current Dry Bed Creek discharge, and to provide a long-term plan to implement improvements to the WWTP so the needs of the City can be met. This planning study describes the conditions, flows, and problems in the existing WWTP and provides recommendations for improvements.

1.1 LOCATION

The Study Area is shown in Figure 1-1 and consists of all locations within the Area of Impact identified in the Rigby Impact Area. The land varies in elevation across the Study Area. The WWTP is located next to Dry Bed Creek on the north side of Junkyard Road (E 500 N).

Figure 1-1 Study Area Map



1.2 ENVIRONMENTAL RESOURCES PRESENT

This is solely a planning project, with recommended infrastructure and operational improvements that may have environmental impacts. While these impacts are briefly discussed throughout this report, a full environmental analysis is not included. The following paragraphs presents a summary of the environmental features at the Rigby WWTP. Potential consequences for each improvement project are discussed in more detail in the following chapters of this report.

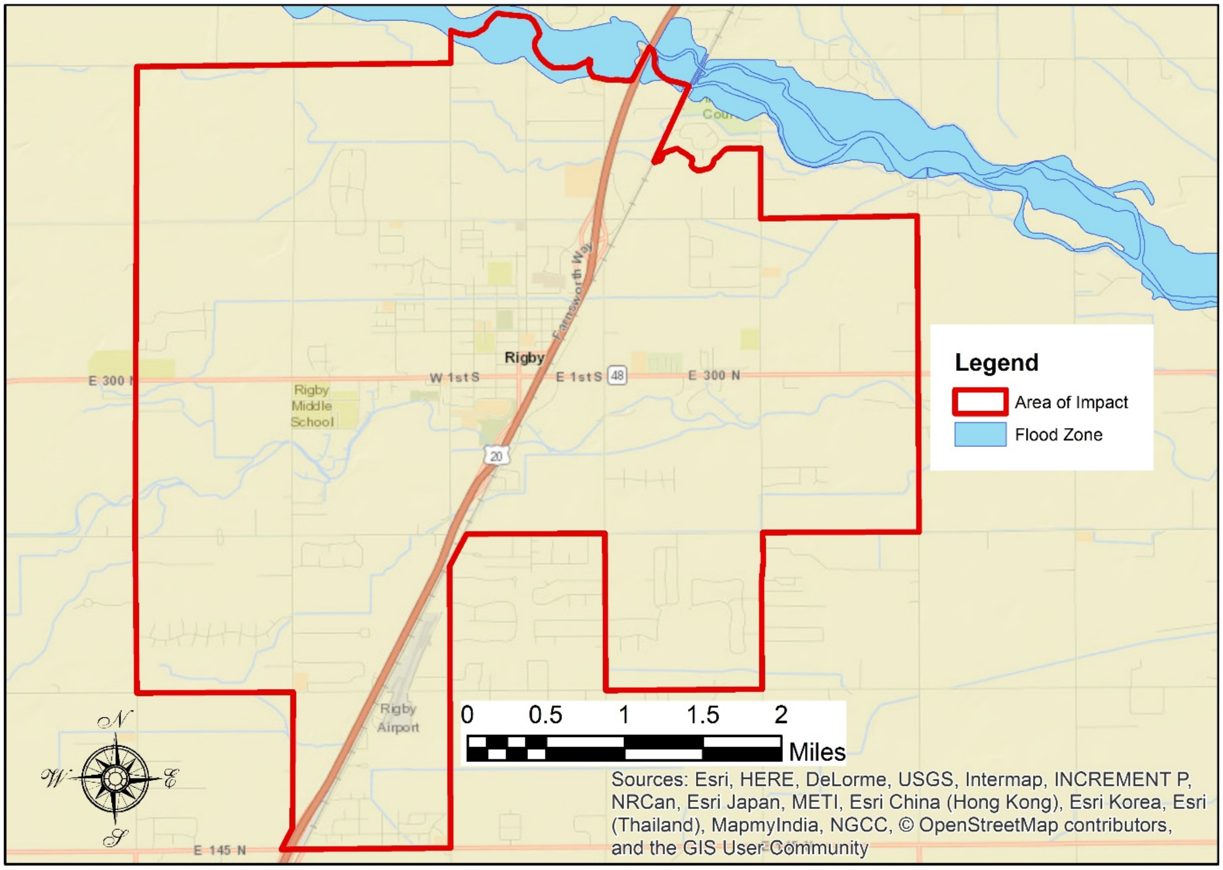
1.2.1 Land Use/Important Farmland/Formally Classified Land

The planning area identified for this study encompasses about 11,300 acres, which is approximately 1.6% of the total area in Jefferson County. Of the 11,300 acres, 10,760 acres or 95 percent have been classified as "Prime farmland if irrigated" by the US Department of Agriculture's Natural Resources Conservation Service. It is likely that any development discussed in this plan will take place at the existing WWTP and would not affect prime farmland since this area was used historically for the City's wastewater lagoons. See Appendix B for a map of prime farmland in the Study Area.

1.2.2 Floodplains

Information from the Federal Emergency Management Agency (FEMA) was viewed using the FEMA Map Service Center. These maps show that portions of the planning area lie within the 100-year floodway and adjacent to the floodway of the Dry Bed Creek. The annual floodway designation identifies areas that are crucial to maintaining the current river channel, and subject to regular flooding and high-water velocities. Development in annual floodways has a high probability of increasing upstream flood elevations and damage to the structures. Figure 1-2 shows the flood areas within the Study Area. This figure is for display purposes only, individual FEMA FIRM Panel maps should be referenced for specific areas and can be found in Appendix B.

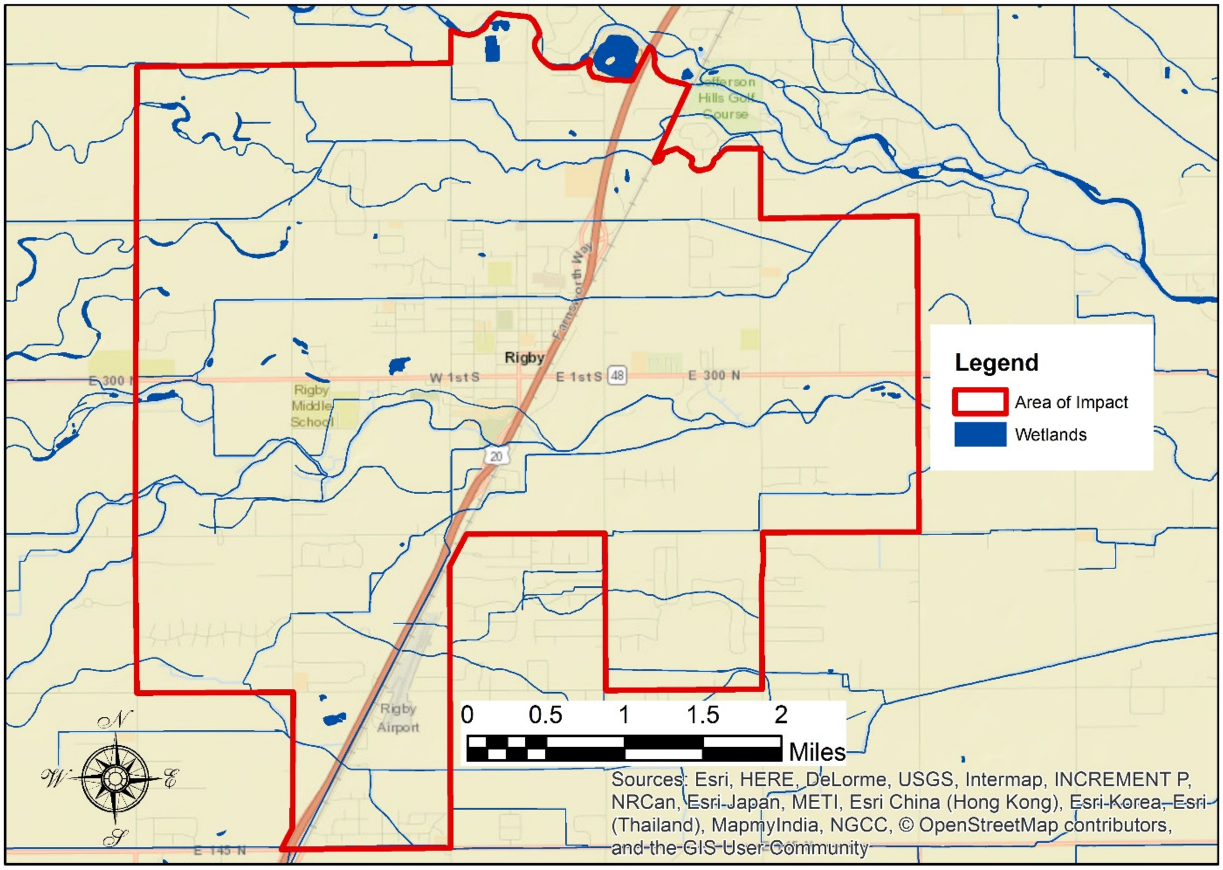
Figure 1-2 Flood Map



1.2.3 Wetlands

The National Wetlands Inventory provides geographic information system (GIS) data outlining wetlands in Idaho. This data shows wetlands along the Dry Bed Creek north of the WWTP. Figure 1-3 shows the wetlands within the study area.

Figure 1-3 Wetland



1.2.4 Historic Properties

The National Register of Historic Places lists the Jefferson County Courthouse as the only historic building in Rigby. The courthouse is not near the WWTP so there are no anticipated impacts to historic places.

1.2.5 Biological Resources

The United States Department of Agriculture (USDA) produces a database that lists endangered and threatened plants throughout the country. A database search for Jefferson County returned many plants listed as endangered or threatened (see Appendix B). However, priority improvements recommended in this plan are on previously disturbed lands; therefore, impacts to threatened or endangered plant life are not anticipated.

The USFWS also provides a list of endangered/threatened species (see Appendix **B** for the April 21, 2017, summary from the USFWS IPaC resource). Once again, since the priority improvements being proposed are on previously disturbed lands, impacts to threatened or endangered wildlife and/or fish are not anticipated.

1.2.6 Water Quality Issues

The City has a public drinking water system that provides potable water to its residents and businesses. The proposed improvements in this plan are not expected to pose a threat to the existing water quality. In fact, community sewer treatment facilities reduce risks to groundwater by reducing the number of individual septic tanks and drain fields.

Best management practices should be employed during construction activities, ensuring protection of surface water quality in the area. Backflow preventers will be provided where appropriate to protect potable water from cross-contamination.

1.2.7 Coastal Resources

The Coastal Zone Management Act does not list any area in Idaho as a coastal resource; therefore, no coastal area will be affected by the proposed improvements.

1.2.8 Socio-Economic Conditions

There will be no socio-economic or environmental justice issues raised by the recommended project improvements. The improvements will not have any adverse effect on either of these categories; rather, they will provide mutual benefit to all sanitary sewer customers and improve the overall economic vitality of the area.

1.2.9 Climate, Topography, Geology, and Soils

The Western Regional Climate Center climate summary (August 1948 through June 2016) for the Rigby area shows minimum average monthly temperatures ranging from 10.2˚F to 50.8˚F, and maximum average monthly temperatures ranging from 27.2˚F to 86.0˚F. Over this same period, the total annual precipitation averaged about 13.0 inches with an average snowfall of 35.3 inches per year. The coldest month was January, and the hottest month was July.

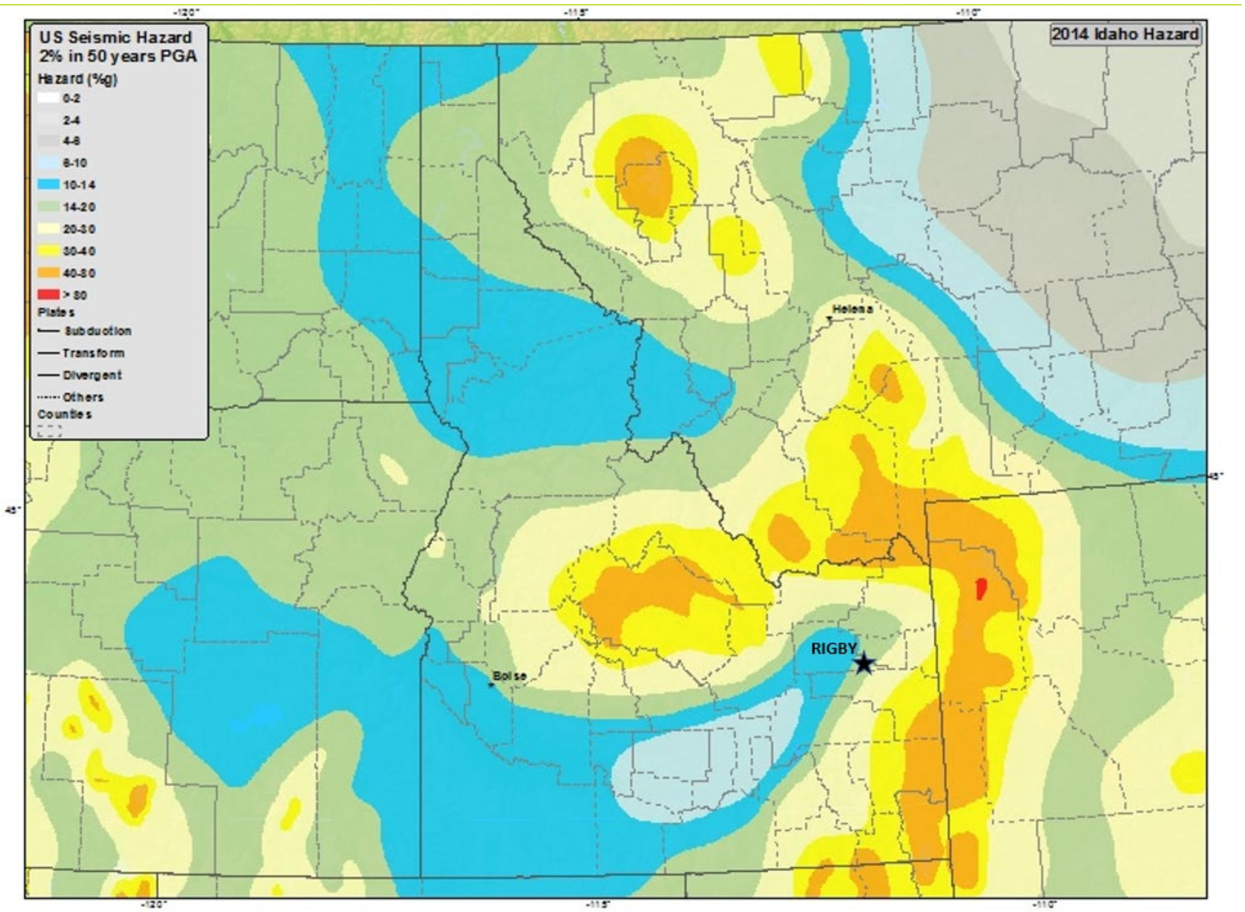
Based on Western Regional Climate Center wind data (1992 to 2002) for Idaho Falls Airport, Idaho (about 16 miles southwest of Rigby), the prevailing wind direction is south-southwest from March through October, and north from November through February. The average wind speed for the area is 9.0 mph.

The Rigby planning area is relatively flat, USGS Topography Maps show elevations ranging from approximately 4,820 to 4,895 feet. The highest elevations in the planning area are at the eastern boundary line. Elevations drop as you move west.

According to USGS the general soil types in the Rigby planning area are Blackfoot loams, Bannock loams, and Xeric Torrifluvents. Bannock loams (sandy through gravely) are the most common soil type, occupying about 40.7% of the area. This poses a high to moderate risk of corrosion to steel and a low risk of corrosion to concrete. Further study would be required for a specific site to be properly evaluated.

The United States Geological Survey (USGS) earthquake hazard map for the Rigby area is shown in Figure 1-4. Rigby is marked by a star on the east of the state.

Figure 1-4 Rigby Area Earthquake Hazard Map



1.2.10 Wild and Scenic Rivers

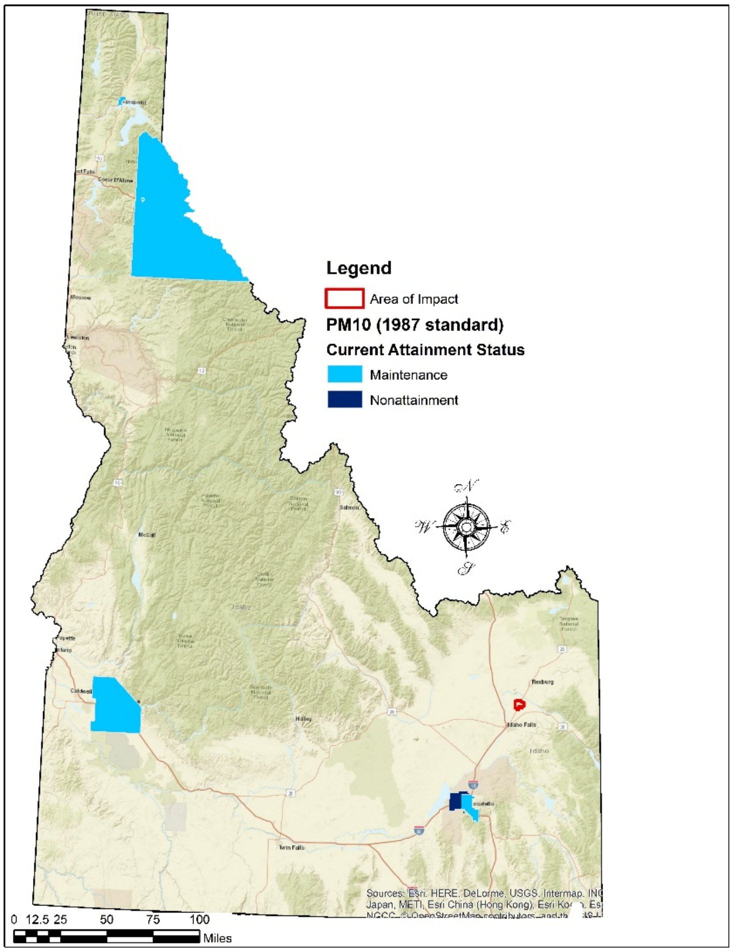
There are no wild and scenic rivers listed for the Rigby area according to the National Wild and Scenic Rivers System. A map of Wild and Scenic Rivers within southern Idaho is provided in Figure 1-5.

Figure 1-5 Wild and Scenic Rivers in Southern Idaho

1.2.11 Air Quality

Rigby is not in an air non-attainment area (see Figure 1-6). No impacts to air quality are anticipated from the recommended improvements. Dust control measures will be implemented during construction of improvements.

Figure 1-6 Air Non-Attainment Area Map



1.3 POPULATION TRENDS

Historical population data through 2017 for the City of Rigby was taken from US Census Bureau estimates obtained via the Idaho Department of Labor (https://lmi.idaho.gov/census). Population for 2018 was estimated based on population trends since 2011. According to the most recent U.S. Census (2010), the population in Rigby was 3,945, with an average household size of 2.58. The estimated population in 2018 is 4,075.

The City has seen moderate growth over the past couple of decades; however, that growth rate has recently increased. In order to be conservative and plan for continued growth, the City has elected to assume a 3.25% growth rate for the planning horizon of this study. This results in a future population of about 8,236 people in 20 years. Table 1-1 shows the historical populations from 1950 to 2010; Table 1-2 shows the population projections, and Chart 1-1 includes the historical data from 1970 to present and the projected populations to 2040.

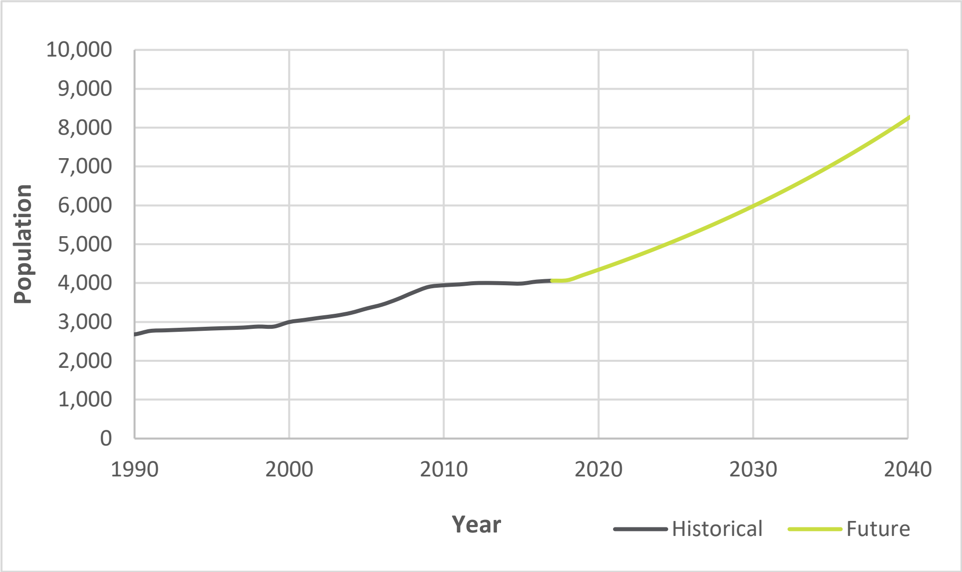
Table 1-1 Historical Population

Year	Population	Average Annual Growth Rate
1950	1,826	
1960	2,281	2.25%
1970	2,324	0.19%
1980	2,624	1.22%
1990	2,681	0.22%
2000	2,998	1.12%
2010	3,945	2.78%
20-Year Average		1.37%
40-Year Average		1.11%

Table 1-2 Rigby Projected Populations

Year	Population
2018	4,075
2020	4,344
2025	5,098
2030	5,981
2035	7,019
2040	8,236

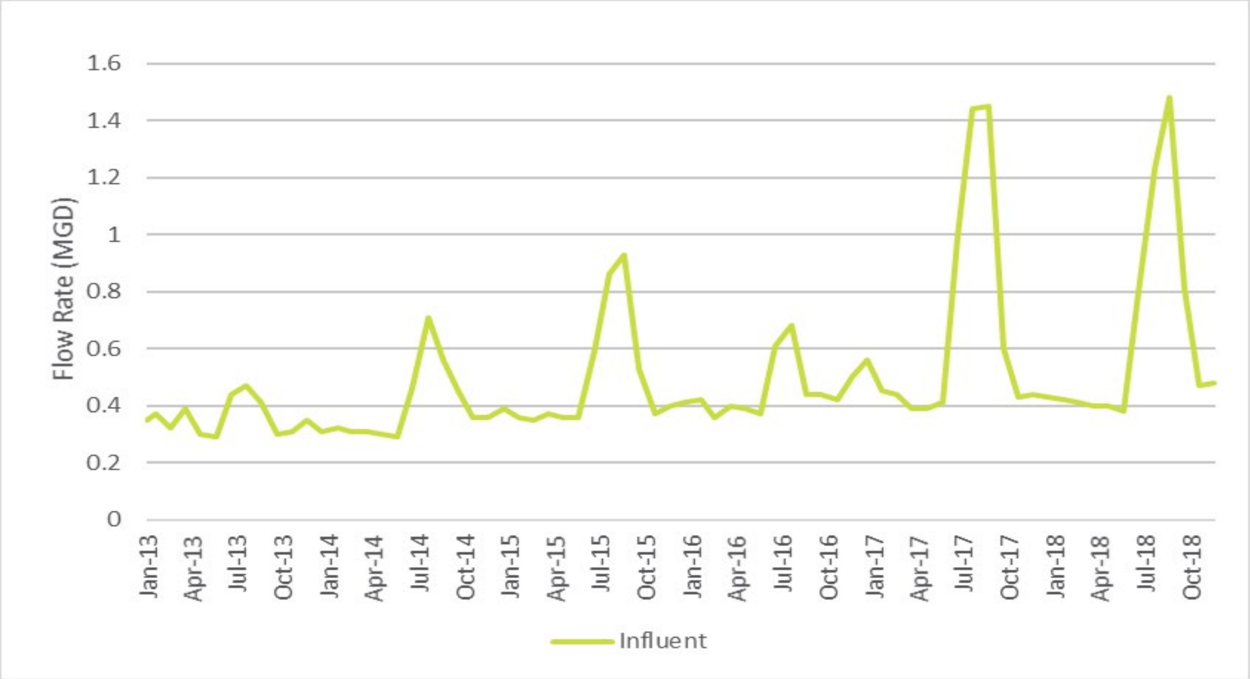
Chart 1-1 Historical and Projected Populations



1.4 INFLUENT FLOW

The wastewater flow analysis reviews historical wastewater flows, develops planning criteria flows, and provides projected flows for the planning period. Plant influent flows for the period of January 2013 through December 2018 were evaluated for the purposes of this study and are presented below in Chart 1-2. This section summarizes the results of the flow analysis, including average day, dry (non-irrigation season), wet (irrigation season), maximum month, peak day, and peak hour flows. The following sub-sections define each of these terms, followed by a summary of the resulting influent flow statistics.

Chart 1-2 Historical Monthly Influent Flows



1.4.1 Average Annual Daily Flow (AADF)

The average annual daily flow (AADF) is the average daily flow for the entire year. An AADF was calculated for each of the six years of data (January through December). Upon noting an increasing trend in AADF over the six years of data, the AADF for 2017 and 2018 was then averaged to obtain the current planning criteria AADF.

1.4.2 Average Low Flow (ALF)

The average low flow (ALF) is the average daily flow for the three consecutive calendar months with the lowest total flows each year. Though it varies year to year, this three-month period typically fell from April to June (observable in Chart 1-2). Rigby's influent flows are highly influenced by infiltration of high groundwater tied to agricultural irrigation (see Section 1.4.9). This leads to periods of low flow anytime outside of the irrigation months of summer, even when natural precipitation is high. An ALF was calculated for each year of data. Based on an increasing trend over the six years of data, the ALF was averaged for 2017 and 2018 to obtain the current planning criteria ALF.

1.4.3 Average High Flow (AHF)

The average high flow (AHF) is the average daily flow for the three consecutive calendar months with the highest total flows each year. This is typically the months of July through September, when agricultural irrigation is heavy and raises the local groundwater levels, resulting in large amounts of infiltration. An AHF was first calculated for each year of data. Based on an increasing trend over the six years of data, the AHF was averaged for 2017 and 2018 to obtain the current planning criteria AHF.

1.4.4 Maximum Month Flow (MMF)

The Maximum Month Flow (MMF) represents the highest monthly average flow into the wastewater treatment plant for the year. For Rigby, this has typically occurred in either August or September and is due to groundwater infiltration. The largest monthly flow for the six years of data was used for the current planning criteria MMF.

1.4.5 Peak Day Flow (PDF)

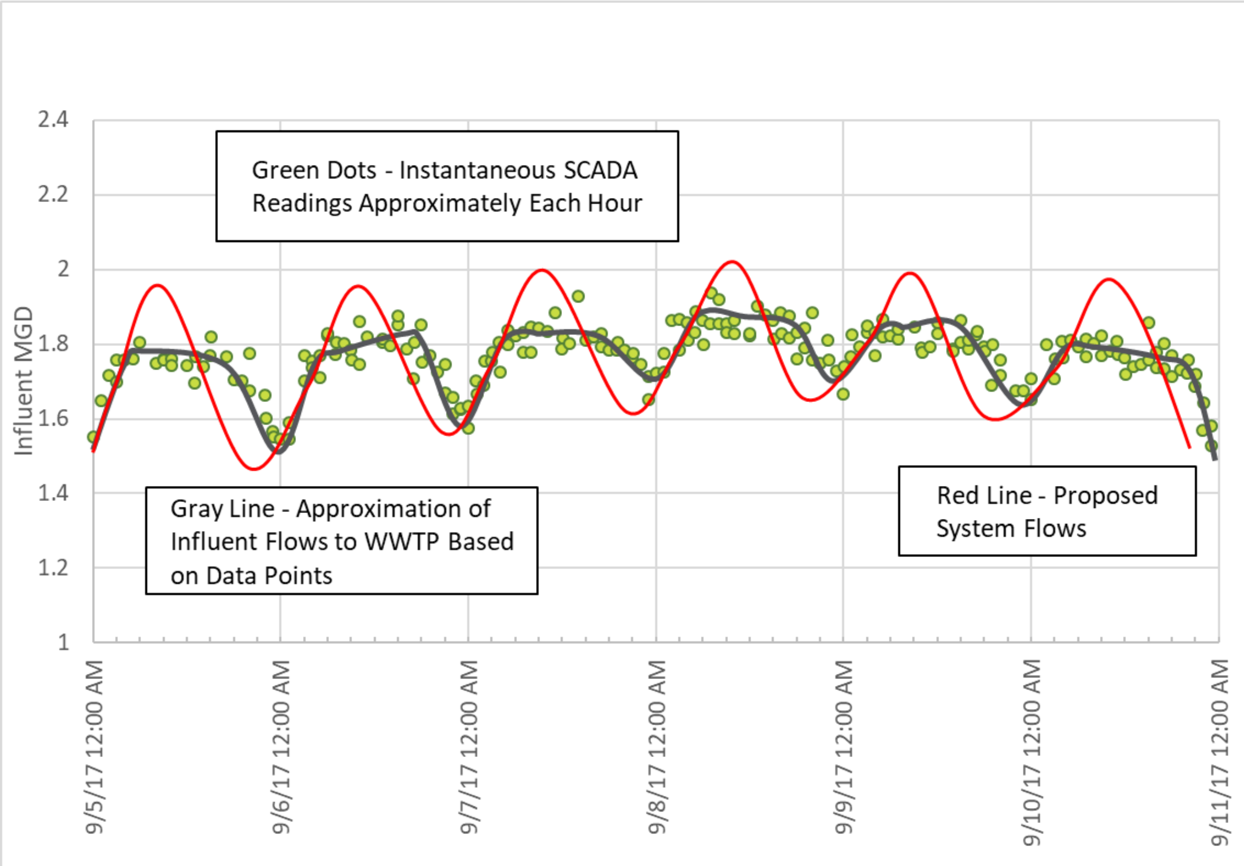
The peak day flow (PDF) was taken as the maximum daily flow recorded for each year. The current planning criteria PDF was the highest daily flow recorded for the past six years.

1.4.6 Peak Hour Flow (PHF)

The peak hour flow (PHF) represents the highest hourly flow at the WWTP. All flow into the plant passes through the City's main lift station. At present, the three pumps in the lift station are not able to accommodate flows at their peak and reach maximum capacity at around 1.9 MGD (1,320 GPM). This results in sewage backing up in the lift station and upstream lines until flows recede to the point where the pumps can keep up. As a result, the influent peak hour flows entering the WWTP that are recorded by the SCADA system are artificially low.

Chart 1-3 below shows historical SCADA data for peak flows in 2017, the highest flow year evaluated, during the week with the highest total flows. The City is in the process of refitting this lift station with higher capacity pumps that will eliminate the "flatlining" effect seen in the chart and pass on peak flows to the plant that more closely resemble the peak flows in the collections system.

Chart 1-3 Peak Hour Flow Evaluation



To plan accordingly for these flows, a hypothetical flow rate was added for the week shown in Chart 1-3. This flow curve seeks to project the peak flow that is generated in the collections system and that would be passed on to the WWTP if the lift station pumps could keep pace. It also takes into account the volume that is believed to be backing up in the collection lines during these peak flow times (further analysis details can be found in Appendix B). A typical municipal diurnal (daily) curve would feature a main peak in the morning hours as people prepare for the day and a second, smaller peak in the early evening as people return home and prepare meals. For the hypothetical system flows shown, a single peak was thought to be sufficient for the purpose of determining peak hour flow. Based on this evaluation, a peak hour flow rate of 2.0 MGD has been estimated for 2017. As 2017 had the highest flows of the years considered, this value for PHF was used for the current planning criteria PHF.

1.4.7 Summary of Influent Flow Statistics

A summary of the flow analysis – in million gallons per day (MGD) and gallons per capita per day (gpcd) – is presented in Table 1-3 and Table 1-4, respectively.

Table 1-3 Influent Flow Statistics (MGD)

Parameter	2013	2014	2015	2016	2017	2018	Historical Average
AADF	0.36	0.40	0.49	0.45	0.67	0.64	0.50
ALF	0.32	0.30	0.36	0.38	0.40	0.39	0.36
AHF	0.44	0.58	0.79	0.58	1.29	1.17	0.81
MMF	0.47	0.71	0.93	0.68	1.45	1.48	0.95
PDF	0.60	0.90	1.10	0.80	1.80	1.80	1.17
PHF[1]					2.00		2.00

1 - Peak Hour Flow was calculated using SCADA data only for 2017 (see Section 1.4.6).

Table 1-4 Influent Flow Statistics (gpcd)

Parameter	2013	2014	2015	2016	2017	2018	Historical Average
Population	*4,003*	*3,995*	*3,988*	*4,039*	*4,062*	*4,075*	
AADF	90	100	123	111	165	158	124
ALF	80	75	90	94	98	97	89
AHF	110	145	198	144	318	288	200
MMF	117	178	233	168	357	363	236
PDF	150	225	276	198	443	442	289
PHF[1]					492		492

1 - Peak Hour Flow was calculated using SCADA data only for 2017 (see Section 1.4.6).

1.4.8 Commercial and Industrial Flow Planning Criteria

The City expects that commercial and industrial flows will maintain a similar balance as currently exists. New commercial and industrial customers will be expected to pretreat to the levels of domestic wastewater and will be billed on an equivalent dwelling unit (EDU) basis.

1.4.9 Infiltration and Inflow (I/I)

Infiltration and Inflow (I/I) refers to the groundwater and storm water that enters the wastewater collection system. Wastewater flows shown in the tables above reflect a significant amount of I/I. Current EPA guidance considers flows in excess of 120 gpcd as excessive I/I (Sewer System Infrastructure Analysis and Rehabilitation, EPA/625/6-91/030, October 1991). It is anticipated that the City will continue seeking to reduce I/I in existing areas of the collection system. New construction will be monitored to ensure manholes, sewer lines, and services are constructed water tight.

1.4.10 Influent Flow Planning Criteria

Future influent flows to the WWTP were estimated using the population projections, historical flows, and I/I discussed previously. Due to Rigby's high I/I, using current per capita flows to project future system demands would significantly overestimate flows if the City's I/I situation is maintained or improved (Section 1.4.9). To account for this, the projected planning criteria AADF shown below in Table 1-5 assumes that all future growth will add 100 gpcd AADF to the existing baseline flows. An average daily flow of 100 gpcd represents typical residential wastewater flows in new collections system construction (Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, "Recommended Standards for Wastewater Facilities" aka "10 States Standards", 2014 edition). Due to the notable increase in flows in 2017 and 2018, an average of the flows in these two years was used as a baseline to which flow generated by future population growth was added. The peaking factors shown in Table 1-5 represent the ratio between the parameter of interest and the AADF for the baseline years and were used to adjust the 100 gpcd AADF value for use in ALF, AHF, MMF, PDF, and PHF parameters.

Table 1-5 Influent Flow Planning Criteria

Parameter	Planning Baseline[1] Flow (MGD)	Planning Baseline Peaking Factors[2]	Planning Criteria Projected Flow (MGD)[3]					2040 Unit Flow (gpcd)
Year	**2017-2018[4]**	**-**	**2020**	**2025**	**2030**	**2035**	**2040**	**2040**
Population	*4069 avg.*	-	*4,344*	*5,098*	*5,981*	*7,019*	*8,236*	*8,236*
AADF	0.66	1.00	0.68	0.76	0.85	0.95	1.07	130
ALF	0.40	0.60	0.41	0.46	0.51	0.58	0.65	79
AHF	1.23	1.88	1.28	1.42	1.59	1.79	2.01	245
MMF	1.48	2.26	1.54	1.71	1.91	2.15	2.42	294
PDF	1.80	2.74	1.88	2.08	2.32	2.61	2.94	357
PHF	2.00	3.05	2.08	2.31	2.58	2.90	3.27	397

1 - The average value for these two years was used for AADF, ALF, and AHF. The highest value was used for MMF, PDF, PHF.

2 - The peaking factor is equal to the parameter of interest divided by the AADF.

3 - Projected Flow = Baseline Flow + 100 gpcd/1,000,000-gal x Population Increase x Peaking Factor

4 - 2017 and 2018 were used as the baseline years due to a marked increase in flows these two years.

1.5 INFLUENT QUALITY

1.5.1 Analysis of Plant Records

Plant data taken from the DMRs were analyzed for January 2013 through February 2019. The plant influent was monitored for 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS). The effluent flow rate was monitored by the City continuously. Effluent constituents with permit limits include BOD_5, TSS, *E. coli* bacteria, total ammonia, and pH. The City collected composite samples at least once per week of both the influent and effluent for BOD_5 and TSS.

Grab samples of the effluent were also collected for *E. coli* bacteria (five times per month); pH (five times per week); and total ammonia (once per week).

Additionally, although there are no requirements in the permit, the City of Rigby has periodically collected influent composite samples for ammonia, TKN, total nitrogen (TN), and total phosphorus (TP). The City has also collected grab samples for influent temperature.

1.5.2 BOD_5 and TSS Loading

Influent BOD_5 and TSS concentrations and loadings into the WWTP are provided in Chart 1-1 and Chart 1-2, respectively. BOD_5 concentrations ranged from about 100 to 900 milligrams per liter (mg/L) and TSS concentration ranged from 100 and 850 mg/L. The higher concentrations are likely due to industrial contributions and the lower concentrations are likely due to I/I in the collection system. These concentrations equate to BOD_5 loadings of approximately 500 to 4,200 pounds per day (ppd) and TSS loadings of 500 and 3,000 ppd.

Potato Products of Idaho (PPI) began producing a new product in the summer of 2016. Within a couple weeks, the wastewater treatment plant operator began noticing highly variable loading and upset conditions at the plant. The City informed PPI that the WWTP couldn't accommodate the loads that PPI was discharging to the City sewer. For the next six months, PPI utilized a local septic hauler to haul off some of the wastewater with high BOD_5 concentrations in an attempt to regulate loading to Rigby's WWTP. Still, loading at the WWTP was highly variable and created difficulty in operating the WWTP. In the spring of 2017, the City informed PPI they would need to pretreat their waste to domestic wastewater strength (200 mg/L BOD_5, and 130 mg/L TSS) prior to discharging to the City sewer. In response, PPI constructed a mechanical treatment plant that came online in the spring of 2018. The influence from PPI's untreated discharges can be seen in Chart 1-4 and Chart 1-5 beginning in the summer of 2016 through the spring of 2018. Since the spring of 2018, loading from PPI has been in the range of 6-66 pounds of BOD5 per day with typical loading in the 20-30 pound per day range.

Chart 1-4 WWTP Influent BOD_5 and TSS Concentrations

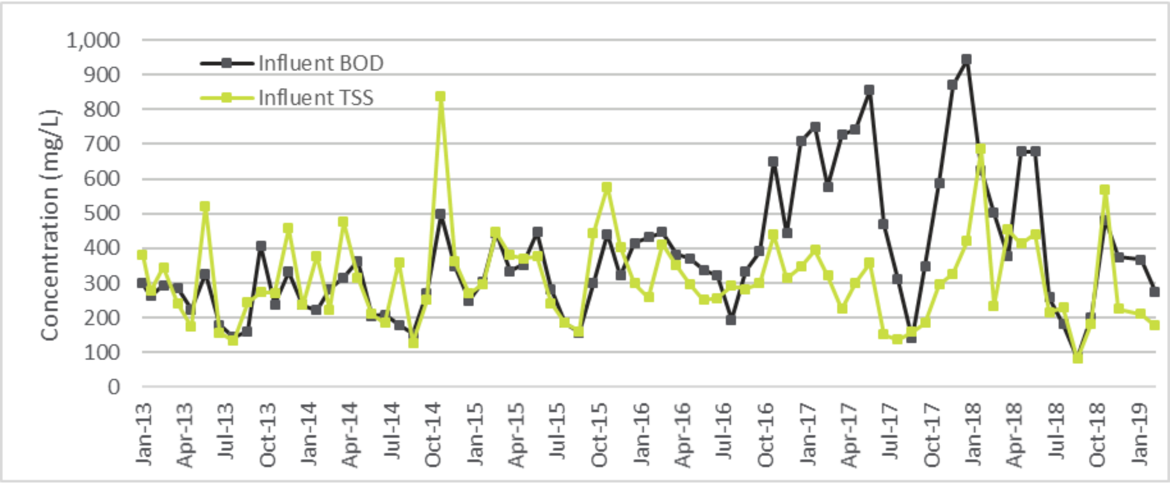
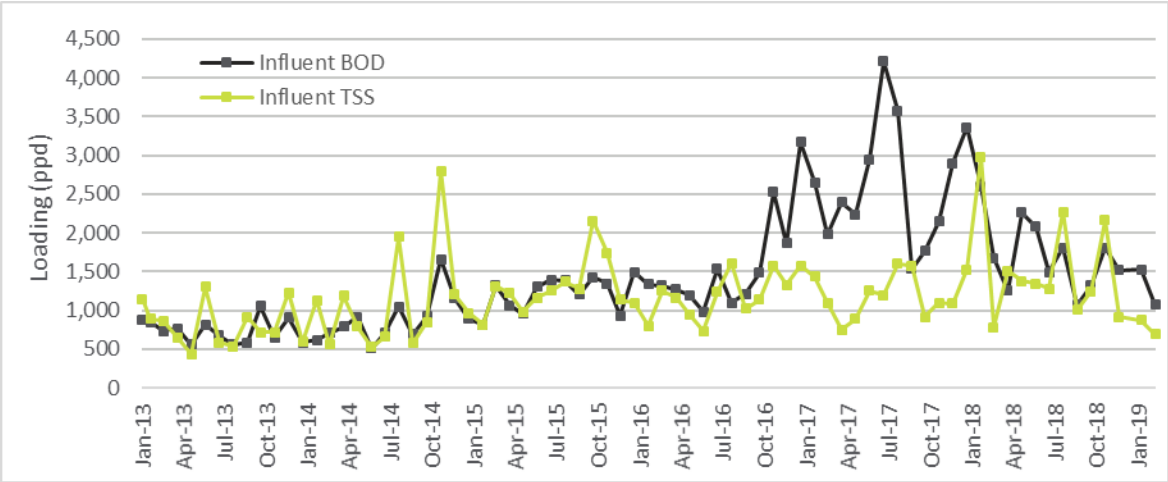


Chart 1-5 WWTP Influent BOD_5 and TSS Loadings



The waste strength appears to be increasing, likely due to industrial contributions and population growth. As shown in the 2013 through 2016 data, the BOD_5 and TSS concentrations typically have followed a 1:1 ratio.

The January 2013 through December 2018 data for BOD_5 and TSS was normalized using the populations during those years (BOD_5 or TSS pounds per capita per day [ppcd]). Based on an increasing trend in per capita loading, the 2018 normalized loading values for BOD_5 and TSS were used as the Baseline Planning Criteria. The 2016 and 2017 values were ignored due to the influence from PPI prior to constructing their wastewater treatment plant.

Table 1-6 shows historical loading values normalized to pounds per capita per day. The typical ranges for BOD_5 and TSS are shown in the table footnotes.

Table 1-6 Normalizing Influent BOD_5 and TSS Data

Parameter	2013	2014	2015	2016	2017	2018	Avg.	Max.	Baseline Planning Criteria
Population	*4,003*	3,995	3,988	4,039	4,062	4,075	--	--	*8,236*
BOD_5 ppd									
AADF	753	859	1,172	1,445	2,628	1,854	1,452	2,628	**--**
ALF	834	920	1,115	1,616	2,431	1,934	1,475	2,431	**--**
AHF	639	774	1,251	1,206	2,905	1,742	1,419	2,905	**--**
MMF	1,056	1,661	1,432	2,525	4,214	2,083	2,162	4,214	**--**
BOD_5 ppcd									
AADF	0.188	0.215	0.294	0.358	0.647	0.455	0.359	0.647	**0.455**
ALF	0.208	0.230	0.280	0.400	0.598	0.475	0.365	0.598	**0.475**
AHF	0.160	0.194	0.314	0.299	0.715	0.428	0.351	0.715	**0.428**
MMF	0.264	0.416	0.359	0.625	1.037	0.511	0.543	1.037	**0.511**
TSS ppd									
AADF	833	1,068	1,284	1,160	1,208	1,535	1,181	1,535	**--**
ALF	889	1,189	1,337	1,195	1,139	1,590	1,223	1,590	**--**
AHF	754	899	1,210	1,110	1,305	1,457	1,123	1,457	**--**
MMF	1,308	2,797	2,154	1,611	1,601	2,271	1,957	2,797	**--**
TSS ppcd									
AADF	0.208	0.267	0.322	0.287	0.297	0.377	0.293	0.377	**0.377**
ALF	0.222	0.298	0.335	0.296	0.280	0.390	0.304	0.390	**0.390**
AHF	0.188	0.225	0.303	0.275	0.321	0.358	0.278	0.358	**0.358**
MMF	0.327	0.700	0.540	0.399	0.394	0.557	0.486	0.700	**0.700**

Notes:
1. BOD_5 industry typical values (Metcalf and Eddy, 5th Edition) – 0.11-0.26 ppcd
2. TSS industry typical values (Metcalf and Eddy, 5th Edition) – 0.13-0.33 ppcd
3. AADF = annual average load during the year
4. ALF = annual low flow load
5. AHF = annual high flow load
6. MMF = maximum month load

Current per capita loadings of 0.455 pounds of BOD5 per day far exceed typical loadings for residential wastewater. Typical loadings are in the range of 0.11-0.26 ppcd. Even after accounting for loadings from septic haulers and PPI, per capita loading is approximately 0.38 pounds per day. Additional samples were taken in January and February of 2019 to ensure there was no influence from septic haulers and to make sure solids accumulation in the influent channel were not biasing influent sample results. The results from these samples showed per capita loading remained unusually high. While it is not yet clear what the source of the additional loading is, the additional sampling suggests that the historical loading that has been reported at the WWTP is real and was not artificially biased due to sample error.

It was determined to use existing loading as a plant baseline, but that it would not be reasonable to use current loading to project future loads. It was determined that it would be more appropriate to project future loads from new residential growth using industry standard values.

In order to calculate the future BOD_5 and TSS loadings to the plant, the current loadings from Table 1-6 were added to the future populations from Table 1-2 multiplied by industry standard values for BOD_5 and TSS to estimate planning criteria loading projections (ppd) for the years 2020, 2025, 2030, 2035, and 2040 in Table 1-7. The formula that was used is (baseline criteria (ppcd) x baseline population + planning criteria x additional population above baseline).

Table 1-7 Influent BOD_5 and TSS Loading Projections

Parameter	Current/Baseline Planning Criteria (ppcd*)	Planning Criteria for New Growth (ppcd*)	Loading Projections (ppd)				
			2020	2025	2030	2035	2040
Projected Population			*4,344*	*5,098*	*5,981*	*7,019*	*8,236*
BOD_5							
AADF	**0.455**	**0.260**	1,924	2,120	2,349	2,619	2,936
ALF	**0.475**	**0.260**	2,004	2,200	2,429	2,699	3,015
AHF	**0.428**	**0.260**	1,812	2,008	2,238	2,508	2,824
MMF	**0.511**	**0.260**	2,153	2,349	2,579	2,848	3,165
TSS							
AADF	**0.377**	**0.330**	1,623	1,872	2,164	2,506	2,908
ALF	**0.390**	**0.330**	1,679	1,928	2,219	2,562	2,963
AHF	**0.358**	**0.330**	1,546	1,795	2,086	2,429	2,830
MMF	**0.557**	**0.330**	2,360	2,609	2,900	3,243	3,645

1.5.3 Nitrogen and Phosphorus Loading

Influent total Kjeldahl nitrogen (TKN) and total phosphorus (TP) concentrations and loadings are provided in Chart 1-6 and Chart 1-7, respectively. The maximum TKN and TP concentrations were approximately 35 mg/L as N and 5.7 mg/L as P, respectively. The maximum TKN and TP loadings were approximately 350 ppd as N and 57 ppd as P, respectively.

Chart 1-6 WWTP Influent TKN and TP Concentrations

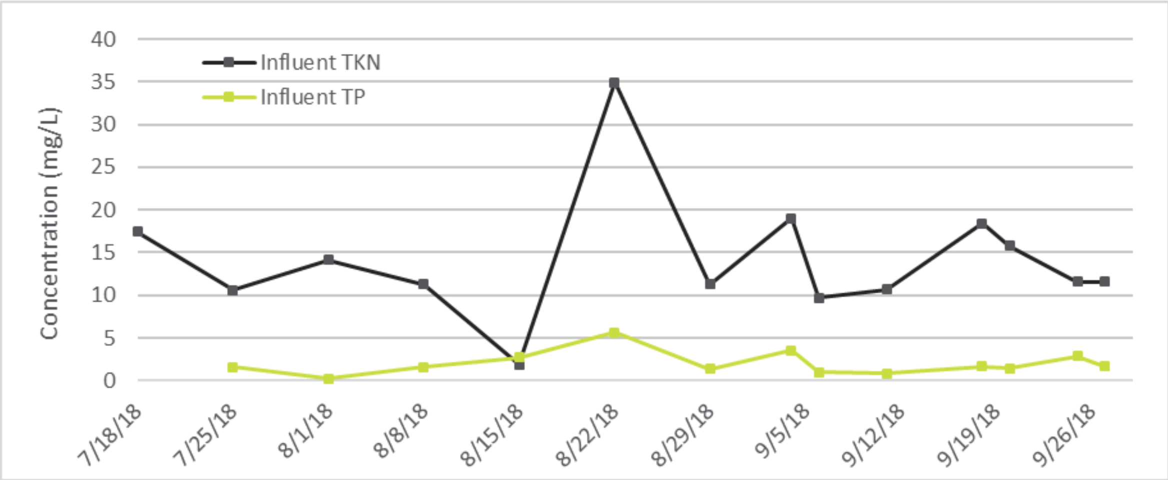
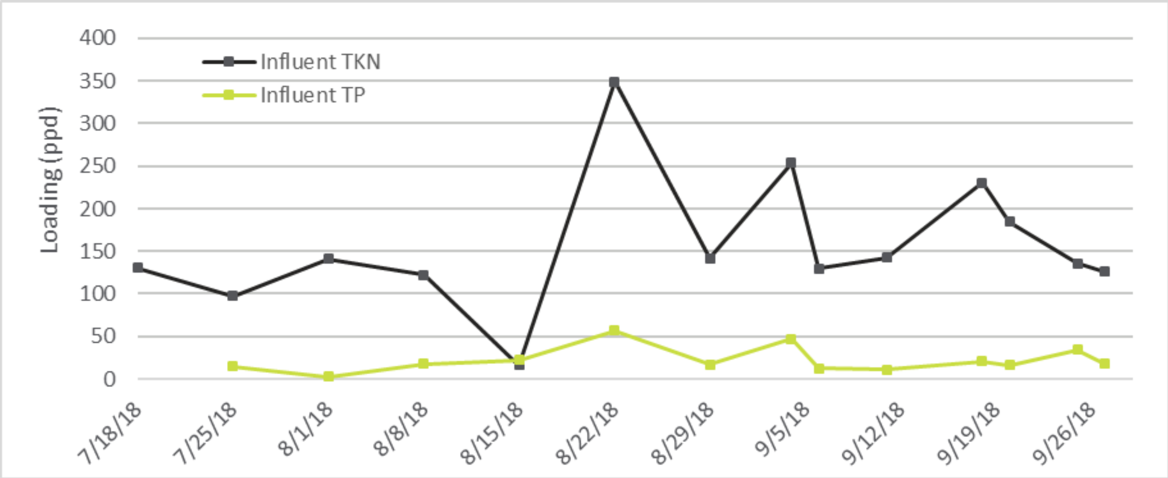


Chart 1-7 WWTP Influent TKN and TP Loadings



Normalizing the maximum values leads to ppcd values of 0.086 ppcd as N and 0.014 ppcd as P, respectively. The average values are 0.039 ppcd as N and 0.005 ppcd as P, respectively. As noted previously with BOD5 and TSS loadings, per capita loadings for TKN and TP are higher than expected for residential wastewater. Typical residential wastewater values for TKN and TP are 0.020-0.040 ppcd as N and 0.003-0.010 ppcd as P, respectively (Metcalf & Eddy, 5th Edition).

Using the normalized values (ppcd) for the current/baseline planning criteria, and typical residential wastewater values for additional population above the baseline, the estimated projections (ppd) for the planning years are shown in Table1-8 based on the following formula (baseline criteria (ppcd) x baseline population + planning criteria x additional population above baseline).

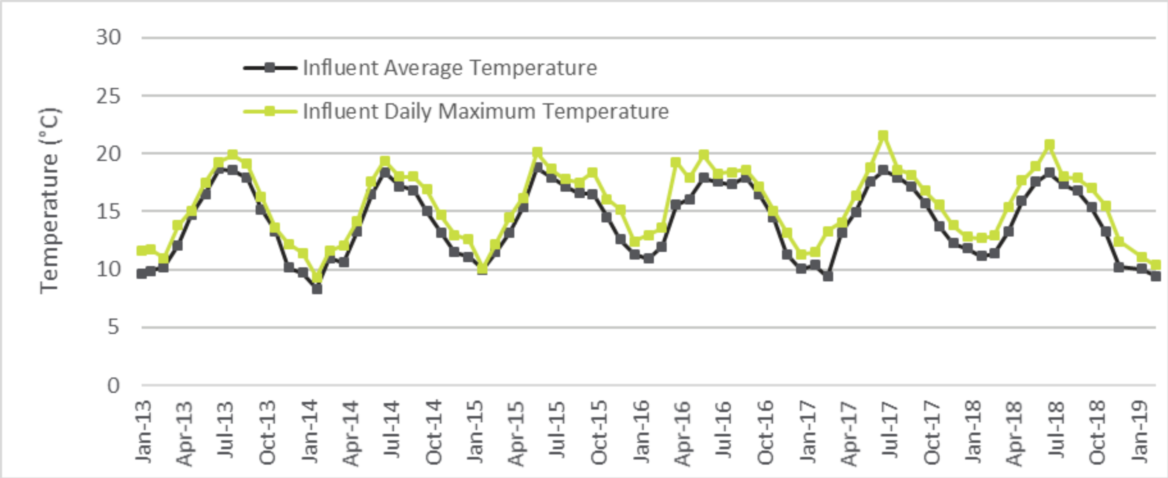
Table 1-8 : Influent TKN and TP Loading Projections

Parameter	Current/Baseline Planning Criteria (ppcd)	Planning Criteria for New Growth (ppcd)	Loading Projections (ppd)				
			2020	2025	2030	2035	2040
Projected Population			*4,344*	*5,098*	*5,981*	*7,019*	*8,236*
TKN							
Avg.	**0.039**	**0.032**	168	192	220	253	292
Max.	**0.086**	**0.040**	361	391	427	468	517
TP							
Avg.	**0.005**	**0.008**	22	28	35	43	52
Max.	**0.014**	**0.010**	60	67	76	86	99

1.5.4 Temperature

The City has also collected influent temperature readings. The monthly average influent temperatures are shown in Chart 1-8. The minimum monthly temperature was approximately 8°C. The maximum monthly temperature was approximately 19°C.

Chart 1-8 WWTP Influent Temperatures



1.6 NPDES PERMIT

The City of Rigby discharges treated effluent under National Pollution Discharge Elimination System (NPDES) Permit No. ID-0020010 (Appendix B) into Dry Bed Creek. Existing effluent limits are summarized in Table 1-9.

Table 1-9 Existing NPDES Permit Limits

Parameter	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (BOD_5)	30 mg/L 648 lbs./day 85% removal	45 mg/L 972 lbs./day --	--
Total Suspended Solids (TSS)	30 mg/L 648 lbs./day 85% removal	45 mg/L 972 lbs./day	--
Total Ammonia (as N) May 1 – September 30	4.3 mg/L 93 lbs./day	--	12.6 mg/L 272 lbs./day
Total Ammonia (as N) October 1 – April 30	0.65 mg/L 14 lbs./day	--	1.7 mg/L 37 lbs./day
E. coli Bacteria	126/100 mL	--	460/100 mL
pH	Daily minimum and maximum between 6.5 and 9.0		

The effluent ammonia limits are new to the City's discharge permit and the City was given a compliance schedule to meet the ammonia limits by August 1, 2023. The City's permit went into effect on January 1, 2017, with an expiration date of December 31, 2021. According to the NPDES Fact Sheet (Appendix B), the Dry Bed Creek is an undesignated surface water. Undesignated surface waters shall be protected for beneficial uses including:

- recreational use
- propagation of fish, shellfish, and wildlife, wherever attainable
- industrial and agricultural water supply
- wildlife habitats and aesthetics

There are a number of items that may be added as future discharge requirements. However, there is currently no impairment or TMDL on the Dry Bed Creek, and according to the fact sheet, the Rigby WWTP effluent is not known to be causing any issues with temperature, phosphorus, toxicity or heavy metals (e.g. copper).

In addition to the surface water discharge, the City is also considering using reuse (i.e. land application) as a potential method of effluent discharge. There are four different effluent classifications in Idaho for reuse water - Class A to Class D - specified in Idaho's Recycled Water Rules (IDAPA 58.01.17). Depending on how the reuse water is used, the treated effluent will need to meet one of the classes. Table 1-10 provides typical treatment requirements for the four different classes along with allowable uses for each class.

Table 1-10 Idaho Reuse Water Requirements

	Class A	Class B	Class C	Class D
Typical Treatment Requirements				
Oxidized	X	X	X	X
Coagulated and Clarified	X	X	-	-
Filtered	X	X	-	-
Disinfected	X	X	X	X
BOD_5, mg/L	5 - 10	-	-	-
Total Nitrogen, mg/L	10 (or stricter) - 30	10 (or stricter) - agronomic rate	agronomic rate	agronomic rate
Turbidity, NTU	0.2 - 5	5 - 10	-	-
pH	6.0 - 9.0	-	-	-
Total Coliform, no./100 mL	2.2 - 23	2.2 - 23	23 - 230	230 – 2,300
Virus	5-log reduction	-	-	-
Allowable Uses				
Fodder, fiber, or processed food crops	X	X	X	X
Pasture: not producing milk for human consumption	X	X	X	X
Pasture: producing milk for human consumption	X	X	X	-
All edible food crops	X	X	-	-
Golf courses	X	X	-	-
Parks: non-use periods	X	X	-	-
Parks: use periods	X	-	-	-
Home irrigation	X	-	-	-
Groundwater recharge	X	-	-	-

1.7 PLANNING CRITERIA SUMMARY

The planning criteria are summarized in Table 1-11. The BOD_5 and TSS loading limits are technology-based effluent limits based on the oxidation ditch technology and the 20-year maximum month design flow. The ammonia limits are based on the ammonia reasonable potential analysis and the future 20-year maximum month design flow.

Table 1-11 WWTP 20-Year (2040) Planning Criteria

Parameter	Unit	Influent	2040 Planning Effluent Requirements					
			Monthly Average Limit	Monthly Geometric Mean Limit	Weekly Average Limit	Weekly Maximum Limit	Daily Maximum Limit	Instantaneous Maximum Limit
Annual Average Daily Flow	MGD	1.07	--	--	--	--	--	--
Maximum Month Flow	MGD	2.42	--	--	--	--	--	--
Peak Day Flow	MGD	2.94	--	--	--	--	--	--
Peak Hour Flow	MGD	3.27	--	--	--	--	--	--
BOD_5	mg/L	157	30	--	45	--	--	--
	ppd	3,165	605	--	972	--	--	--
	% removal	--	85 (minimum)	--	--	--	--	--
TSS	mg/L	181	30	--	45	--	--	--
	ppd	3,645	605	--	972	--	--	--
	% removal	--	85 (minimum)	--	--	--	--	--
E. coli	#/100 mL	--	--	126	--	--	--	460
pH	SU	--	Instantaneous min. and max. between 6.5 and 9.0					
Ammonia as N May 1 - Sept. 30	mg/L	--	4.3	--	--	--	12.6	--
	ppd	--	93	--	--	--	272	--
Ammonia as N Oct. 1 - Apr. 30	mg/L	--	0.65	--	--	--	1.7	--
	ppd	--	14	--	--	--	37	--
Temperature	°C	8 - 19	--	--	--	--	--	--
TKN as N	mg/L	25.6	--	--	--	--	--	--
	ppd	517	--	--	--	--	--	--
TP as P	mg/L	4.9	--	--	--	--	--	--
	ppd	99	--	--	--	--	--	--

1.8 COMMUNITY ENGAGEMENT

Preliminary flows and loadings were presented to the City Council on September 20, 2018 along with historical growth trends that showed growth within the City at 0.66 percent annually from 1920 to 1980; 2.78 percent annually from 2000 to 2010, and 0.4 percent annually from 2010 to the present. High level treatment costs were presented in order to provide context for growth assumptions.

Information presented to the City Council is included in Appendix B. The City Council requested we provide historical growth within Jefferson County School District 251 for reference at the next City Council meeting.

Information presented to the City Council on October 4, 2018 showed 5.8 percent growth in the school district for the 2017-2018 school year. Growth in Jefferson County was 3.17 percent from 2000 to 2010 and 1.3 percent from 2010 to the present. After considering current trends in the school district and county, the City Council asked that the study assume a 3.25 percent annual growth rate for the 20-year planning horizon.

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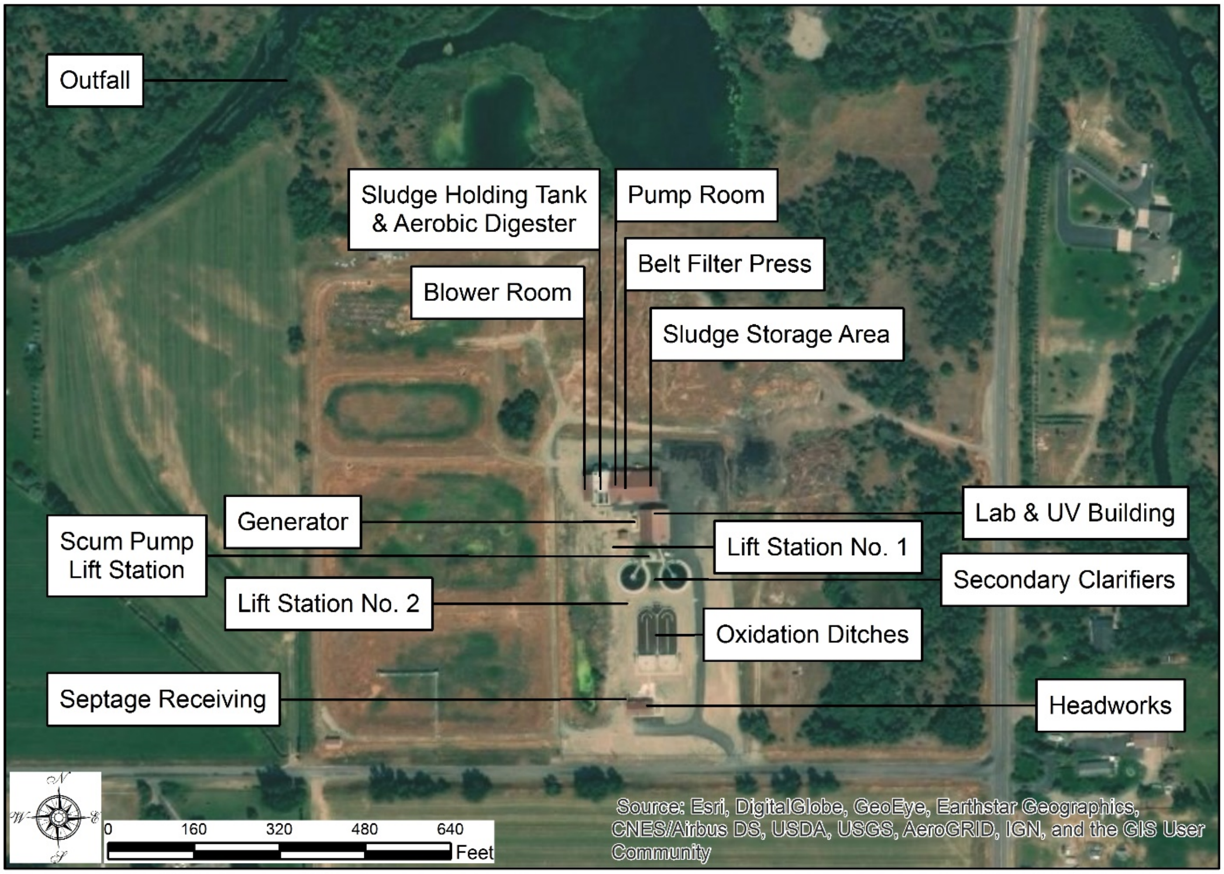
CHAPTER 2 – EXISTING FACILITY ASSESSMENT

This section contains a description and condition evaluation of the City of Rigby's existing WWTP

2.1 LOCATION

A map of the existing WWTP is shown in Figure 2-1.

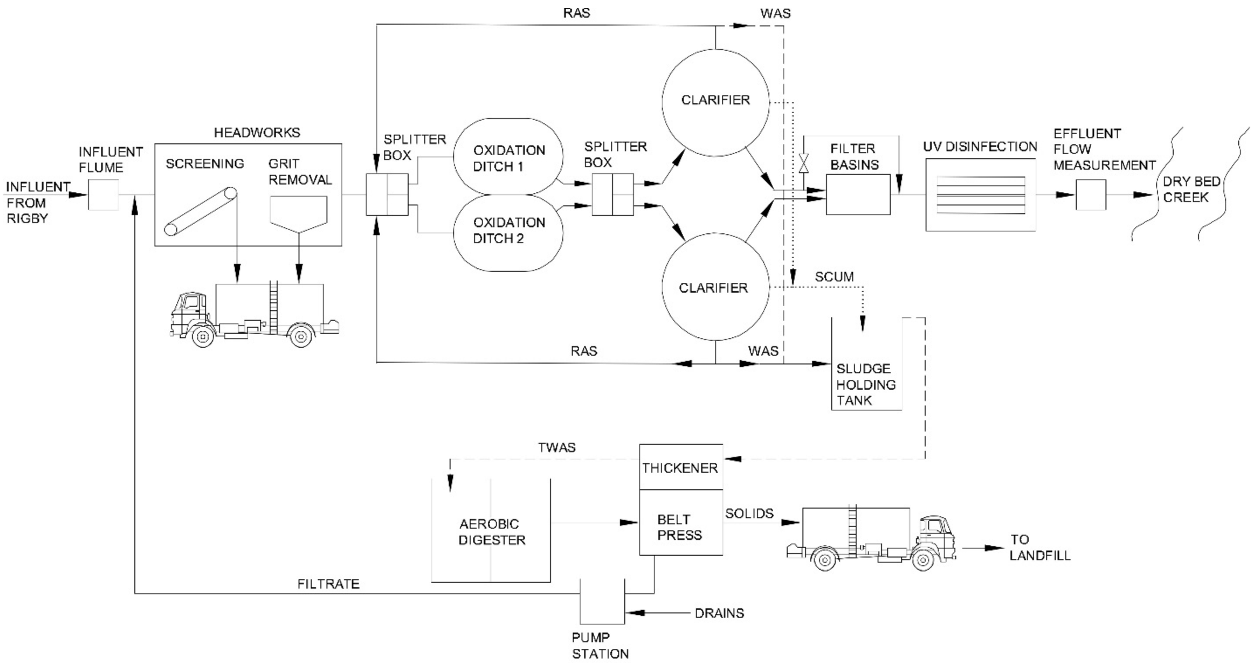
Figure 2-1 Existing WWTP Map



2.2 HISTORY

The WWTP, prior to the more recent upgrades, was a partial mix aerated lagoon system. In 2010 the plant was upgraded to an oxidation ditch secondary treatment process and the lagoons were abandoned. Along with the oxidation ditch and secondary clarifiers, a new headworks was constructed - adding an influent screen and grit removal. The WWTP improvements included ultraviolet light (UV) disinfection, solids thickening, aerobic digestion, and dewatering. A simplified schematic process layout of the WWTP is shown in Figure 2-2.

Figure 2-2 Existing WWTP Process Schematic



2.3 WWTP DESCRIPTION

Wastewater from the entire collection system is combined and pumped to the WWTP through a 12-inch line which transitions to a 14-inch line for the last 650 feet prior to discharging to the WWTP. Septage is periodically allowed at the WWTP and is dumped into a box with a bar screen near where the 14-inch line discharges into the WWTP. The wastewater flows by gravity through the headworks. The headworks consists of a Parshall flume with ultrasonic level sensor for influent flow measurement, one fine screen with a backup bar screen in a bypass channel, a vortex grit chamber with a grit classifier, and a composite sampler.

The screened and degritted wastewater is then combined with the return activated sludge (RAS) in the splitter box prior to flowing to one of the two oxidation ditches. The wastewater is aerated and mixed by surface aerators (one per oxidation ditch). The treated wastewater flows over an adjustable weir gate and is then split and sent to one of the two secondary clarifiers. Solids in the secondary clarifiers are removed and either returned to the influent splitter box by the RAS pumps or sent to the solids treatment system by a waste activated sludge (WAS) pump. The clarified effluent is combined at the filter basins. Cloth filters were originally installed at the WWTP, but the filters have since been removed and all that is left is the basin walls. The effluent is then disinfected by the UV system, which deactivates bacteria, viruses, and other microorganisms to permissible levels for discharge. The effluent flow is measured with an open channel flow measurement and an ultrasonic level sensor; and then discharged through an 18-inch pipe into Dry Bed Creek.

Solids are pumped by the WAS pumps to a sludge holding tank. The solids are mixed and aerated to keep the sludge from becoming septic. The solids are then pumped to the gravity belt thickener portion of the belt filter press for thickening. The thickened sludge is pumped to the aerobic digesters for treatment. Following sludge treatment, the sludge is dewatered using the belt filter press.

2.4 CONDITION OF EXISTING FACILITIES

2.4.1 Headworks

A Parshall flume and ultrasonic level sensor are used to measure the influent flow to the headworks. An automatic refrigerated sampler collects samples of the influent wastewater in the channel upstream of the flume. The automatic sampler can receive a flow measurement signal for flow-paced sampling; however, the sampler is currently set up to sample every two hours on a timer as there is an issue with the flow-pace signal. A septage receiving box with a coarse bar screen is used for septage haulers. The septage receiving box is upstream of the sampler and Parshall flume.

Influent Screen

The headworks contains an influent drum screen that has ¼-inch bar openings. The screen is a Lakeside Raptor® and was installed in 2010. The screen operates based on upstream and downstream water surface elevation differential in the influent channel as measured by a level sensor. There is also a timer in the control panel that will clean the screen after an operator-adjustable amount of time. The screenings are washed and compacted in the Raptor, and then discharged to a trash container, which is emptied as needed by City staff. The screen control panel is in an electrical room adjacent to the headworks building. The screen can be controlled by a hand / off / auto (HOA) switch on the control panel. Screen timer, level, run time, delays, etc. are visible at the control panel. The influent screen is rated by the manufacturer to handle 3 MGD, which is slightly less than the 2040 PHF (3.27 MGD). There is a backup manual bar screen in the bypass channel in the event the screen is not operational; however, the bar screen has larger openings and would not provide as much protection for the downstream components.

After passing through the screen, the wastewater normally flows to the vortex grit removal system. It is comprised of a single vortex grit separator, self-priming grit pump, and grit cyclone/classifier. Removal of grit helps protect the equipment downstream of the grit facility. Grit settles out in the grit chamber and is pumped to the grit cyclone/classifier which dewaters the grit and deposits it into a dumpster. The cyclone/classifier is operated at the same time as the grit pump. The grit pump is operated on a timer. The grit facility has a capacity rating of 2.5 MGD which is approximately the 2030 PHF. The grit chamber has a bypass channel if the equipment needs to be taken off-line for service or repairs; however, there is no redundant grit removal system. Several stop gates enable bypassing of the grit equipment. City staff has had issues with the water flow rate to the grit scour line and is currently using a portable pump in the influent channel to provide the grit scour.

Vortex Grit Removal

Combustible gas detectors and a portable fire extinguisher are provided in accordance with the National Fire Protection Association (NFPA) 820 Standard for Fire Protection in Wastewater Treatment and Collection Facilities, 2016 Edition. However, the ventilation and roof/ceiling in the headworks are both in need of repair.

The City's supervisory control and data acquisition (SCADA) system is used to track the status of the headworks equipment and send alarms. A backup generator provides power in the event of a power loss. The backup generator is discussed in more detail in Section 2.4.9.

Deficiencies

- There is not a redundant automatic screen or vortex grit removal system.
- The water flow for the grit scour line is not sufficient.
- The headworks does not have sufficient ventilation for a Class I, Division 2 environment (NFPA 820).
- The roof/ceiling and flow pacing signal need repair.

Recommendations

- Add a redundant automatic screen and vortex grit removal system. In the interim, purchase spare motors, pump and drive to limit maintenance down time.
- Improve the plant water system to provide sufficient flow for the grit scour line.
- Increase the ventilation for a Class I, Division 2 environment (NFPA 820).
- Repair the roof/ceiling and flow pacing signal to the sampler.

2.4.2 Oxidation Ditches


Oxidation Ditches

From the headworks the wastewater is combined with the RAS in the splitter box and then directed to one of the two oxidation ditches. Each oxidation ditch has a volume of approximately 325,000 gallons. Aeration and mixing are provided in each oxidation ditch by a single variable speed surface aerator in each oxidation ditch. The aeration and mixing can be varied in two ways: 1) by adjusting the aerator speed (no less than 600 rpm to maintain oil flow and proper reducer function), or 2) by changing the aerator submergence by raising or lowering the water level in the oxidation ditch using the adjustable effluent weir gate. A dissolved oxygen (DO) sensor (Hach LDO) is provided near the effluent weir gates for each oxidation ditch to monitor DO levels. The City staff manually adjust the aerator speed and/or water level based on the DO levels. If the City staff want to drain one of the oxidation ditches, they utilize 8-inch mud valves which are connected to Lift Station No. 2. The 8-inch pipe is not located in a sump so additional pumping and effort is required to completely drain the oxidation ditch.

Deficiencies

- The aerator speed and weir gate level require manual adjustment.
- The City staff are not able to easily drain an oxidation ditch.

Recommendations

- Make programming changes so that aerator speed and weir gate levels are automatically adjusted.
- Add a sump to each oxidation ditch to allow for easier draining and maintenance.

2.4.3 Secondary Clarifiers

After the oxidation ditches the wastewater is combined and then split to one of the two secondary clarifiers. Each clarifier is 50-foot diameter, with a center feed and energy dissipating inlet well. There is a density current baffle under the effluent launder. Sludge is collected to a central sludge hopper using a spiral blade sludge scraper. The floor of the clarifier is also sloped toward the hopper. Scum is removed from the clarifier water surface using a scum skimmer, trough, and flushing valve.

Secondary Clarifier

2.4.4 UV Disinfection

Effluent from the secondary clarifiers is combined in the filter basins. The cloth filters that were originally installed have been removed. After it is combined, the effluent then flows to the UV disinfection system, which is a Trojan UV 3000. The UV disinfection system is comprised of one rectangular channel with two banks of UV modules. Each bank consists of five modules with eight lamps per module. The system is difficult to clean, and the system has been discontinued although parts are available for the next approximately 5 years.

UV Disinfection System

The UV system includes a controller that monitors the effluent flow, water level in the channel, UV intensity, transmittance, temperature and lamp ballast status. The controller turns banks on and off based on the 4-20mA DC signal from the effluent flow meter to conserve power.

From the UV disinfection system, the effluent flow is measured using a Siemens Miltronics OCM III open channel flow meter, sampled using a refrigerated automatic sampler, and then discharged to Dry Bed Creek at the WWTP outfall.

Deficiencies

- There is only one UV channel, so there is no way to isolate the channel for maintenance.
- The UV system is difficult to clean.

- Spare parts are no longer being produced and the supply is estimated to run out in approximately 5 years.

Recommendations

- Add a second UV channel for redundancy.
- Replace the UV system with a system that can be more easily maintained.

2.4.5 Sludge, Scum, and Drain Pumping

There are three RAS pumps to return the mixed liquor from the secondary clarifiers to the oxidation ditches. One RAS pump is dedicated to each clarifier with one RAS pump being a shared standby pump capable of pumping from either clarifier. The RAS pumps are screw centrifugal pumps with variable frequency drives and a capacity of approximately 680 gpm per pump. There is a magnetic flow meter on each clarifier RAS suction line to measure the RAS flow. The RAS pumps typically operate at a constant flow rate set by the operator.

RAS, WAS, and Digested Sludge Pump Room

Sludge wasting is necessary to keep the desired solids retention time (SRT) to maintain consistent performance. Sludge is wasted using the two larger rotary lobe pumps in the RAS/WAS Pump Room. The WAS pumps connect to the RAS line and pump the sludge to the sludge holding tank. The WAS pumps also pump the sludge back from the sludge holding tank to the gravity belt thickener. The WAS pumps are equipped with variable frequency drives and are rated for 150 gpm at full speed. A magnetic flow meter on the WAS pump discharge measures the flow rate to the sludge holding tank and to the gravity belt thickener.

The two smaller rotary lobe pumps in the pump room are used to pump the digested sludge from the digesters to the belt filter press for dewatering. These digested sludge pumps are equipped with variable frequency drives and have a capacity of 40 gpm. One of the pumps is redundant.

There are two scum pumps that are used to the pump the secondary clarifier scum to the aerobic digesters. The scum from the secondary clarifiers flows by gravity to the scum pump lift station. The scum pumps are submersible chopper pumps that have a maximum capacity of 200 gpm. The scum pumps operate based on the water level in the scum pump lift station.


Scum Pump Lift Station

Lift Station No. 1 is used to pump the plant drain back to the headworks (downstream of the influent sampling and flow measurement location). The plant drain receives water from the belt filter press and from the process building (lab, break room and restroom). Lift Station No. 1 has two submersible non-clog pumps, each rated for 360 gpm.

Lift Station No. 2 is used to drain the oxidation ditches for maintenance. There is only one pump in Lift Station No. 2. Although it is rated for 360 gpm, the flow should be constrained so that it does not overwhelm the pump. The lift station discharges join, and the combined flow is through an 8-inch pipe. The pumps in each lift station are operated when the water level in each lift station reaches a certain level.

No deficiencies were identified for the RAS, WAS, scum, or drain lift stations.

2.4.6 Plant Water


Plant Water System

Following the UV disinfection system is a plant water pumping system. The system consists of three multistage centrifugal pumps with variable frequency drives and a control system. Based on system pressure at the pump discharge manifold, the system varies the pump speed and number of pumps operating to maintain a constant discharge pressure over a wide range of demands. The system includes a hydropneumatic tank to minimize pump cycling at low flows. The system also injects a small amount of chemical disinfectant to the pumped discharge (currently 12.5% solution of Liquichlor) to clean the lines of biological growth.

There have been several issues with this plant water system. The water flow in the headworks has been insufficient for the grit scour line at the grit chamber. According to City staff the plant water flow meter appears to be broken. Additionally, the pump intake screens plug frequently, and the screens need to be manually cleaned.

Deficiencies

- The flow meter is broken.
- The pump intake screens require manual cleaning.

Recommendations

- Replace the flow meter.
- Add filtration to protect the pumps and reduce the amount of maintenance on the pumps.

2.4.7 Sludge Holding Tank and Aerobic Digesters

In the sludge holding tank, the sludge is mixed and aerated by medium bubble diffuser assemblies. The diffusers introduce compressed air from the sludge holding tank blower into the bottom of the tank to keep the sludge from becoming septic. Once City staff is ready to process the sludge, it is pumped from the sludge holding tank to the gravity belt thickener section of the belt filter press. Following thickening, the sludge is then pumped to the aerobic digesters for stabilization.

Blower Room

The aerobic digesters consist of two tanks in series. As thickened sludge is pumped to the first tank, it displaces partially digested sludge to the second tank. The digester tanks are equipped with medium bubble diffuser assemblies with shear tubes to provide mixing and oxygen transfer for aerobic treatment. The aerobic digesters are designed to stabilize the sludge and reduce the mass of solids for disposal, while also providing holding capacity until the sludge can be dewatered. The digested sludge is currently dewatered and disposed of in the Jefferson County landfill. The City currently spends about $17,500 per year for a contractor to haul the biosolids to the landfill.

The blowers for both the sludge holding tank and aerobic digesters are positive displacement blowers with variable frequency drives. The blower for the sludge holding tank is rated at a maximum output of 300 scfm at 10 psig. The two blowers for aerobic digesters are rated at a maximum output of 410 scfm at 8.5 psig and 300 scfm at 8.5 psig, respectively. A fourth blower serves as a backup blower for the other three blowers and is rated at a maximum output of 410 scfm at 8.5 psig. The blowers do not have sound enclosures making the blower room extremely loud. The sound also escapes the blower room and is audible on the digester roof. Additionally, a biosolids management plan has not been developed by the City.

Deficiencies

- Although not measured, the blowers are likely dangerously loud to work around for maintenance.
- A biosolids management plan has not been developed.

Recommendations

- Add sound enclosures to the blowers.
- Develop a biosolids management plan.

2.4.8 Thickening and Dewatering

Sludge thickening and sludge dewatering are currently performed using one unit – a 0.75-meter BDP Model 3DP belt filter press. The gravity belt thickener portion of the belt filter press is used for thickening the WAS before it is sent to the aerobic digesters. Thickening the WAS maximizes the treatment capacity of the digesters. The digested sludge is then periodically sent back to the belt filter press, this time for dewatering using both the gravity belt and pressure sections of the belt filter press.

Gravity Belt Thickener / Belt Filter Press

A thickened sludge transfer pump is used when thickening to pump the thickened sludge to the digesters. The thickened sludge pump is a progressive cavity pump with an open hopper that receives sludge from the gravity belt thickener section. A flow meter on the thickened sludge pump discharge measures the flow to the digesters. The thickened sludge pump is rated for up to 30 gpm and is equipped with a variable frequency drive.

Thickening is currently performed Monday through Friday for 5-6 hours per day, and dewatering is performed Mondays and Thursdays for 6-8 hours per day. Due to the time needed for thickening and dewatering operations, the system is periodically run without operator supervision, which can result in less than optimal results.

In addition to the belt filter press, the thickening and dewatering system includes a polymer mix/feed system and washwater booster pump. A shaftless screw conveyor is used to transport the dewatered sludge from belt filter press to the truck loading/dewatered sludge storage area. There is currently no berm around the sludge storage area to collect runoff.

Deficiencies

- There is no redundancy for the thickening and dewatering system. Additionally, the same belt filter press is used to thicken and dewater.
- There is no berm around the sludge storage area.

Recommendations

- Add redundant equipment. In the interim, purchase spare motors, pumps and drives to limit maintenance downtime.
- Dedicate a unit to either thickening or dewatering and operate it as a backup to the other unit. Operation for thickening and dewatering can typically be optimized (sometimes with different polymers) when not using the same unit to perform both functions.
- Add berms and a sump pump station to collect runoff in the sludge storage area.

2.4.9 Emergency Power


Emergency Generator

There is a 600-kW emergency power generator at the WWTP; however, there is not enough generating capacity for the entire WWTP. The generator is wired to supply power to the headworks, oxidation ditches, clarifiers, RAS pumps, and UV system. There is no backup power for the WAS pumps, blowers, and solids handling. There is also no backup power for several of the lift stations. The WWTP can operate under backup power for several days before power is needed for solids handling systems. In the past, power outages have been relatively short in duration, and backup power at the WWTP has been adequate.

In the event of a power outage, an automatic transfer switch will power the main components using the generator. When power is restored to the grid, the automatic transfer switch will operate again, connecting the system to the grid, and the generator will shut down.

Deficiency

- The emergency power system cannot currently turn on all the WWTP equipment at once.
- There is no backup power for the lift stations.
- The emergency power system is insufficient for future expansion of the WWTP.

Recommendation

- Expand the emergency power system to provide power for the entire plant in the event of a loss of power.
- Purchase a portable generator for the lift stations.

2.4.10 Storage, Site Security, SCADA, and Roads

There are several items that for budgetary reasons were not included in the WWTP upgrade, but based on the long-term benefits, should be reconsidered. The WWTP does not have a lot of available storage space for equipment, parts, or maintenance. The WWTP lab also could benefit from an oven and microscope for process control reasons. The SCADA system was primarily based on the alarms and did not allow for much data trending, which could improve operations. There are also components that would be helpful to be controlled by the SCADA system, such as the RAS pumps.

The main access to the WWTP is off Junkyard Road. The main road in the WWTP is paved; however, the area around the septage receiving box is gravel and can be susceptible to washing out according to City staff. The WWTP is completely fenced with a lockable gate at the main entrance. The City intends to change out the lights in the WWTP access areas to new LED lights to save electricity.

Deficiency

- Space for equipment (e.g. jetter truck, tractor, etc.), spare parts, and work space for maintenance in the WWTP is limited.
- Gravel leading to and around the septage receiving box is periodically washed out.
- SCADA is limited without much control or data trending capability.
- The WWTP lab is limited without an oven and microscope.
- WWTP access lighting is not LED.

Recommendation

- Consider adding a maintenance building that can be used for equipment and parts storage as well as maintenance activities.
- Pave the area leading to and around the septage receiving box.
- Upgrade the SCADA system.
- Purchase an oven and microscope.
- Change out the access lighting to LED to save electricity.

2.5 FINANCIAL STATUS OF EXISTING FACILITIES

Financial information for the City of Rigby sewer utility is provided in Appendix C for the years 2014 through 2018. Sewer revenue during the 2017-2018 fiscal year was $1,607,546. Annual costs to operate and maintain the wastewater system, separated by type of expense, are shown in Appendix C. Total expenses from the sewer fund (including transfers to reserve accounts and grant funds) for the 2017-2018 fiscal year were approximately $933,888.

2.6 WATER/ENERGY/WASTE AUDITS

No energy audits have been performed on the system; however, an energy audit should be conducted as part of a future project.

2.7 SYSTEM CLASSIFICATION

The system classified as a Class III Treatment system. A Treatment Plant Classification Worksheet is included in Appendix B. The treatment classification is not expected to change with the improvements recommended in this study. Scott Humpherys is the Wastewater Superintendent and lead operator for the City and is a Class III Wastewater Treatment Licensed operator. His license number is WWT3-10812.

CHAPTER 3 – WWTP CAPACTIY AND PERFORMANCE

This chapter contains an evaluation of the capacity and performance of the existing WWTP for the City of Rigby. WWTP effluent performance was compared to the permit limits to demonstrate the historically compliant operation. The WWTP capacity is compared to the planning criteria to determine when improvements are necessary.

3.1 WWTP OPERATIONS

3.1.1 WWTP Performance

This section evaluates the effluent quality from the WWTP. The effluent quality is compared to current/anticipated limits for BOD_5, TSS, *E. coli*, pH, and ammonia. The data was taken from the DMRs analyzed from January 2013 through February 2019.

BOD_5

Monthly and weekly effluent BOD_5 concentrations are shown in Chart 3-1 and Chart 3-2, respectively, along with the current limits. There were a few BOD_5 concentration exceedances (expressed as mg/L) during this period. These exceedances were due to high influent loadings to the WWTP. However, although not shown, the average monthly and average weekly effluent loadings (calculated from BOD_5 concentration and effluent flow and expressed as lbs./day) have not experienced any exceedances. The WWTP has also met the 85% BOD_5 removal requirement (Chart 3 -3).

Chart 3-1 Effluent BOD Monthly Average

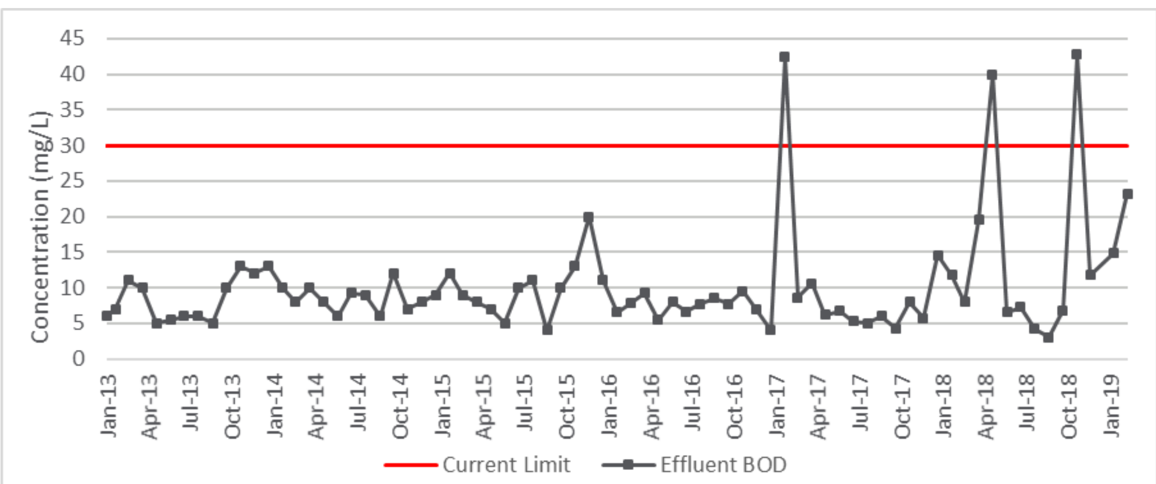


Chart 3-2 Effluent BOD Weekly Average Concentrations

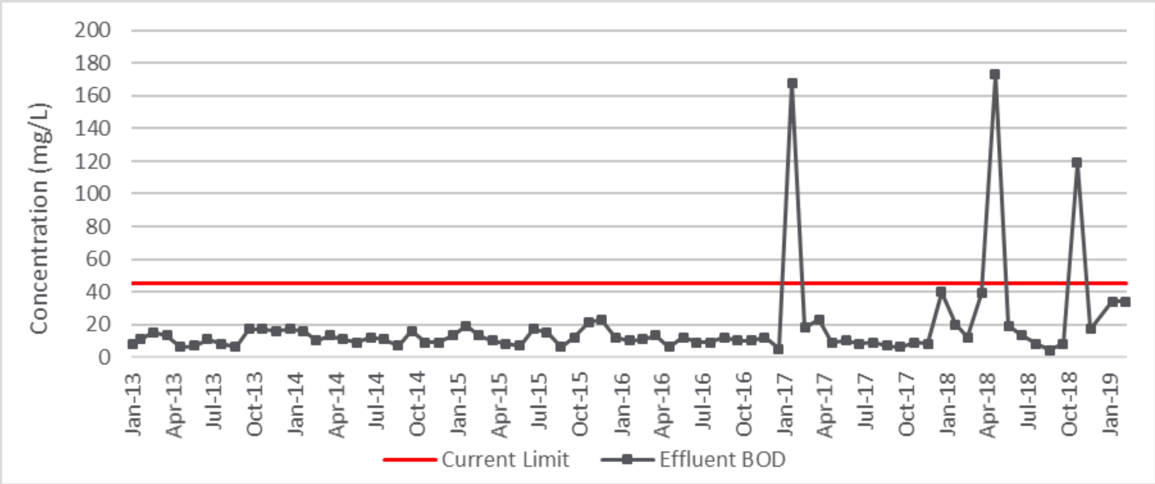
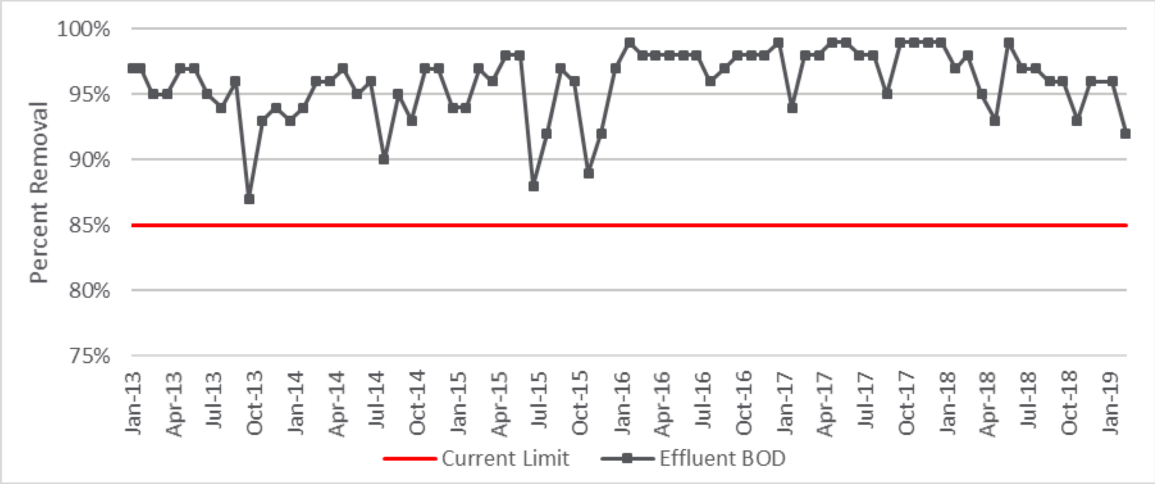


Chart 3-3 Effluent BOD Monthly Percent Removal



TSS

Monthly and weekly effluent TSS concentrations are provided in Chart 3-4 and Chart 3-5, respectively. There was one TSS concentration exceedance, again due to a high influent load. Although not shown, the WWTP has not experienced any TSS permit violations for effluent loading. The WWTP has also met the 85% TSS removal requirement (Chart 3-6).

Chart 3-4 Effluent TSS Monthly Average Concentrations

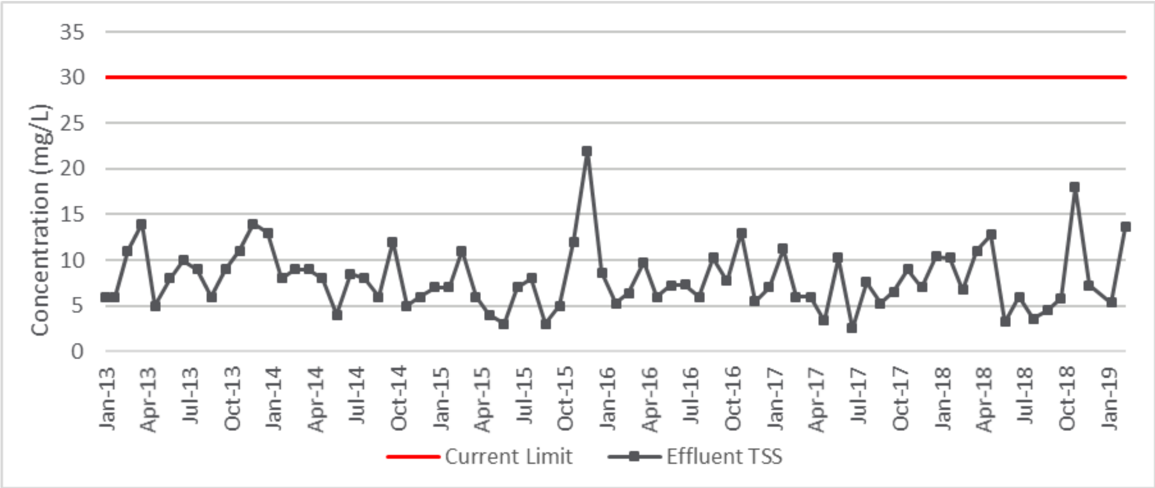


Chart 3-5 Effluent TSS Weekly Average Concentrations

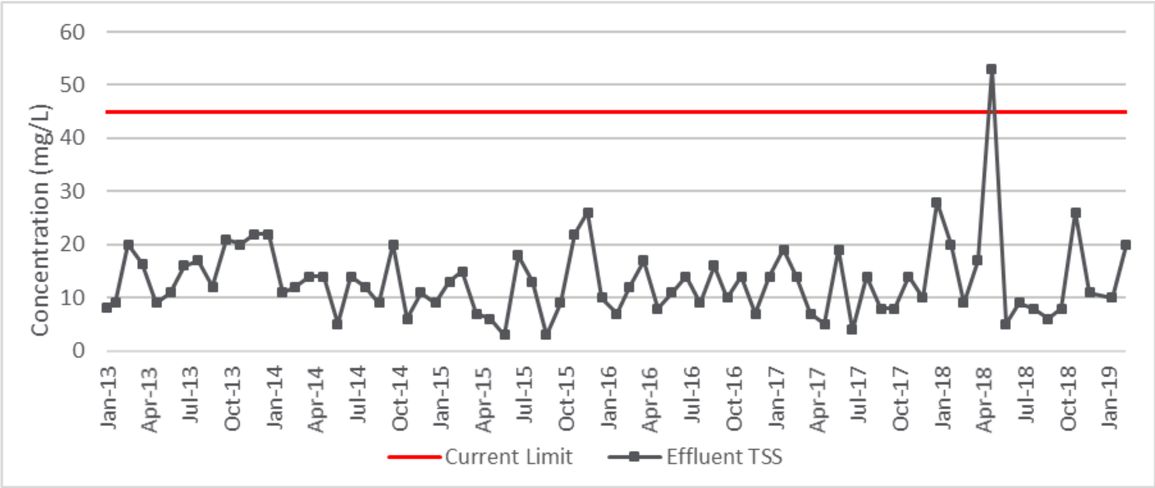
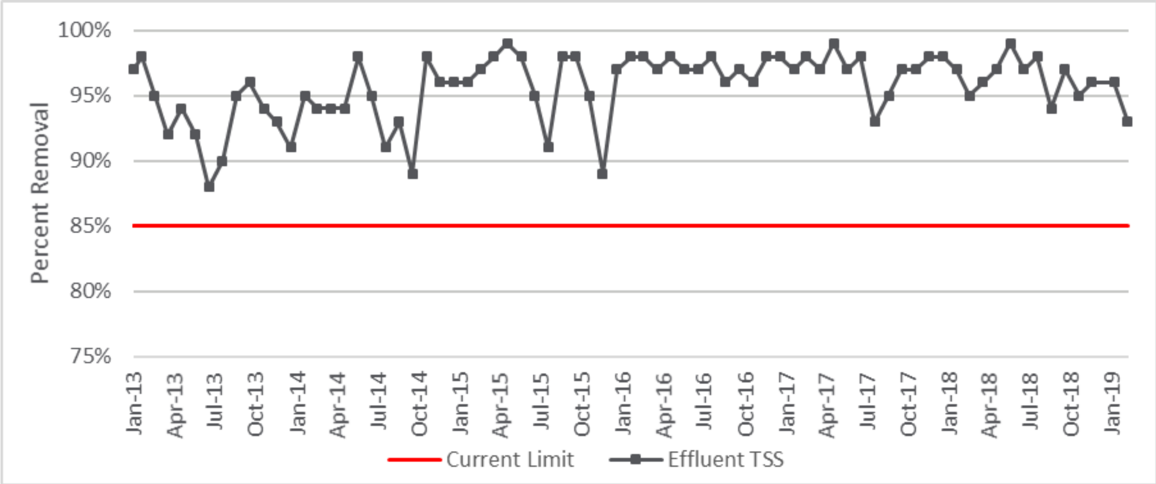


Chart 3-6 Effluent TSS Monthly Percent Removal



E. coli

Monthly geometric mean and instantaneous maximum *E. coli* bacteria effluent data (as most probable number (MPN) per 100 ml) is shown in Chart 3-7 and Chart 3-8, respectively. No exceedances were observed during this period.

Chart 3-7 Effluent E. coli Monthly Geometric Mean

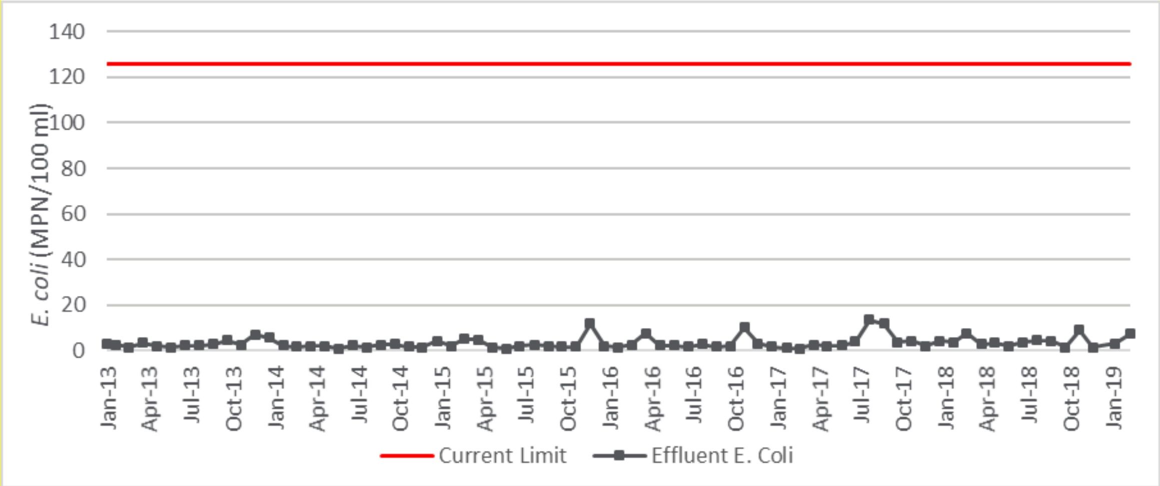
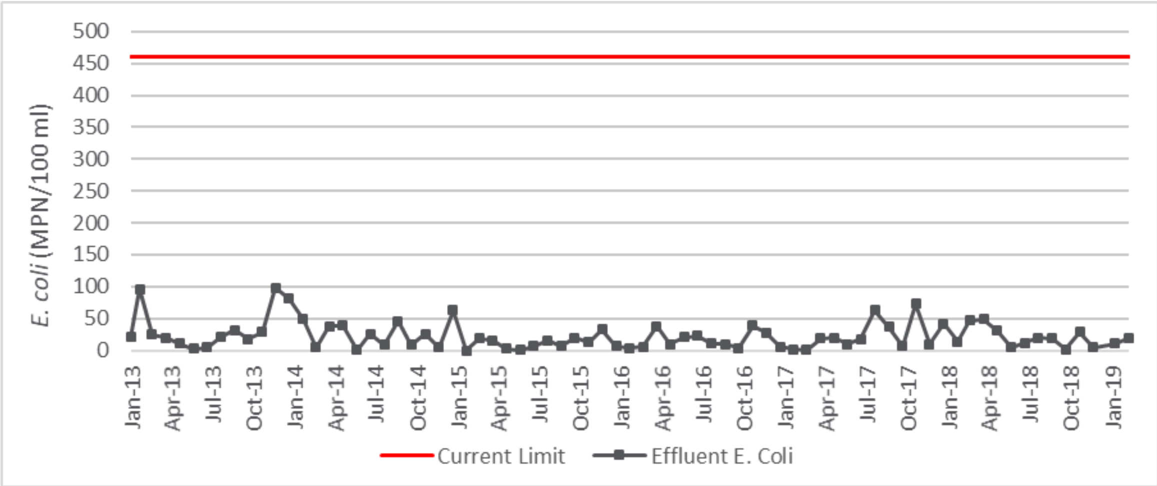


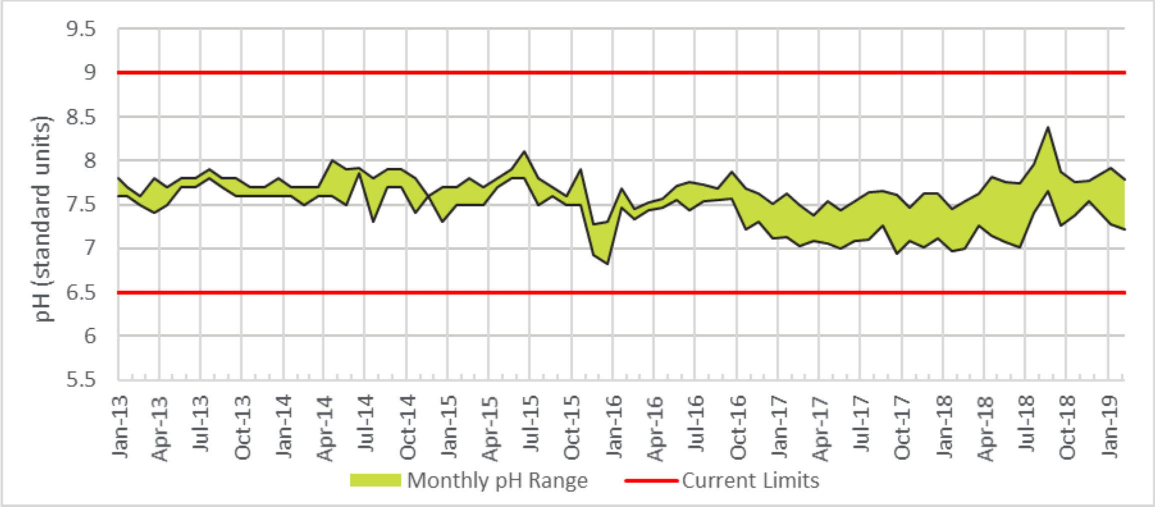
Chart 3-8 Effluent E. coli Instantaneous Maximum



pH

Daily maximum and minimum pH effluent data are shown in Chart 3-9. There were no pH exceedances noted during this period.

Chart 3-9 Effluent pH



Ammonia

Monthly effluent ammonia concentrations are shown in Chart 3-10. Maximum daily effluent ammonia concentrations from January 2017 through February 2019 are shown in Chart 3-11. As shown in the charts, the ammonia concentrations have exceeded the concentration limits several times. As mentioned in Chapter 1, the ammonia limits are new, and the City was given a compliance schedule to allow them to meet the ammonia limits by August 1, 2023. Since 2017, most of the exceedances have been during the winter when nitrification is the most difficult due to colder temperatures.

Chart 3-10 Effluent Ammonia Monthly Average Concentrations

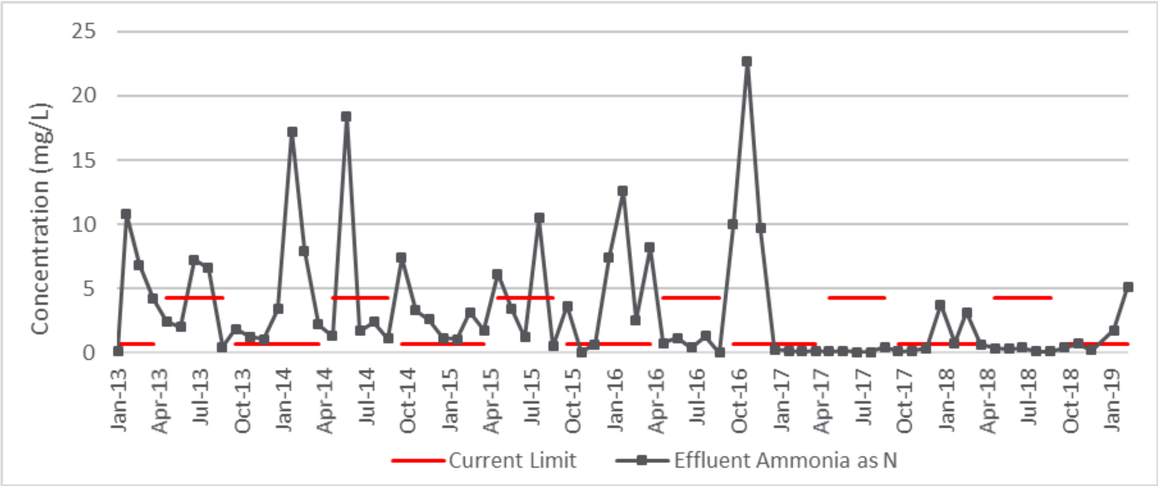
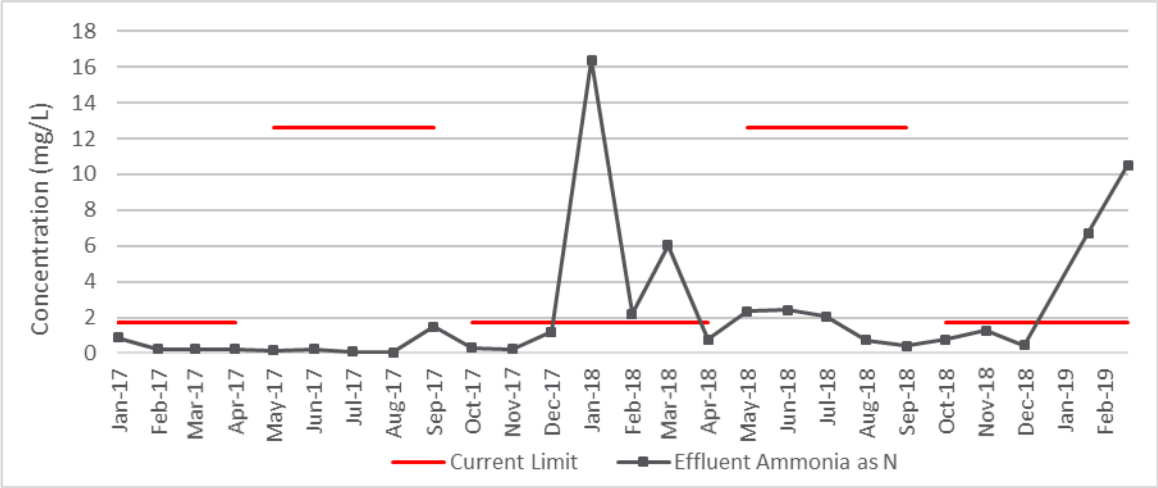


Chart 3-11 Effluent Ammonia Maximum Daily Concentrations



3.1.2 Reliability Evaluation

Another key criterion for WWTP planning is the reliability of unit processes, which generally relates to providing redundant equipment. For the highest level of reliability (Reliability Class I per EPA guidance, EPA 430-99-74-001), at least two units are required for screens, pumps, aeration basins, mechanical aerators, clarifiers, and disinfection. The EPA reliability criteria also requires the capacity, (with the largest unit out of service), be sufficient to provide for:

- Mechanical aerators – design oxygen transfer
- Pumps – peak design flow
- Secondary clarifiers – 75% of the design flow

Ten States Standards (a well-known industry resource, although not formally adopted by Idaho as a standard) also recommends that screening facilities have the capacity to treat peak instantaneous flows with one unit out of service, and that UV disinfection facilities be able to provide full treatment with one bank out of service.

A summary of the reliability evaluation is provided in Table 3-1. This includes ratings for redundancy, criticality, and equipment condition for each major unit process

Table 3-1 Unit Process Reliability Evaluation

Equipment	Built	Redundancy Rating	Criticality Rating	Equipment Condition Rating
Influent Screens	2010	3	S/H, EQ, PF, CC	M
Grit Removal/Classifier	2010	4	PF, CC	M
Oxidation Ditches	2010	1	S/H, EQ, PF, CC	M
Secondary Clarifiers	2010	1	S/H, EQ, PF, CC	M
RAS Pumps	2010	1	S/H, EQ, PF	M
WAS Pumps	2010	1	S/H, EQ, PF	M
Scum Pumps	2010	1	S/H, EQ, PF	M
UV System	2010	1	S/H, EQ, PF, CC	M
Aerobic Digesters	2010	1	S/H, EQ, PF, CC	M
Sludge Holding Tank	2010	4	S/H, EQ, PF, CC	M
Thickening/Dewatering	2010	4	S/H, EQ, PF, CC	M
Backup Rating				
1	**One level of "in kind" redundancy** (Identical piece of equipment is available)			
2	**Two+ levels of "in kind" redundancy** (More than one identical piece is available)			
3	**Equipment alternative** (An alternative piece of equipment is provided)			
4	**Procedural alternative** (An alternative operating procedure is used)			
5	**No Backup** (Failure of equipment will shut entire process down)			
Criticality Rating				
S/H	**Safety and Health Risk** (Would create safety risk to WWTP personnel or others)			
EQ	**Effluent Quality Risk** (Would create effluent permit risk)			
PF	**Process Functionality Risk** (Would affect the function of other processes)			
CC	**Cost Critical** (Would cost a significant amount to repair/replace in emergency)			
Equipment Condition Rating				
N	**New** (Equipment is new, or replaced in last 12 months)			
LN	**Like New** (Equipment is operated very little or recently overhauled)			
M	**Used but Maintained** (Equipment showing expected wear, but is maintained)			
W	**Heavily Worn** (Equipment close to end of useful life; not performing well)			
R	**Needs Replacement** (Equipment beyond cost-effective repair)			

3.2 Capacity Limitations

Both hydraulics and process models were developed to determine the WWTP limitations. The hydraulic model used Visual Hydraulics (Version 4.2) and the process model used BioWin 5.3. The models assumed that all the components were online and functioning. The model results for each area of the WWTP are discussed below.

3.2.1 Headworks

The influent flow is measured upstream of the influent screen using a Parshall flume and ultrasonic level sensor. The rated capacity of the Parshall flume is approximately 2.9 MGD, which is adequate for the future PHF until approximately 2035. However, prior to the screenings being removed, the water level in the influent channel may be impacting the flow measurement, as shown in the hydraulic profile in Appendix A. Solids have also been observed upstream of the Parshall flume. It is recommended that the Parshall flume channel be built up and re-sculpted to maximize the scour and ensure the Parshall flume is clear for accurate flow measurement.

The capacity of the influent fine screen is 3 MGD, which means the existing screen has capacity until nearly 2040. There is a bypass channel with a manual bar screen in case the fine screen needs to be taken out of service for a short period of time. The openings between the bars on the manual bar screen are approximately an inch, so more material will make it into the WWTP when the influent fine screen is down for maintenance.

A vortex grit removal system is utilized downstream of the influent screen. The capacity of the vortex grit removal system is 2.5 MGD, which is approximately the 2030 PHF. There is also only one grit removal system, so if the system is out of service, the flow may need to use the bypass channel. The grit would accumulate in the WWTP rather than being removed, and could cause issues with the equipment, especially the WWTP pumps.

Grit is pumped out of the bottom of the vortex grit chamber by a self-priming centrifugal pump. There is only one pump which discharges to the grit classifier. If the pump or classifier are out of service, grit would accumulate in the grit chamber and eventually overflow and could affect the WWTP equipment. Therefore, maintenance of the pump and grit removal equipment is essential and spare parts need to be on hand for quick replacement.

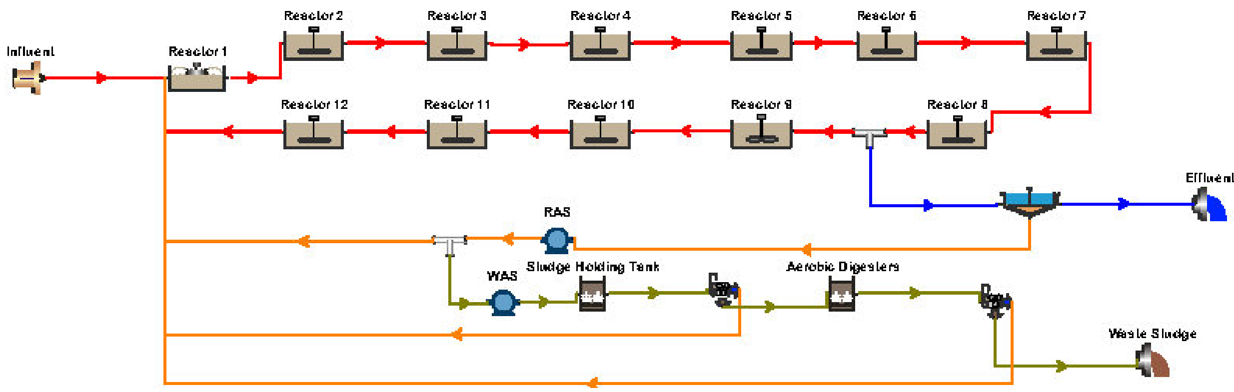
3.2.2 Oxidation Ditches

The keys to a well-functioning oxidation ditch are the ability to maintain an appropriate hydraulic retention time (HRT), dissolved oxygen (DO) levels, solids retention time (SRT), and settleable solids. Typically, oxidation ditches operate in an extended aeration mode with long HRTs (greater than 24 hours) and long SRTs (20-30 days) (WEF Manual of Practice No. 8, 5th Edition). Using the 2040 MMF, the existing oxidation ditches would have a combined HRT of approximately 6.5 hours. This short HRT is more like a conventional activated sludge system that requires only BOD_5 removal rather than ammonia removal.

Aeration in each oxidation ditch is supplied by one (1) 50 HP surface aerator. The combined capacity of the two aerators is approximately 4,100 lbs. oxygen per day. Assuming an influent BOD_5 concentration of 157 mg/L, TKN of 25.6 mg/L, peaking factor of 1.25 – and aeration requirements of 1.2 lbs. oxygen per lb. BOD_5, and 4.6 lbs. oxygen per lb. TKN – the existing aerators have the capacity to handle loadings equivalent to an MMF of approximately 1.3 MGD. Therefore, the aerators are at capacity for BOD_5 and ammonia removal. This aeration capacity also assumes that an aerator can be replaced quickly without any significant downtime, as there is no installed redundancy.

The oxidation ditch capacity was evaluated using a BioWin model as shown in Figure 3-1. The influent flow rates and loadings from Chapter 1 were input into the model.

Figure 3-1 BioWin Schematic



The model showed the oxidation ditch volume is not able to achieve consistent ammonia removal to meet the permit requirements for the current flows. In order to meet the new ammonia permit limits with oxidation ditches, additional oxidation ditches would be necessary for current and future flows.

The return activated sludge (RAS) is combined with WWTP influent downstream of the grit chamber. The combined RAS and influent flow are then split to the two oxidation ditches. The flow to each oxidation ditch is through an 18-inch pipe, which should be sufficient for the 2040 planning period flows plus the RAS flows.

3.2.3 Secondary Clarifiers

Following the oxidation ditches, the flow is again combined prior to being split to the two (2) 50 ft. diameter secondary clarifiers. The flow from the oxidation ditches to each secondary clarifier is through an 18-inch diameter pipe. The pipe size is enough for the 2040 design flows, even if all the flow is being sent to one clarifier.

The hydraulic capacity evaluation of the secondary clarifiers is based on overflow rates of 400 to 600 gallons per day per square foot of clarifier surface area (gpd/sf) for average conditions, 1,000 to 1,200 gpd/sf for the peak hour (Metcalf & Eddy, Wastewater Engineering, 5th Edition), and 700 gpd/sf for maximum month conditions. Considering surface overflow rates only, the maximum firm capacity of the secondary clarifiers is 1.8 MGD for MMF, and 3.1 MGD for PHF (when a clarifier is offline, the remaining clarifier can handle 75% of the design flow). Based on the overflow rate, a third clarifier is required by 2030; however, the overall clarifier capacity is typically more dependent on the solids loading capacity.

The secondary clarifier solids loading capacity is dependent on the operation of the oxidation ditches with regards to mixed liquor suspended solids (MLSS) and the RAS flow. The recommended solids loading capacities of secondary clarifiers are 19.2 to 28.8 lbs. per square feet (ft^2) per day for average conditions, and 48 lbs. per ft^2 per day for peak hour (Metcalf & Eddy, Wastewater Engineering, 5th Edition). Based on expected solids loadings necessary for BOD_5 and ammonia treatment, the clarifiers would currently be at capacity. For the 2040 flows and solids loading from oxidation ditches, two (2) new secondary clarifiers would be needed.

3.2.4 UV Disinfection

Following the secondary clarifiers, the effluent flows from each clarifier through 18-inch diameter pipes by gravity. The 18-inch diameter pipes should be more than adequate for the 2040 PHF. The flow passes through concrete basins that were originally designed for cloth filters. The flow then travels through a single 16-inch diameter pipe to the UV disinfection system. The 16-inch diameter pipe should be acceptable for the 2040 PHF.

The capacity of the UV system is approximately 2.6 MGD; however, if one UV bank is out of service, the capacity of the UV system would drop to approximately 1.3 MGD. The UV system is also not being manufactured any longer and replacement parts are expected to be sold out in the next 5-7 years, according to the manufacturer. Replacement of the UV system is recommended.

3.2.5 Sludge, Scum, and Drain Pumping

There are three (3) RAS pumps – one per clarifier and an installed spare. Each RAS pump has a capacity of approximately 680 gpm (0.97 MGD). The RAS is pumped through a 10-inch pipe, which has a capacity of approximately 2,000 gpm, so two RAS pumps should be able to operate at the same time. It is recommended that a RAS pump be installed (along with the associated piping) with any new secondary clarifier.

Each waste activated sludge (WAS) pump has a capacity of 150 gpm (0.22 MGD). One of the WAS pumps draws from the secondary clarifiers and pumps it to the sludge holding tank. The other WAS pump transfers sludge from the sludge holding tank to the gravity belt thickener. The WAS pumps discharge to a 4-inch pipe, which has a capacity of approximately 300 gpm. Depending on the operation, the WAS pumps may be sufficient for the 20-year planning period.

The thickened sludge from the gravity belt thickener is then pumped to the aerobic digesters using a 30 gpm pump. There is no installed backup for this pump, but there is a spare pump on the shelf. The digested sludge is pumped back to the belt filter press to be dewatered. There are two digested sludge pumps (one is a standby). The pumps have a capacity of 40 gpm, which depending on the alternative selected and operation may be sufficient for the planning period.

There are two (2) scum pumps installed in a wet well (one of the scum pumps is redundant). Scum from each secondary clarifier flows by gravity to the wet well. Each scum pump has a capacity of 200 gpm (0.29 MGD). The scum is pumped through a 4-inch pipe, which has a capacity of approximately 300 gpm, so only one scum pump should operate at a time. City staff have not reported issues with scum backing up in the scum pump station.

There are two WWTP lift stations, both utilizing submersible pumps. Lift Station No. 1 returns filtrate from the belt filter press and wastewater from the lab, break room, and restroom to the headworks for treatment. There are two pumps in this lift station – each rated for 360 gpm. One of the pumps is redundant. If a filter is again installed, the filter backwash likely could also be sent to this lift station as originally designed.

Lift Station No. 2 provides a means to drain the oxidation ditches for maintenance. A mud valve in each ditch can be opened manually to drain that ditch to the wet well. There is only one pump in Lift Station No. 2. Although it is rated for 360 gpm, the flow should be regulated so that it does not overwhelm the pump. The lift station discharges join, and the combined flow is through an 8-inch pipe, which should have enough capacity for the lift station flows.

3.2.6 Plant Water

There are three (3) plant water pumps. Each pump was designed to have a capacity of approximately 65 gpm and a discharge pressure of approximately 78 psi. However, the flow and discharge pressure have been reported by City staff to be lower than this, especially in the headworks. The problems, according to City staff, come from the plant water pumps plugging. Usage of the filter system should reduce this concern.

3.2.7 Sludge Holding Tank and Aerobic Digesters

The WAS pumps discharge to the sludge holding tank. The sludge holding tank is equipped with medium bubble diffuser assemblies to keep the sludge from becoming septic and to keep it mixed. A blower with a maximum capacity of 300 SCFM is used. The blower shares a standby with the aerobic digesters.

From the sludge holding tank, the sludge is pumped by the backup WAS pump to the thickener. Sludge thickening occurs on the gravity thickening section of the belt filter press. The sludge is thickened to increase the capacity of the aerobic digesters. The thickener section has a capacity of approximately 350 dry pounds per hour. The current WAS flow is approximately 35,000 gallons per day (gpd) at a concentration of approximately 1,500 mg/L. Assuming a flow rate of 150 gpm, the gravity belt thickener operates for a little more than 2 hours a day if operated every day. This concentration and pumping rate equate to approximately 110 dry pounds per hour loading to the gravity belt thickener. The adequacy of the gravity belt thickener for the entire planning period will depend on the WWTP operation. For example, if a separate dewatering device were installed, the gravity belt thickener could be used solely for thickening. Due to the age of the equipment and longer use, near the end of the planning period, it is recommended to upgrade the existing gravity belt thickener. At that time a larger capacity dewatering unit and larger WAS pumps would be recommended as well.

The aerobic digesters are operated in series. As thickened sludge is pumped to the first tank, it displaced treated sludge from the second tank. The digesters are designed to keep the sludge aerobic to decrease odors, lessen the mass for disposal, and provide holding capacity until the sludge can be dewatered. The aerobic digesters are equipped with medium bubble diffusers that are supplied with compressed air from blowers. There are two blowers dedicated to the aerobic digesters. One blower has a capacity of 410 SCFM and the other has a capacity of 300 SCFM. There is a redundant blower that is a standby blower for the sludge holding tank and aerobic digesters, and it has a capacity of 410 SCFM.

The aerobic digesters have a combined maximum total volume of approximately 80,000 gallons. Currently the WAS is thickened three to four days per week. The average solids concentration and flow to the aerobic digesters are approximately 1.5% and 4,000 gpd, respectively. The City staff currently thickens three to four days per week, so these flow and concentration estimates are from monthly averages. Unless the sludge is thickened further in the aerobic digesters, (e.g. through settling and drawing off the supernatant), the digesters currently have a 20-day SRT. In order to achieve Class B biosolids (40 CFR Part 503) appropriate for land application, typically a minimum SRT of 40-days at 20°C or 60-days at 15°C is required. For Class B biosolids, the volatile suspended solids (VSS) must also be reduced by at least 38%. For Rigby a 60-day winter SRT for the 2040 planning period would require significantly larger digesters. The City currently disposes of the solids in the Jefferson County landfill and does not need to meet Class B biosolid requirements.

Sludge holding tank and aerobic digester mixing may be limited when it is performed only using diffused air rather than a dedicated mixing device. Typical diffused air requirements for digester mixing are between 20 and 40 SCFM/1,000 ft3 (Metcalf & Eddy, Wastewater Engineering, 5th Edition). Both the sludge holding tank and digester blowers are designed to provide greater than 40 SCFM/1,000 ft3, which should be adequate for mixing.

The belt filter press has a capacity of approximately 500 dry pounds per hour. There is no redundancy for the belt filter press, so if the unit requires repairs, both sludge thickening and dewatering would be affected. At the maximum pumping rate of the digested sludge pump (40 gpm), the maximum solids concentration allowed to the belt filter press would be 2.5%. At the current sludge concentration, the belt filter press may be able to be suitable for the entire planning period if a separate device for thickening were purchased.

3.2.8 Summary

The existing WWTP capacity, based on meeting the permit requirements in Table 1-9, is summarized in the table below:

Table 3-2 WWTP Capacity Needs Summary (MGD)

Component	Governing Flow	Capacity Provided[1]	Current Capacity Needed	2040 Capacity Needed	Limiting Factor
Influent Screens	PHF	3.0	2.00	3.27	Capacity
Grit Removal	PHF	2.5	2.00	3.27	Capacity
Oxidation Ditches	MMF	0.65	1.48	2.42	Basin Volume
Secondary Clarifiers	MMF	1.4	1.48	2.42	Solids Loading and Redundancy
UV Disinfection	PHF	1.3	2.00	3.27	Capacity and Redundancy

1 – Redundancy discussed in the sections above.

3.3 Deficiency and Capacity Summary

Below is a summary of the deficiency and capacity limitations for each of the WWTP components:

3.3.1 Headworks

Deficiencies

- There is not a redundant automatic screen or vortex grit removal system.
- There is not sufficient influent flume, influent screen, and vortex grit removal capacity for the entire planning period.
- The water flow for the grit scour line is not sufficient.

- The headworks does not have sufficient ventilation for a Class I, Division 2 environment (NFPA 820).
- The roof/ceiling and flow pacing signal need repair.

Recommendations

- Add a redundant automatic screen and vortex grit removal system. In the interim, purchase spare motors, pump and drive to limit maintenance down time.
- Add influent flume measurement, influent screening, and grit removal capacity to the headworks.
- Improve the plant water system to provide sufficient flow for the grit scour line.
- Increase the ventilation for a Class I, Division 2 environment (NFPA 820).
- Repair the roof/ceiling and flow pacing signal to the sampler.

3.3.2 Oxidation Ditches

Deficiencies

- The surface aerator and basin capacity are not sufficient for the entire planning period.
- The aerator speed and weir gate level require manual adjustment.
- The City staff are not able to easily drain an oxidation ditch.

Recommendations

- Add treatment capacity to handle the entire planning period.
- Make programming changes so that aerator speed and weir gate levels are automatically adjusted.
- Add a sump to each oxidation ditch to allow for easier draining and maintenance.

3.3.3 Secondary Clarifiers

Deficiencies

- The secondary clarifiers do not have sufficient capacity for the entire planning period.
- Periodically high effluent TSS and BOD_5 concentrations have been observed.

Recommendations

- Add secondary clarifier capacity.
- Adding filters downstream of the secondary clarifiers would help with the periodic difficulties of achieving TSS and BOD_5 removal.

3.3.4 UV Disinfection

Deficiencies

- There is only one UV channel, so there is no way to isolate the channel for maintenance.
- The UV system is difficult to clean.
- Spare parts are no longer being produced and the supply is estimated to run out in approximately 5 years.

Recommendations

- Add a second UV channel for redundancy.
- Replace the UV system with a system that can be more easily maintained.

3.3.5 Sludge, Scum, and Drain Pumping

No Deficiencies

3.3.6 Plant Water

Deficiencies

- The plant water system has insufficient flow.
- The flow meter is broken.
- The pump intake screens require manual cleaning.

Recommendations

- Increase the plant water system capacity.
- Replace the flow meter.
- Add filtration to protect the pumps and reduce the amount of maintenance on the pumps.

3.3.7 Sludge Holding Tank and Aerobic Digesters

Deficiencies

- Although not measured, the blowers are likely dangerously loud to work around for maintenance.
- The detention time in the aerobic digesters is not long enough to meet Class B biosolid requirements during the planning period.
- A biosolids management plan has not been developed.

Recommendations

- Add sound enclosures to the blowers.
- Consider biosolid alternatives that can meet Class B or Class A biosolid requirements during the entire planning period. This would provide the City with flexibility for land application rather than landfill disposal.
- Develop a biosolids management plan.

3.3.8 Thickening and Dewatering

Deficiencies

- The belt filter press capacity is insufficient for the planning period.
- There is no redundancy for the thickening and dewatering system. Additionally, the same belt filter press is used to thicken and dewater.
- There is no berm around the sludge storage area.

Recommendations

- Add redundant equipment. In the interim, purchase spare motors, pumps and drives to limit maintenance downtime.
- Dedicate a unit to either thickening or dewatering and operate it as a backup to the other unit. Operation for thickening and dewatering can typically be optimized (sometimes with different polymers) when not using the same unit to perform both functions.
- Add berms and a sump pump station to collect runoff in the sludge storage area.

3.3.9 Emergency Power

Deficiency

- The emergency power system cannot currently start all the WWTP equipment at once.
- There is no backup power for the lift stations.
- The emergency power system is insufficient for future expansion of the WWTP.

Recommendation

- Expand the emergency power system to provide power for the entire plant in the event of a loss of power.
- Purchase a portable generator for the lift stations.

3.3.10 Storage, Site Security, SCADA, and Roads

Deficiency

- Space for equipment (e.g. jetter truck, tractor, etc.), spare parts, and workspace for maintenance in the WWTP is limited.
- Gravel leading to and around the septage receiving box is periodically washed out.
- SCADA is limited without much control or data trending capability. SCADA panels are from different manufacturers and don’t communicate well with each other.
- The WWTP lab is limited without an oven and microscope.
- WWTP access lighting is not LED.

Recommendation

- Consider adding a maintenance building that can be used for equipment and parts storage as well as maintenance activities.
- Pave the area leading to and around the septage receiving box.
- Upgrade the SCADA system.
- Purchase an oven and microscope.
- Change out the access lighting to LED to save electricity.

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CHAPTER 4 – WASTEWATER TREATMENT ALTERNATIVES

There are many different alternatives to meet the wastewater facility deficiencies discussed in this master plan. The alternatives with the highest likelihood of being used by the City were considered for evaluation. The goals of the alternatives were to:

- Find solutions that are practical and cost-effective
- Provide facilities capable of reliably meeting ammonia permit limits
- Maximize use of existing facilities
- Select facilities that can be constructed without unacceptably impacting effluent quality
- Identify solutions that could be phased to reduce debt and minimize user rate increases

If a WWTP deficiency discussed in the previous chapters had one clear preferred solution (such as installing an additional screen, replacing worn pumps, etc.), then the solution is not discussed here, but is included in the individual project summary sheets found in Appendix D.

The advantages, disadvantages, and comparative costs of the alternatives are presented is this chapter. The cost estimates are a Class 5 cost opinion, as defined by the Association for the Advancement of Cost Engineering. They include estimated construction costs with markups of 10% for general conditions, a contingency of 30%, 15% contractor overhead and profit (OH&P), and engineering services including construction of 25% (based on total construction cost).

In addition to project capital costs, annual O&M costs are compared to arrive at a more complete picture of the alternative costs. A 20-year life-cycle cost analysis is provided for most of the alternatives, based on a real discount rate (inflation removed) of 1.5%. The equipment (unless a short-lived asset) is assumed to have a 20-year useful life so no depreciation or salvage value is included for comparing the alternatives. An average rate of $0.06 per kWh was used for estimating power costs and an average labor cost of $25 per hour was used to estimate maintenance costs.

4.1 DISCHARGE ALTERNATIVES

The current method of discharge is into the Dry Bed Creek. Several different discharge alternatives were discussed with the City. Discharge via rapid infiltration basins was an alternative that was not chosen for evaluation due to the high groundwater level in the area around Rigby.

4.1.1 Regionalization with Lewisville and Menan

The City of Rigby discussed combining wastewater systems with the cities of Lewisville and Menan. The City of Lewisville does not currently have a community sewer system, which the Mayor of Lewisville believes is negatively impacting the city. For example, when a septic system fails on a property that is less than one acre, the property owner is unable to rebuild the septic system and is forced to abandon the property at significantly less than the property's value. The Mayor of Lewisville believes developers are discouraged from developing in Lewisville due to no access to a community sewer system. The Lewisville City Council is going to discuss whether there is interest in exploring the next steps to a community sewer system. If there is interest, it would likely make more sense to construct a one-mile pressure line to connect to Menan's sewer system rather than construct a four-mile pressure line to Rigby's sewer system.

Menan's wastewater lagoons and reuse site are currently operating at approximately 50 percent of capacity according to the City's Public Works Director. Menan also recently purchased additional land for wastewater reuse. The City of Menan has little to no debt and until the City outgrows their current system, the Mayor of Menan sees no benefit in regionalizing with Rigby. The Mayor of Menan intends to confirm this with the Menan City Council. The Mayor of Menan also said they would be open to taking Lewisville's wastewater if they decide to sewer their city. In the past, there has been some disputes between the cities, but the Mayor of Menan believes past grievances have been forgotten.

4.1.2 Agricultural Land Application and Winter Storage

In this alternative, the City would discharge the water to agricultural land and store the treated water when land application is not possible. The treated water would need to meet Class C reuse standards as defined in Chapter 1. Permit requirements for agricultural reuse are likely to continue to be not as stringent as surface water discharge to Dry Bed Creek as the nutrients in the WWTP effluent are useful for plant growth.

The main concern with agricultural land application is the protection of groundwater. This typically translates to irrigating at agronomic rates to match the net irrigation requirements of the crops, although nitrogen and phosphorus application rates are also typically monitored. Allowable agronomic irrigation rates are based on historical precipitation deficit values from ETIdaho -- Evapotranspiration and Net Irrigation Requirements for Idaho. For alfalfa, (one of the most commonly used crops for reuse water), water application can take place during the growing season at a rate of approximately 37.8 inches per acre per year, assuming 85% irrigation efficiency. For the 2040 average design flow, the minimum estimated farmland needed is 380 acres.

This alternative would also require storage during the winter (non-growing season) when water cannot be land applied. Based on the 2040 average design flow, the required total storage volume during the non-growing season is approximately 200 million gallons. Assuming a pond water depth of 10 feet, the storage volume may require approximately 70 additional acres. Thus, the total acreage needed for this alternative is a minimum of approximately 450 acres (not including the WWTP itself).

In addition to the total acreage, several other considerations include topography, groundwater levels, groundwater pollutant concentrations, general soil conditions, climate, land use, well locations, and distance to water bodies. DEQ has published guidance for general setbacks or buffers for agricultural land application (Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater, DEQ 2007). The guidance for Class C is summarized in Table 4-1.

Table 4-1 Buffer Guidance for Class C Land Application

Buffer Zones for Suburban or Residential Areas
50 ft. to areas accessible to public
100 ft. to permanent or intermittent surface water, other than irrigation ditches and canals
300 ft. to inhabited dwelling
500 ft. to private water supply well used for human consumption
Buffer Zones for Rural or Industrial Areas
100 ft. to permanent or intermittent surface water, other than irrigation ditches and canals
300 ft. to inhabited dwelling
500 ft. to private water supply well used for human consumption
Grazing
For grazing during the growing season, submit grazing management plan including: • Type and number of animals • Identification of times when animals can be on a plot, and when they should be removed – based on plant growth characteristics. Indicate months anticipated for the grazing season. • Schedule for rotating the animals through the site. Include a map showing plot arrangement, location of salt blocks, protein blocks, and water – include schedule for rotating the location of any blocks to prevent excessive traffic on any portion of the site. • Nutrient balance, accounting for crops grown, crop yield, fertilizers used, and nutrients removed and added by livestock (manure)
For grazing during the non-growing season (solely for purpose of fall "clean-up"), limitations include: • Livestock on site only after harvest • Livestock off site no later than December 31 • No winter pasturing of livestock or supplemental feeding
Minimum waiting period prior to grazing after application: 15 to 30 days, depending on soil type III.

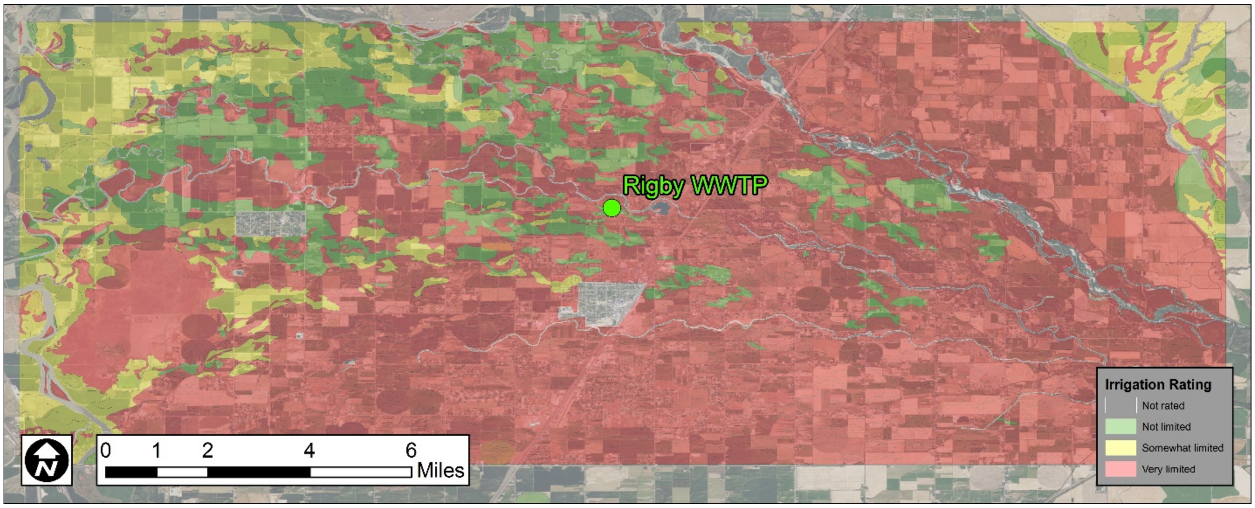
A preliminary assessment of the feasibility of land application for Rigby was done based on soil suitability ratings from the NCRS Soil Data Explorer. The rating class terms, as defined by NRCS, are summarized in Table 4-2.

Table 4-2 NRCS Soil Ratings for Reuse

Rating	Suitability for Specified Use	Ability to Overcome Limitations	Expected Performance	Expected Maintenance
Not Limited	Very favorable	NA	Good	Very low
Somewhat Limited	Moderately favorable	Can be minimized by special planning, design or installation	Fair	Moderate
Very Limited	One or more unfavorable features	Generally, cannot be overcome without major soil reclamation, special design, or expensive installation procedures	Poor	High

Figure 4-1 shows the NRCS rating map for disposal of wastewater by land application. There are areas rated as Not Limited near the Rigby WWTP (green areas on Figure 4-1).

Figure 4-1 Land Suitability for Reuse Water



For this evaluation it was assumed that the treated water would be pumped to land 2 miles away from the WWTP. It was assumed that the storage pond would be located next to the WWTP. The storage pond would be lined with a membrane liner to prevent leakage. A cost of $60,000 per acre was assumed, as according to the City the area is in a prime location. Reuse water would need to be pumped from the City's storage pond to the property. A second pump station would be used to pump the WWTP effluent to the storage pond. Because of the critical function of the pump stations, it is recommended to have both pumping redundancy and backup power. The irrigation facilities at the land application site are necessary in order to distribute the reuse water on the property. It is assumed the City would be responsible for the construction and maintenance of these facilities.

A typical arrangement for most communities is to have a farmer handle operation of the land application site, including crop management and irrigation equipment maintenance. The farmer may also be asked to pay for pumping costs from storage to the irrigation site, and for use of the site based on a flat rate per acre or crop yield. Any agreement with the farmer must include conformance with reuse permit requirements (e.g. no ponding or runoff, application at rates not to exceed published irrigation water requirements, etc.). The City would likely be responsible for all costs of monitoring (soils, crops, and groundwater) required by the reuse permit. It should be noted that, if the farmland used for effluent disposal is privately owned, the City may have limited control over when the effluent is used. For this evaluation it was assumed that the City would purchase the land due to the need to maintain control for land application permitting purposes.

In order to meet Class C requirements for the future flows, an additional oxidation ditch and secondary clarifier would be needed for wastewater oxidation; however, ammonia removal would no longer be a requirement. This means the size of the oxidation ditch would be smaller than required for full ammonia treatment. If the City desired Class A or B reuse water (see Table 1-10 for allowable uses), the oxidation ditches could be upgraded to remove ammonia and potentially total nitrogen. The improvements needed for Class A or B reuse water could include the cloth filters, adding greater ultraviolet light (UV) disinfection, and adding an automatic bypass to divert flow to storage or alternate permitted disposal. The capital and operating costs to achieve Class A or B reuse water are significantly greater, consequently this alternative focused on Class C agricultural land application.

4.1.3 Continued Surface Water Discharge into Dry Bed Creek

Continued discharge to the Dry Bed Creek is the status-quo alternative. The City would upgrade their WWTP to meet the discharge permit limits as shown in Chapter 1. In general, this alternative has more stringent permit limits than agricultural land application; however, there are no additional costs for storing, transporting, or management of the water. Alternatives to meet the ammonia discharge permit limits are presented and evaluated later in this chapter, but for the purpose of this discharge alternative evaluation, the similar oxidation ditches to the existing alternative were used.

4.1.4 Surface Water Discharge into the Snake River

Another discharge alternative is to pump the treated effluent to the Snake River near Lorenzo, ID. The distance from the WWTP to the Snake River in this location is approximately 4 miles. This alternative would include a lift station, stream crossing, and approximately 4 miles of pressurized pipeline. There are currently no impairments on this segment of the Snake River; however, this would be the first WWTP to discharge on this segment and a thorough investigation would be required.

In preliminary discussions with DEQ, it was mentioned that a discharge permit may have similar requirements to Idaho Falls. Idaho Falls is required to meet effluent limits for BOD_5, TSS, *E. Coli* bacteria, pH, residual chlorine, total ammonia, and total phosphorus. An anticipated effluent total ammonia limit is likely to be a higher concentration than is required for Dry Bed Creek, due to the higher base flow in the Snake River. However, the capital expenditures would likely be similar to continued discharge to the Dry Bed Creek due to the nature of biological ammonia removal. There may also be a total phosphorus limit on a Snake River discharge, which may require additional capital and operating costs.

Despite the additional costs, having a secondary discharge option for the City may be useful as it would provide the City with flexibility to respond to future permit requirements. The City could also look at potential land application sites between the two discharge locations, which would provide more flexibility.

4.1.5 Discharge Evaluation

As mentioned above, regionalization with Lewisville or Menan is not likely to be discussed further due to the distance and need from those cities. Also adding a discharge location in the Snake River near Lorenzo, ID may provide some flexibility for the City, but it would likely still require year-round ammonia removal and similar capital costs to continued discharge into the Dry Bed Creek.

A summary of the advantages and disadvantages of agricultural land application and continued surface water discharge are shown in Table 4-3. A preliminary construction cost comparison is shown in Table 4-4. Most of the improvements that were common for all the alternatives (e.g. UV upgrades, headworks upgrades, etc.) were not included in this comparison.

Table 4-3 Summary of Discharge Alternatives Advantages and Disadvantages

Alternative	Advantages	Disadvantages
Alt. 4.1.2 – Agricultural Land Application and Winter Storage	• Permit requirements are less stringent. • Water benefits the local area.	• Highest capital and operating costs. • Risk of transmission failures. • Complexity of operation and maintenance.
Alt. 4.1.3 – Continued Surface Water Discharge into Dry Bed Creek	• Same discharge method as currently used. • No additional costs for storing, transporting, or management of the water.	• Permit requirements are more stringent than agricultural land application. • More uncertainty regarding future permit requirements.

Table 4-4 Effluent Discharge Comparison Costs (2019)

Item	Alt. 4.1.2 - Agricultural Land Application and Winter Storage	Alternative 4.1.3 - Continued Surface Water Discharge into Dry Bed Creek
Reuse Water System		
Lift Station to Storage	$ 350,000	$ -
Land for Storage Pond and Land Application	$ 27,000,000	$ -
Storage Pond	$ 3,000,000	$ -
Chlorine Dosing System	$ 50,000	$ -
Transmission Pump Station	$ 350,000	$ -
Transmission Piping	$ 2,100,000	$ -
Distribution Systems	$ 1,000,000	$ -
Electrical/Controls	$ 200,000	$ -
Reuse Water Subtotal	**$ 34,050,000**	**$ -**
WWTP Upgrades		
Site Work	$ 600,000	$ 1,300,000
Piping/Valves and Instrumentation	$ 150,000	$ 300,000
Influent Splitter Box	$ 120,000	$ 150,000
New Oxidation Ditch Basins and Equipment	$ 850,000	$ 1,700,000
Mixed Liquor Splitter Box	$ 150,000	$ 150,000
New Secondary Clarifiers	$ 550,000	$ 1,100,000
RAS Pumps and Pump Room Upgrades	$ 200,000	$ 250,000
Electrical/Controls	$ 400,000	$ 890,000
Wastewater Treatment Subtotal	**$ 3,020,000**	**$ 5,840,000**
General Conditions (10%)	$ 3,710,000	$ 590,000
Contingency (30%)	$ 12,240,000	$ 1,930,000
Contractor OH&P (15%)	$ 7,960,000	$ 1,260,000
Total Construction Cost	**$ 60,980,000**	**$ 9,620,000**

Discharge Recommendation

The construction cost for continuing to discharge into Dry Bed Creek (Alternative 4.1.3) is significantly less than for agricultural land application. For this reason, it is recommended that the City continue to discharge to the Dry Bed Creek. In the future, the City may want to consider adding a secondary discharge location to the Snake River to provide some flexibility in meeting discharge limits.

4.2 AMMONIA TREATMENT ALTERNATIVES

The existing oxidation ditches are unable to meet the new ammonia permit limits. Several alternatives were discussed with the City. The four (4) alternatives that the City and Keller agreed best met the City's goals were: 1) Similar Oxidation Ditches; 2) New Oxidation Ditch Configurations; 3) New Technology for New Oxidation Ditches, but no changes for existing; and 4) Enhanced Oxidation Ditches. The general arrangement of processes for each of these alternatives is essentially the same as the existing configuration (see Figure 2-2). Differences were mainly the number of oxidation ditches and secondary clarifiers; and, for the enhanced oxidation ditch alternative, media being added to the oxidation ditches to enhance ammonia treatment. For evaluation consistency, the technology alternatives were compared based on their ability to meet the Table 1-11 discharge limits rather than reuse discharge requirements. These alternatives are discussed in more detail below.

4.2.1 Similar Oxidation Ditches

Surface Aerator

Oxidation ditches, due to their race-track design and typically long hydraulic retention time, can provide reliable ammonia removal. This alternative would construct two new larger oxidation ditches with the similar type of surface aerators as the existing oxidation ditches. The existing oxidation ditches, (with the existing surface aerators), would continue to treat some of the flow, but more of the flow would be sent to the larger oxidation ditches. In addition to the new oxidation ditches, this alternative would also include expanding the flow splitter box to distribute the correct flow to the oxidation ditches, a mixed liquor flow splitter to balance the flow from the oxidation ditches to the secondary clarifiers, two (2) additional secondary clarifiers, and an upgrade to the existing sludge pump room to house the additional RAS pumps.

4.2.2 New Oxidation Ditch Configuration

Diffused Aeration with Independent Mixers

Oxidation ditches can come is various shapes and configurations. For this alternative, it was decided not to change the shape of the oxidation ditches, but only to change the type of aeration and mixing. Fine bubble diffusers can have a higher oxygen transfer efficiency than surface aerators. For ease of maintenance, the City requested retrievable fine bubble diffuser racks be included in the capital cost. Separate independent mixers would move the water through the oxidation ditches (a process that is currently done by the surface aerators). For this alternative, the surface aerators in the existing oxidation ditches would be removed and replaced with fine bubble diffusers and independent mixers. The resell value of the existing surface aerators was not included in the evaluation. Oxygen would be provided to the diffusers from new blowers.

Like Alternative 4.2.1, this alternative would also include expanding the flow splitter box, a mixed liquor flow splitter, two (2) additional secondary clarifiers, and upgrading the existing sludge pump room to house additional RAS pumps. This alternative would also include an upgrade and expansion of the blower room to include the blowers for the oxidation ditches.

4.2.3 New Oxidation Ditch Configuration; Don't Change Existing

The City was interested in an iteration of the first two alternatives. This alternative would keep the surface aerators in the existing oxidation ditches and use retrievable fine bubble diffusers and independent mixers in the new oxidation ditches. The improvements would be similar to Alternative 4.2.2; however, not changing out the surface aerators in the existing oxidation ditches decreases the total capital costs.

4.2.4 Enhanced Oxidation Ditches

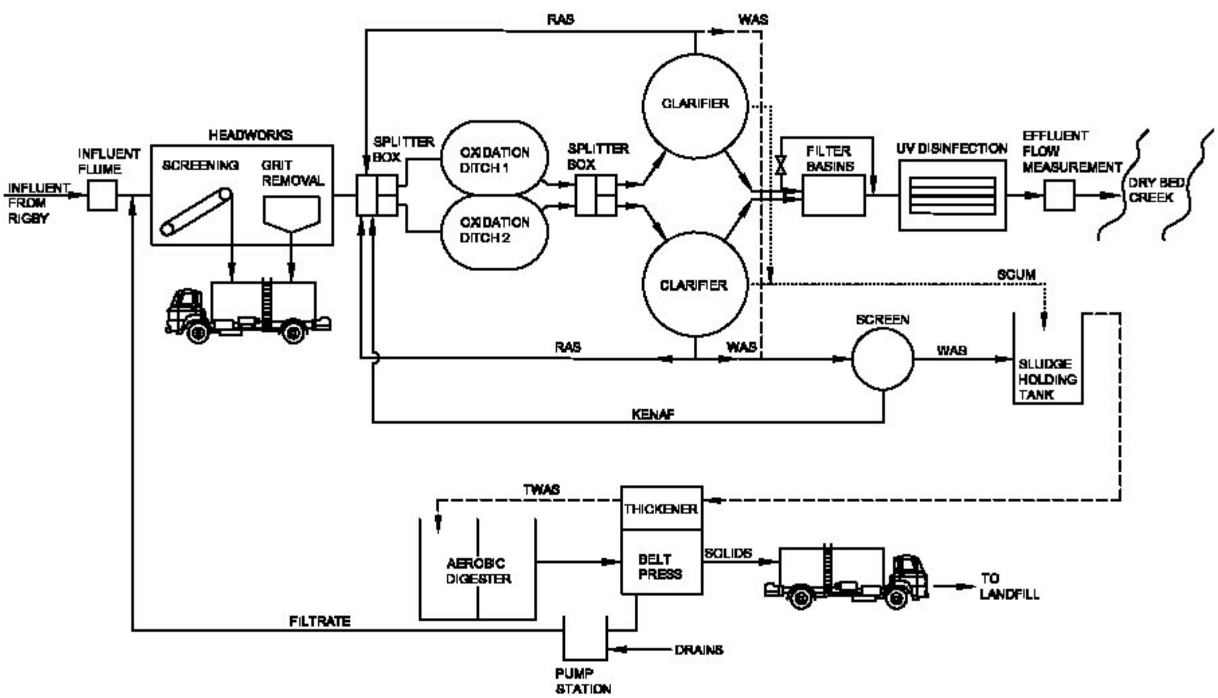
The oxidation ditches could also be enhanced to increase their treatment capacity. This is done by adding media into the oxidation ditches, which provides surface area for fixed film growth – increasing the number of microorganisms in the oxidation ditches. In addition to more microorganisms, the fixed film media provides improved stability for the microorganisms which means the system can handle greater fluctuations in influent loading. There are several enhanced oxidation ditch alternatives. For this evaluation, the City and Keller decided to investigate the Nuvoda Mobile Organic Biofilm (MOB) process and Integrated Fixed-Film Activated Sludge (IFAS).

4.2.5 Enhanced Oxidation Ditches – Nuvoda MOB

The Nuvoda MOB process utilizes the kenaf plant (Hibiscus cannabinus) for the media. The kenaf media is organic and in addition to providing surface area for microorganisms also aids with settling in the secondary clarifiers. The kenaf media is kept in the WWTP by screening the waste activated sludge (WAS) and returning the kenaf to the influent splitter box.

According to Nuvoda, ammonia removal up to the 2040 flows can be achieved in the existing oxidation ditches and secondary clarifiers – no additional oxidation ditches or secondary clarifiers are needed. The improvements needed for this alternative are the kenaf media, screens to remove the kenaf from the WAS, and pumps to return the kenaf to the splitter box. It is expected that the existing RAS pumps can recycle the higher solids associated with the kenaf media without the need for new RAS pumps. A schematic process layout of this alternative is depicted in Figure 4-2.

Figure 4-2 Nuvoda MOB Process Schematic



For this alternative, it was also assumed that the existing aeration and mixing system would be replaced with a similar system to Alternative 4.2.2 (fine bubble diffusers and independent mixers). An upgrade to the existing blower room is also included in the cost estimate, although the number of blowers is fewer than in Alternative 4.2.2.

There are relatively few Nuvoda MOB installations and there are unknowns concerning how much aeration, mixing, and clarifiers are needed. If this alternative is selected, it is recommended that pilot testing be performed to confirm the performance; aeration, mixing and clarification requirements; and costs.

4.2.6 Enhanced Oxidation Ditches – IFAS

An IFAS system incorporates fixed-film (either floating or fixed media) into the oxidation ditches. It effectively increases the nitrification capacity of the existing oxidation ditches by providing additional microorganisms, which stay attached to the IFAS media. The activated sludge and solids that slough off the fixed-film are collected and returned with the RAS from the secondary clarifiers. Aeration is provided by blowers, which deliver air to coarse or medium bubble stainless steel diffusers (depending on the manufacturer). For this alternative we have assumed floating media and new walls with media retention screens would be installed to prevent the media from escaping the basins.

The IFAS system requires a finer screen than is currently used in the headworks. The finer screen is needed to avoid materials plugging the media and retention screens. For this alternative, two fine screens are included to provide protection if a fine screen is down for maintenance. Figure 4-3 shows a picture of a typical IFAS floating media (enlarged), as well as an IFAS plant.

Figure 4-3 IFAS System Media and Basins

Ammonia removal up to the 2040 flows can be achieved with IFAS in the existing oxidation ditches. The process schematic of this alternative is the same as the existing configuration (see Figure 2-2); however, IFAS media is incorporated into the existing oxidation ditches. In addition to the improvements mentioned above, an upgrade to the existing blower room is included to provide aeration and mixing to the IFAS system. The number of blowers for this alternative is greater than Alternative 4.2.3.1 due to the diffuser type and required mixing. An additional secondary clarifier, and the associated pump room modification, are also included for this alternative.

Due to the higher number and performance of similar IFAS installations, pilot testing may not be necessary. However, there are some concerns with the cold-water temperature affecting treatment and the amount of aeration required. Additional investigation of other similar installations is recommended during the pre-design phase. Also, construction would require taking an oxidation ditch down to install the new basin walls and equipment, which may make it difficult to meet permit requirements during construction.

4.2.5 Ammonia Treatment Technology Evaluation

A summary of the advantages and disadvantages of each of the ammonia treatment alternatives described above are shown in Table 4-5.

Table 4-5 Summary of Ammonia Treatment Advantages and Disadvantages

Alternative	Advantages	Disadvantages
Alt. 4.2.1 – Similar Oxidation Ditches	• Same technology as existing system. • Maintenance requirements are similar. • Can phase improvements. • Multiple manufacturers; pilot testing is not needed.	• Highest operating costs. • Additional oxidation ditches and secondary clarifiers needed. • Large footprint.
Alt. 4.2.2 – New Oxidation Ditch Configuration	• Similar technology to existing system. • Lower power costs than Alt. 4.2.1. • Can phase improvements. • Multiple manufacturers; pilot testing is not needed.	• Highest capital costs. • Additional oxidation ditches and secondary clarifiers needed. • Additional maintenance costs for new blowers, diffusers, and mixers. • Large footprint.
Alt. 4.2.3 – New Oxidation Ditch Configuration; Don't Change Existing	• Similar technology to existing system. • Lower power costs than Alt. 4.2.1. • Can phase improvements. • Multiple manufacturers; pilot testing is not needed.	• Additional oxidation ditches and secondary clarifiers needed. • Additional maintenance costs for new blowers, diffusers, and mixers. • Large footprint.
Alt. 4.2.4.1 – Enhanced Oxidation Ditches - Nuvoda MOB	• May be able to meet ammonia removal in existing oxidation ditches. • Additional capacity can be added later through adding more media. • Typically, better settling in the secondary clarifiers, less susceptibility to process upsets, and better ammonia removal at low temperatures. • May be able to retrofit without taking an oxidation ditch down. • Lowest capital and operating costs.	• Few installations and few manufacturers. • Mixing, aeration, and clarification may need to be increased. • Pilot testing is recommended.
Alt. 4.2.4.2 – Enhanced Oxidation Ditches - IFAS	• Can meet ammonia removal in existing oxidation ditches. • Additional capacity can be added later through adding more media. • Less susceptibility to process upsets, and better ammonia removal at low temperatures. • Multiple manufacturers; pilot testing is not needed.	• Retrofit would require taking one of the two oxidation ditches out of service. • Requires a finer influent screen. • Cold weather may require additional aeration than anticipated.

A preliminary cost comparison of the ammonia treatment alternatives is shown in Table 4-6.

Table 4-6 Ammonia Treatment Comparison Costs (2019)

Item	Alt. 4.2.1 – Similar Oxidation Ditches	Alt. 4.2.2 – New Oxidation Ditch Configuration	Alt. 4.2.3 – New Oxidation Ditch Configuration; Don't Change Existing	Alt. 4.2.4.1 – Enhanced Oxidation Ditches - Nuvoda MOB	Alt. 4.2.4.2 – Enhanced Oxidation Ditches - IFAS
Pilot Testing	$ -	$ -		$ 200,000	$ -
Site Work	$ 1,300,000	$ 1,500,000	$ 1,500,000	$ 200,000	$ 300,000
Demolition	$ -	$ 30,000	$ -	$ 30,000	$ 30,000
Piping/Valves and Instrumentation	$ 300,000	$ 550,000	$ 450,000	$ 270,000	$ 300,000
New Fine Screens	$ -	$ -	$ -	$ -	$ 520,000
Influent Splitter Box	$ 150,000	$ 150,000	$ 150,000	$ -	$ -
New Oxidation Ditch Basins and Equipment	$ 1,700,000	$ 1,800,000	$ 1,800,000	$ -	$ -
Existing Oxidation Ditch Modifications and Equipment	$ -	$ 500,000	$ -	$ 500,000	$ 450,000
Blowers and Blower Room Expansion	$ -	$ 600,000	$ 450,000	$ 450,000	$ 600,000
Mixed Liquor Splitter Box	$ 150,000	$ 150,000	$ 150,000	$ -	$ 150,000
New Secondary Clarifier(s)	$ 1,100,000	$ 1,100,000	$ 1,100,000	$ -	$ 550,000
RAS Pump(s) and Pump Room Upgrades	$ 250,000	$ 250,000	$ 250,000	$ -	$ 210,000
Media and Screens	$ -	$ -	$ -	$ 1,000,000	$ 900,000
Media Screening Building (including return pump)	$ -	$ -	$ -	$ 400,000	$ -
Electrical/Controls	$ 890,000	$ 1,190,000	$ 1,050,000	$ 550,000	$ 720,000
General Conditions (10%)	$ 590,000	$ 790,000	$ 690,000	$ 360,000	$ 480,000
Contingency (30%)	$ 1,930,000	$ 2,590,000	$ 2,280,000	$ 1,190,000	$ 1,570,000
Contractor OH&P (15%)	$ 1,260,000	$ 1,680,000	$ 1,490,000	$ 780,000	$ 1,020,000
Total Construction Cost	**$ 9,620,000**	**$ 12,880,000**	**$ 11,360,000**	**$ 5,930,000**	**$ 7,800,000**
Soft Costs (Eng. & CMS; 25%)	$ 2,410,000	$ 3,220,000	$ 2,840,000	$ 1,490,000	$ 1,950,000
Total Project Cost	**$ 12,030,000**	**$ 16,100,000**	**$ 14,200,000**	**$ 7,420,000**	**$ 9,750,000**
Estimated Annual O&M	$ 179,000	$ 140,000	$ 152,000	$ 128,000	$ 155,000
20-Year Life Cycle Cost	**$ 15,110,000**	**$ 18,510,000**	**$ 16,810,000**	**$ 9,620,000**	**$ 12,420,000**

Ammonia Treatment Recommendation

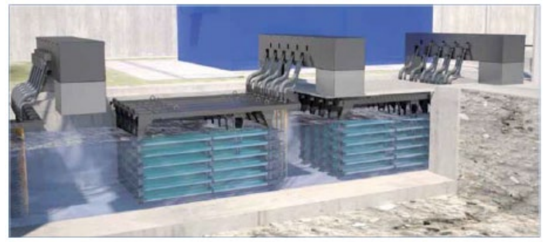
The City selected Alternative 4.2.4.2 (Enhanced oxidation ditches – IFAS) due to its low 20-year life cycle cost and the number of successful installations. As stated above, there are still some unknowns with respect to this IFAS alternative (cold water performance and aeration capacity). If during the pre-design phase, the IFAS alternative becomes less appealing, the City would likely pursue Alternative 4.2.1 (Similar Oxidation Ditches) since it has a low 20-year life cycle cost when compared to the other typical oxidation ditch configurations.

4.3 DISINFECTION ALTERNATIVES

According to the existing UV disinfection system manufacturer, the City's current system is obsolete and spare parts will likely be unavailable in the next 5-7 years. Although there are several disinfection technologies available, the City would like to remain with UV disinfection due to its ease of use and consistency in meeting permit limits. However, the City and Keller recommended evaluating two different configurations for UV disinfection – horizontal and inclined vertical. The City currently has a horizontal UV system. UV system manufacturers have also developed an inclined vertical UV system with higher wattage bulbs and easier access for maintenance. This section discusses the advantages and disadvantages of each configuration and provides a cost estimate based on treating the 2040 peak hour flow with one channel out of service.

4.3.1 Horizontal UV System

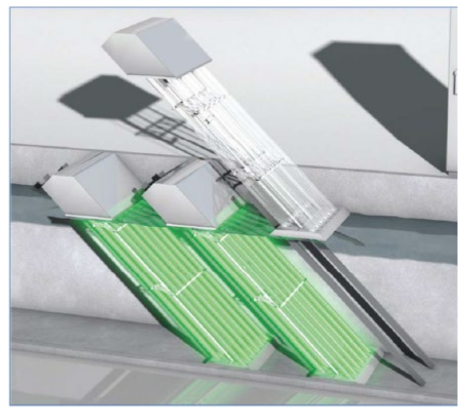
In this alternative a similar horizontal UV system would be provided to the current system (albeit a newer model). The existing system would be replaced. A parallel second UV channel would be constructed. The new system would be placed in the existing channel and the new channel.



Horizontal UV

4.3.2 Inclined Vertical UV System

An inclined vertical UV system could also be installed in the existing channel and a new second UV channel. The inclined vertical UV system requires fewer lamps than a horizontal system. The lamp output is greater. The inclined vertical UV systems also have an integral lifting mechanism which makes maintenance easier.



Inclined Vertical UV

4.3.3 Disinfection Evaluation

A summary of the advantages and disadvantages of the evaluated disinfection alternatives are shown in Table 4-7.

Table 4-7 Summary of UV Configuration Advantages and Disadvantages

Alternative	Advantages	Disadvantages
Alt. 4.3.1 – Horizontal UV	• Variable lamp and ballast output. • Automatic cleaning system.	• Lower watt lamps (more lamps needed). • No integrated automatic lift – maintenance is more difficult. • More manufacturers can provide this system.
Alt. 4.3.2 – Inclined Vertical UV	• Fewer lamps (less maintenance). • Integrated lifting system. • Variable lamp and ballast output. • Automatic cleaning system.	• Fewer manufacturers.

A preliminary cost comparison of the UV configuration alternatives is shown in Table 4-8.

Table 4-8 UV Configuration Comparison Costs (2019)

Item	Alt. 4.3.1 - Horizontal UV	Alt. 4.3.2 - Inclined Vertical UV
Demolition	$ 10,000	$ 10,000
New Channel and Building Modifications	$ 250,000	$ 250,000
UV Equipment	$ 370,000	$ 440,000
Electrical/Controls	$ 80,000	$ 80,000
General Conditions (10%)	$ 70,000	$ 80,000
Contingency (30%)	$ 240,000	$ 260,000
Contractor OH&P (15%)	$ 160,000	$ 170,000
Total Construction Cost	**$ 1,180,000**	**$ 1,290,000**
Soft Costs (Eng. & CMS; 25%)	$ 300,000	$ 330,000
Total Project Cost	**$ 1,480,000**	**$ 1,620,000**
Estimated Annual O&M	$ 11,000	$ 9,000
20-Year Life Cycle Cost	**$ 1,670,000**	**$ 1,780,000**

UV Configuration Recommendation

The recommended alternative is a new inclined vertical UV system (Alternative 4.3.1) as it has less expected maintenance.

4.4 SOLIDS THICKENING AND DEWATERING ALTERNATIVES

The existing gravity belt thickener/belt filter press combination unit will be unable to keep up with the additional solids associated with ammonia removal and planned growth. Three alternatives were chosen by the City and Keller for evaluation: 1) Continue to utilize the gravity belt section of the belt filter press for thickening and purchase a screw press for dewatering; 2) Purchase a second combination unit for redundancy (thickening and dewatering in the same unit); 3) Purchase a new rotary drum thickener for thickening and a screw press for dewatering. It was assumed that the existing transfer pumps could be used for all three alternatives.

4.4.1 Use Existing Unit for Thickening and Screw Press for Dewatering

The existing gravity belt thickener could continue to be used for the 2040 planning period if it were used solely for thickening. Another piece of equipment would be needed for dewatering. There are several dewatering technologies that Keller discussed with the City. The City decided on a dewatering screw press for this evaluation.

Screw Press

There may not be sufficient space in the existing dewatering room for the new screw press. For this evaluation it was assumed that the room would need to expand. A dedicated polymer system for the new screw press was also included. It was assumed the existing conveyor and polymer system could be reused. The resell value of the existing belt filter press portion of the existing unit was not included in the evaluation since the market value is difficult to determine.

The City could also keep the belt filter press as a backup for the screw press. Critical spare parts are included to limit the downtime.

4.4.2 Purchase Second Combination Unit

The City could purchase a second combination unit to provide the necessary thickening and dewatering capacity. There are several options for combination units. For this alternative, it was assumed that a similar gravity belt thickener/belt filter press were purchased. There is not adequate room in the existing dewatering room for a second combination unit, so a room expansion is included in the cost estimate. A dedicated polymer dosing skid was also included for the new combination unit so that the units could be independent. This alternative would provide redundancy as either unit would be able to thicken or dewater for short periods of time.

Rigby's Combination Thickener/Dewatering Unit

4.4.3 Purchase a New Thickener and New Screw Press

In this alternative, a new rotary drum thickener and new screw press dewatering unit would replace the existing gravity belt thickener/belt filter press combination unit. It is assumed that both units would fit within the existing dewatering room. Critical spare parts are included to limit downtime since solids storage in the sludge holding tank and digesters is limited. This alternative would allow each process (thickening and dewatering) to be optimized. Typically, that is best done using different polymers and dosing rates. This alternative includes a new polymer skid. It was assumed the existing conveyor and polymer system could be reused. The resell value of the existing gravity belt thickener/belt filter press was not included in the evaluation since the market value is difficult to determine.

Rotary Drum Thickener

4.4.4 Solids Thickening and Dewatering Evaluation

A summary of the advantages and disadvantages of the alternatives are shown in Table 4-9. A preliminary cost comparison of the solids thickening and dewatering alternatives is in Table 4-10. Improvements to the sludge storage area were not included in this evaluation as they are common for all three alternatives. These alternatives anticipate that the City will continue to dispose of sludge in the Jefferson County landfill. This is a very cost-effective solution for the City. Other sludge disposal alternatives such as land application were not evaluated since significant digester improvements would be needed to achieve Class A or Class B sludge.

Table 4-9 Solids Thickening and Dewatering Advantages and Disadvantages

Alternative	Advantages	Disadvantages
Alt. 4.4.1 – Use Existing Unit for Thickening and Screw Press for Dewatering	• Dewatering can start automatically with a screw press. • Better opportunity for process optimization.	• No installed redundancy for thickening (existing unit can provide dewatering redundancy). • Requires dewatering room expansion.
Alt. 4.4.2 – Purchase Second Combination Unit	• Installed redundancy. • Operator familiarity (assuming gravity belt thickener/belt filter press).	• Fewer manufacturers. • Requires dewatering room expansion – largest footprint of the three alternatives. • Difficult to optimize performance – requires more observation.
Alt. 4.4.3 – Purchase a New Thickener and New Screw Press	• May fit in existing dewatering room. • Dewatering can start automatically with a screw press. • Better opportunity for process optimization.	• No installed redundancy. (rotary drum thickener cannot provide redundancy for screw press).

Table 4-10 Solids Thickening and Dewatering Comparison Costs (2019)

Item	Alt. 4.4.1 – Use Existing Unit for Thickening and Screw Press for Dewatering	Alt. 4.4.2 – Purchase Second Combination Unit	Alt. 4.4.3 – Purchase a New Thickener and New Screw Press
Site Work	$ 50,000	$ 50,000	$ -
Demolition	$ 50,000	$ 50,000	$ 20,000
Building Expansion	$ 150,000	$ 200,000	$ -
Thickner/Dewatering Equipment	$ 500,000	$ 350,000	$ 750,000
Polymer System	$ 50,000	$ 50,000	$ 50,000
Critical Spare Parts	$ 60,000	$ -	$ 100,000
Electrical/Controls	$ 100,000	$ 100,000	$ 130,000
General Conditions (10%)	$ 100,000	$ 80,000	$ 110,000
Contingency (30%)	$ 320,000	$ 270,000	$ 350,000
Contractor OH&P (15%)	$ 210,000	$ 180,000	$ 230,000
Total Construction Cost	**$ 1,590,000**	**$ 1,330,000**	**$ 1,740,000**
Soft Costs (Eng. & CMS; 25%)	$ 400,000	$ 340,000	$ 440,000
Total Project Cost	**$ 1,990,000**	**$ 1,670,000**	**$ 2,180,000**
Estimated Annual O&M	$ 74,000	$ 101,000	$ 68,000
20-Year Life Cycle Cost	**$ 3,270,000**	**$ 3,410,000**	**$ 3,350,000**

Solids Thickening and Dewatering Recommendation

The 20-year life cycle costs for the alternatives is similar; however, the recommended alternative is a new screw press (Alternative 4.4.1) as it has the lowest 20-year life cycle cost and would provide dewatering redundancy.

4.5 ENVIRONMENTAL IMPACTS

The potential environmental impacts of the selected alternatives are summarized provided below.

4.5.1 Land Use / Prime Farmland / Formally Classified Lands

It is not anticipated that a project in this facility plan will disrupt prime farmland.

4.5.2 Floodplains

As shown in Chapter 1 and Appendix B, some portions of the alternatives are located inside the 100-year and 500-year floodplains. However, none of the alternatives would create new obstructions to the flood plain.

4.5.3 Wetlands

The alternatives are not located in wetland areas (Figure 1-3 in Chapter 1).

4.5.4 Cultural Resources

It is not anticipated that any of the alternatives will interfere with cultural resources.

4.5.5 Biological Resources

The improvements are on previously disturbed lands.

4.5.6 Water Resources

Modifications to the WWTP to improve treatment should have a beneficial impact on the discharge.

4.5.7 Socio-Economic Conditions

None of the selected alternatives are likely to have a disproportionate effect on any segment of the population (economic, social, or cultural status).

Table 4-11 gives a broad-brush comparison of environmental impacts for the various alternatives.

Table 4-11 General Environmental Impacts

City of Rigby
Wastewater Facilities Planning Study
General Environmental Impacts

Environmental Criteria	WWTP Alternatives										
	Discharge				Ammonia Treatment					Disinfection	
	Regional	Farmland Application	Dry Bed	Snake River	Similar Oxidation Ditches	New Ox. Ditch, Improve Exist.	New Ox. Ditch, Keep Exist.	Enhanced Ox.Ditch - Nuvoda	Enhanced Ox. Ditch - IFAS	Horizontal UV	Inclined Vert. UV
Land Use/Important Farmland/Formally Classified Lands	No Impact	Requires 450 acres	No Impact	Easements Needed	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Floodplains	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Wetlands	No Impact	Potential Impact	No Impact	Potential Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Cultural Resources	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Biological Resources	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Water Quality Issues	No Impact	Streamflow reduction	Improved Effluent Quality	More Dilution in Receiving Stream	Improved Effluent Quality	Improved Effluent Quality	Improved Effluent Quality	Improved Effluent Quality	Improved Effluent Quality	No Impact	No Impact
Groundwater Quality Issues	Improved GW Quality	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Socio-Economic Issues	More Options for Development	Highest User Rates	Select Alternative that Minimizes Rate Impacts	No Impact	Lower Aeration Efficiency	Improved Aeration Efficiency	Lower Aeration Efficiency	Improved Aeration Efficiency	Improved Aeration Efficiency	No Impact	No Impact
System Classification	Treatment Class III	Treatment Class III	Treatment Class III*	Treatment Class III	Treatment Class III	Treatment Class III	Treatment Class III	Treatment Class III	Treatment Class III	Treatment Class III	Treatment Class III
*Current Classification											

4.6 LAND REQUIREMENTS

All the selected alternatives would be located within the City's WWTP site.

4.7 POTENTIAL CONSTRUCTION PROBLEMS

The depth of the water table and subsurface rock may affect the construction of the alternatives. However, subsurface investigations were not within the scope of this project. Construction techniques to effectively manage excavation, dewatering, and sloughing issues should be required of any construction plans. Construction plans for any of the alternatives should also include provisions to control dust and runoff.

4.8 SUSTAINABILITY CONSIDERATIONS

Sustainable utility management practices include environmental, social, and economic benefits that aid in creating a resilient utility.

4.8.1 Water and Energy Efficiency

Additional treatment at the WWTP to remove ammonia requires additional energy but produces cleaner water. Replacing the UV system with more efficient equipment may also reduce the electricity used at the WWTP.

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CHAPTER 5 – CAPITAL IMPROVEMENT PLAN

The alternative evaluation conducted in Chapter 4 helped the City make decisions for the wastewater system deficiencies. This section consists of the recommended plan to address the wastewater system deficiencies identified in previous chapters.

5.1 PRELIMINARY PROJECT DESIGN

Detailed project sheets for each of the improvements are included in Appendix D. Each project summary sheet provides the objective, cost estimate, and a project location map.

5.2 ENGINEER'S OPINION OF PROBABLE COST

The summary of the improvement costs for the IFAS and Similar Oxidation Ditch Alternatives is shown in Table 5-1 Capital Improvement Plan (CIP). Costs shown are planning-level estimates (Class 5 cost opinion by the Association for the Advancement of Cost Engineering) and can vary depending on market conditions. For the most part the project line items in the CIP include estimated construction costs with markups of 10 percent for general conditions, a contingency of 30 percent, 15 percent contractor overhead and profit, and engineering services including construction of 25 percent (based on total construction cost). These costs should be updated and a decision made between IFAS and Similar Oxidation Ditch Alternatives as the projects are further refined in the pre-design and design phases. It is recommended that Priority 1 items be implemented in the next five years. The timeline for the Priority 2 improvements should be updated as growth occurs and budget allows.

Table 5-1 20-Year Capital Improvement Plan

ID#	Item	Primary Purpose(s)	IFAS Alternative Total Estimated Cost (2019)	Similar Oxidation Ditch Total Estimated Cost (2019)
Priority 1 Improvements (2020-2025)				
1.1	Influent Channel Improvements	Operations, Permit Compliance	$ 124,000	$ 124,000
1.2	Critical Spares and Lab Equipment	Operations, Redundancy	$ 39,000	$ 39,000
1.3	Dewatering Improvements	Capacity, Operations	$ 2,370,000	$ 2,370,000
1.4	Biosolids Management Plan	Operations, Permit Compliance	$ 25,000	$ 25,000
1.5	Ammonia Removal Improvements	Capacity, Permit Compliance	$ 9,750,000	$ 12,030,000
1.6	UV Improvements	Cost Savings, Permit Compliance	$ 1,620,000	$ 1,620,000
1.7	Tertiary Filters	Operations	$ 950,000	$ 950,000
1.8	Plant Water Pumps	Capacity, Operations	$ 74,000	$ 74,000
1.9	Electrical Upgrades	Operations, Permit Compliance	$ 434,000	$ 434,000
1.10	SCADA Upgrades	Operations	$ 310,000	$ 310,000
	Total Priority 1 Improvements (rounded)		**$ 15,696,000**	**$ 17,976,000**
Priority 2 Improvements (2030-2040)				
2.1	Headworks Improvements	Capacity, Operations	$ 2,900,000	$ 2,900,000
2.2	Maintenance Building	Operations	$ 840,000	$ 840,000
	Total Priority 2 Improvements (rounded)		**$ 3,740,000**	**$ 3,740,000**
TOTAL WASTEWATER PLANT IMPROVEMENTS COSTS (rounded)			**$ 19,436,000**	**$ 21,716,000**

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2019 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

5.3 PERMIT REQUIREMENTS

The City's current permit went into effect on January 1, 2017. The recommendations set forth in the Capital Improvement Plan are designed to keep the City in compliance with the permit.

5.4 PROJECT SCHEDULE

An estimated schedule for the next 5 years (including this year) is shown in Table 5-2. Costs presented here are planning-level estimates. Actual costs may vary depending on market conditions and should be updated as projects are further refined in the pre-design and design phases.

Table 5-2 Priority CIP Schedule – IFAS Alternative

ID#	Item	Cost	Opinion of Probable Costs (2019 Dollars)				
			2020	2021	2022	2023	2024
Priority 1 Improvements (2020-2025)							
1.1	Influent Channel Improvements	$ 124,000	Not part of project				
1.2	Critical Spares and Lab Equipment	$ 39,000	Not part of project				
1.3	Dewatering Improvements	$ 2,370,000	$ 80,000	$ 290,000	$ 2,000,000		
1.4	Biosolids Management Plan	$ 25,000			$ 25,000		
1.5	Ammonia Removal Improvements	$ 9,750,000	$ 300,000	$ 1,170,000	$ 4,140,000	$ 4,140,000	
1.6	UV Improvements	$ 1,620,000	$ 50,000	$ 200,000	$ 685,000	$ 685,000	
1.7	Tertiary Filters	$ 950,000		$ 150,000	$ 800,000		
1.8	Plant Water Pumps	$ 74,000		$ 12,000	$ 62,000		
1.9	Electrical Upgrades	$ 434,000	$ 20,000	$ 60,000	$ 177,000	$ 177,000	
1.10	SCADA Upgrades	$ 310,000	$ 10,000	$ 40,000	$ 130,000	$ 130,000	
	Total (rounded)	**$ 15,696,000**	**$ 460,000**	**$ 1,922,000**	**$ 8,019,000**	**$ 5,132,000**	**$ -**

5.5 FUNDING ALTERNATIVES

The City is examining funding approaches for these improvements. If cash financing is not possible, there are a variety of funding resources in both the private and public sector if projects meet certain criteria. Some of the funding alternatives are discussed below.

5.5.1 Cash Funding

The City of Rigby could consider raising rates to cash finance the improvements. This would require the least total cash outlays for the City; however, the rates would be higher than if they were spread out over a long-term loan, which could be a significant hardship to the community.

5.5.2 Idaho Department of Environmental Quality (State Revolving Fund (SRF))

The SRF program is funded by a combination of repayment of loans previously made by DEQ and grant money supplied by EPA. Owners of public wastewater systems can apply for SRF funds annually through a competitive application process. Applications are ranked by state officials based on need, sustainability, water quality improvements, and other criteria. Davis-Bacon Wage Act and American Iron and Steel Requirements apply. Applicants may qualify for principal forgiveness or other subsidy programs. DEQ is required to commit a significant percentage of available loan funds to sustainable, energy efficient, and "green" infrastructure improvements. Consequently, elements that meet the "green" infrastructure qualifications may receive priority for funding. Voter approval in a bond election or through judicial confirmation is required for this funding source.

5.5.3 Idaho Department of Commerce and Community Development Block Grants (CDBG)

The Idaho Department of Commerce offers a number of grant programs for public wastewater system improvements. Eligibility for these funds is dependent on economic development. Grants up to $500,000 are available through community programs. Applicants must secure the services of a certified grant administrator to administer grant money and follow other grant requirements. There is an annual application window for applying for these funds.

5.5.4 United States Department of Agriculture-Rural Development (USDA-RD)

USDA-RD offers a grant and loan program for improvements to wastewater systems that serve rural communities which is defined as systems that serve less than 10,000 people. Grants up to 45% of the project cost are eligible depending on user rates. Applicants can apply for USDA-RD funds anytime during the year. Funds have many program requirements including the completion of a short-lived asset inventory, approved engineering report, and others. Voter approval in a bond election or through judicial confirmation and interim financing are required with this funding source.

5.5.5 United States Army Corps of Engineers (Section 595)

The USACE can sometimes offer money for water-related infrastructure projects to supplement funding from DEQ or USDA-RD. Funding availability depends on an appropriation from Congress and varies from year to year. Costs are shared with a 25 percent local match required.

5.5.5 Idaho Bond Bank

A bond bank is a state level entity which lends money to local governments within the state, with the goal of providing funds for their infrastructure needs and access to the capital markets at competitive interest rates. Under the Idaho Bond Bank program "IBBA", a municipality obtains a loan from the Bond Bank secured by either the municipality's bond or a loan agreement with the Bond Bank. The Bond Bank pools several loans to municipalities into one bond issue. The municipalities then repay the loan, and those repayments are used to repay the revenue bonds. The Bond Bank can obtain better credit ratings, more attractive interest rates, and lower underwriting costs than municipalities could achieve individually. The Bond Bank is able to pledge certain state funds as additional security for its bonds, further reducing interest costs. The Idaho Bond Bank Authority can open doors to municipalities that were previously barred from the capital markets due to the high costs of financing or challenging credit situations.

5.5.6 Local & Private

In addition to federal and state funding programs, there are local and private funding sources available to communities to fund. Some of these include a local improvement district (LID), the municipal bond market with voter approval or judicial confirmation, a business improvement district (BID), urban renewal district, connection fees, development agreements with developers, and others.

5.6 USER RATE ANALYSIS

Monthly sewer user rates are currently $44 for maintenance and operation, and $32 for the bond, totaling $76 per month.

On July 3, 2019, potential funding options were presented to the City Council. These funding options are summarized in Table 5.3 User Rate Analysis below. Alternative 1 in the table below is the IFAS alternative with associated Priority 1 improvements. Alternative 2 is the Similar Oxidation Ditch alternative with associated Priority 1 improvements. Table 5-3 compares user rates for Alternatives 1 and 2 with funding from the DEQ SRF loan fund, USDA-RD, and the Idaho Department of Commerce.

Table 5-3 User Rate Analysis

	Alt 1 DEQ/BG	Alt 2 DEQ/BG	Alt 1 USDA/BG	Alt 2 USDA/BG	Alt 2 30% USDA/BG
Project Total	$ 15,696,000	$ 17,976,000	$ 15,696,000	$ 17,976,000	$ 17,976,000
DEQ/USDA LF/Grant	$ 1,063,720	$ 1,223,320	$ 3,139,200	$ 3,595,200	$ 5,392,800
Block Grant	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000
Loan Amount	$ 14,132,280	$ 16,252,680	$ 12,056,800	$ 13,880,800	$ 12,083,200
Term (years)	30	30	40	40	30
Interest Rate	1.50%	1.50%	2.75%	2.75%	2.75%
Annual Debt Service	$ 588,456.67	$ 676,748.40	$ 500,737.16	$ 576,490.64	$ 596,721.82
Monthly Debt Service	$ 49,038.06	$ 56,395.70	$ 41,728.10	$ 48,040.89	$ 49,726.82
Users	1600	1600	1600	1600	1600
Monthly Debt Service per User	$ 30.65	$ 35.25	$ 26.08	$ 30.30	$ 31.08
Debt Service Reserve	$ 3.06	$ 3.52	$ 2.61	$ 3.00	$ 3.11
Total Monthly Fixed (Debt + Reserves) Costs per User	$ 33.71	$ 38.77	$ 28.69	$ 33.03	$ 34.19
Monthly O&M	$ 2,708	$ 2,417	$ 2,708	$ 2,417	$ 2,708
Total Monthly Variable Costs per User	$ 1.69	$ 1.51	$ 1.69	$ 1.51	$ 1.69
Total Monthly Cost per User	$ 1.69	$ 1.51	$ 1.69	$ 1.51	$ 1.69
Total Monthy Fixed Costs per User	$ 33.71	$ 38.77	$ 28.69	$ 33.03	$ 34.19
Total Monthly Variable Costs per User	$ 1.69	$ 1.51	$ 1.69	$ 1.51	$ 1.69
Total Monthly Cost per User	**$ 35.41**	**$ 40.28**	**$ 30.38**	**$ 34.54**	**$ 35.88**

In January 2019, the City of Rigby submitted a letter of interest to DEQ for a construction loan through the SRF loan program. Rigby's project ranked high enough to be funded and the City was offered a loan of up to $18,000,000 with repayment over 30 years at 1.5 percent interest and $1,334,885 of principal forgiveness. Columns 1 and 2 in Table 5.3 show what the increase to the monthly user rate would need to be for Alternatives 1 and 2 if the City uses the DEQ loan offer with principal forgiveness and a $500,000 Block Grant from the Department of Commerce. Columns 3, and 4 show what user rates would need to be if the project is funded with a loan and 20 percent grant from USDA-RD at 2.75 percent interest with repayment over 40 years with a $500,000 Block Grant. The City of Rigby could qualify for up to 45 percent grant from USDA-RD based in income level and current sewer rates, but USDA-RD hasn't had this much grant money available to offer. Column 5 shows user rates with funding from USDA-RD with repayment over 30 years assuming up to 30 percent grant.

Table 5.3 shows that user rates will likely need to increase between $30-$40 per month to pay for the proposed project. If additional grants become available through USACE or USDA-RD, user rates could be reduced $2.20-$2.40 per month for every $1,000,000 of additional grant received. After the project is completed, monthly user rates will likely need to be $106 to $116.

Appendix A

Additional System Documentation

- Hydraulic Profile

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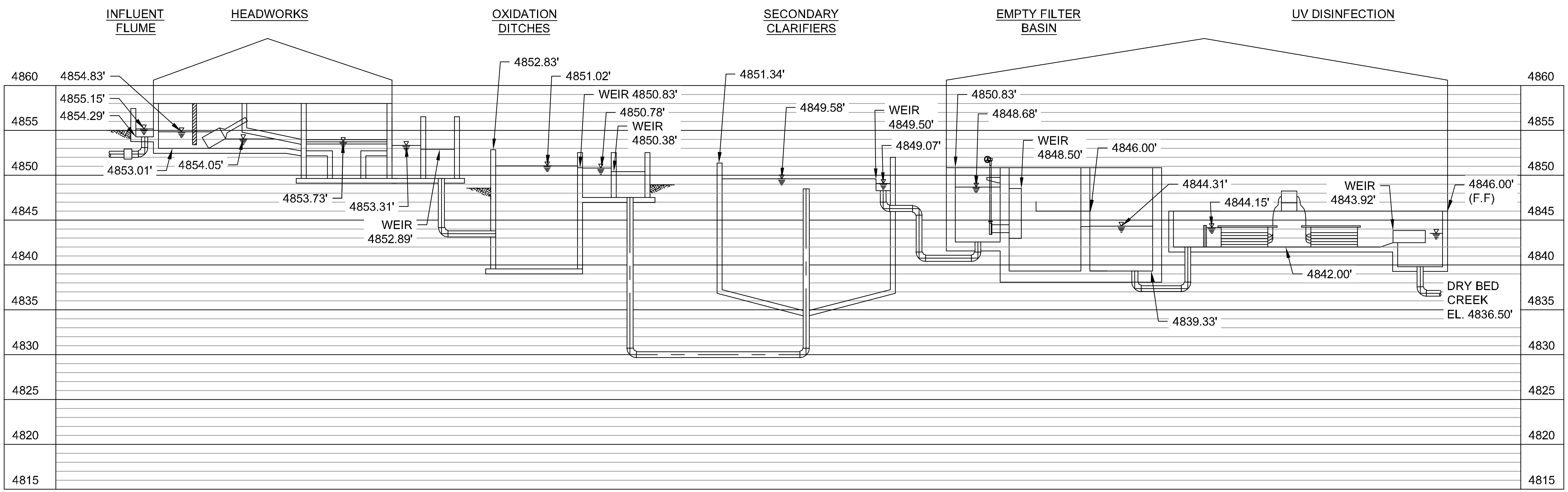

KELLER ASSOCIATES

CITY OF RIGBY
RIGBY, IDAHO

RIGBY WASTEWATER
FACILITIES PLANNING STUDY

EXISTING HYDRAULIC PROFILE (2018 PHF)

PROJECT NO. 218049

FIGURE NO. 1

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Appendix B

Environmental Documentation

- Formally Classified Public Lands in Study Area
- Prime Farmland in Study Area
- USFWS IPaC Endangered/Threatened Plants, April 21, 2017
- Sole Source Aquifers
- Soil Types
- Peak Hour Flow Analysis

NPDES Permit No. ID-0020010
NPDES Fact Sheet
Idaho Public Wastewater Treatment Plant Classification Worksheet

Public Participation

September 20, 2018 City Council Presentation Handout
October 4, 2018 City Council Presentation Handout
March 7, 2019 City Council Presentation Information
April 11, 2019 Planning Meeting Notes
May 3, 2019 Mayors Meeting Notes
May 9, 2019 Planning Meeting Notes
May 16, 2019 City Council Presentation Information
July 3, 2019 City Council Presentation Information

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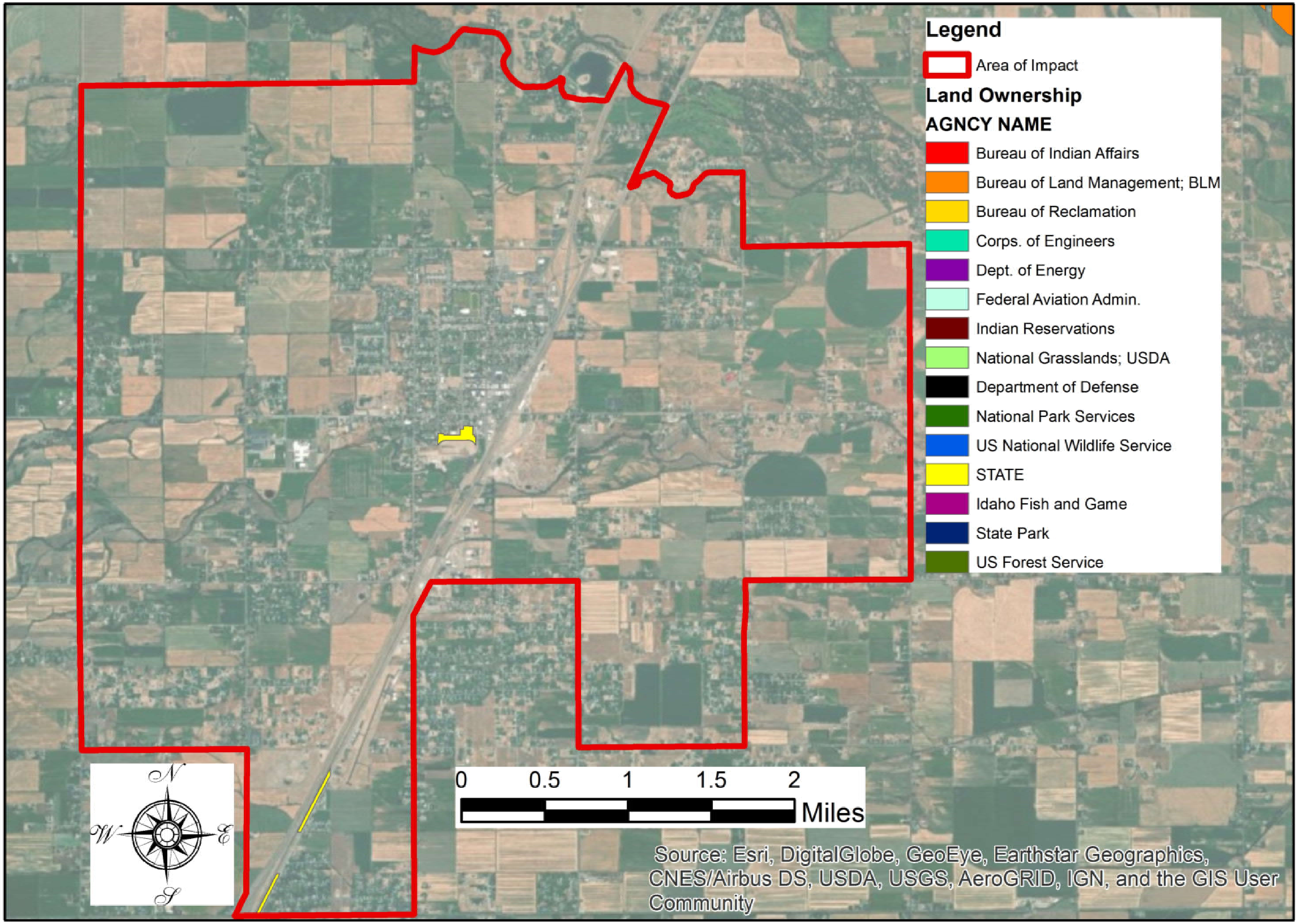
Formally Classified Public Lands in the Study Area



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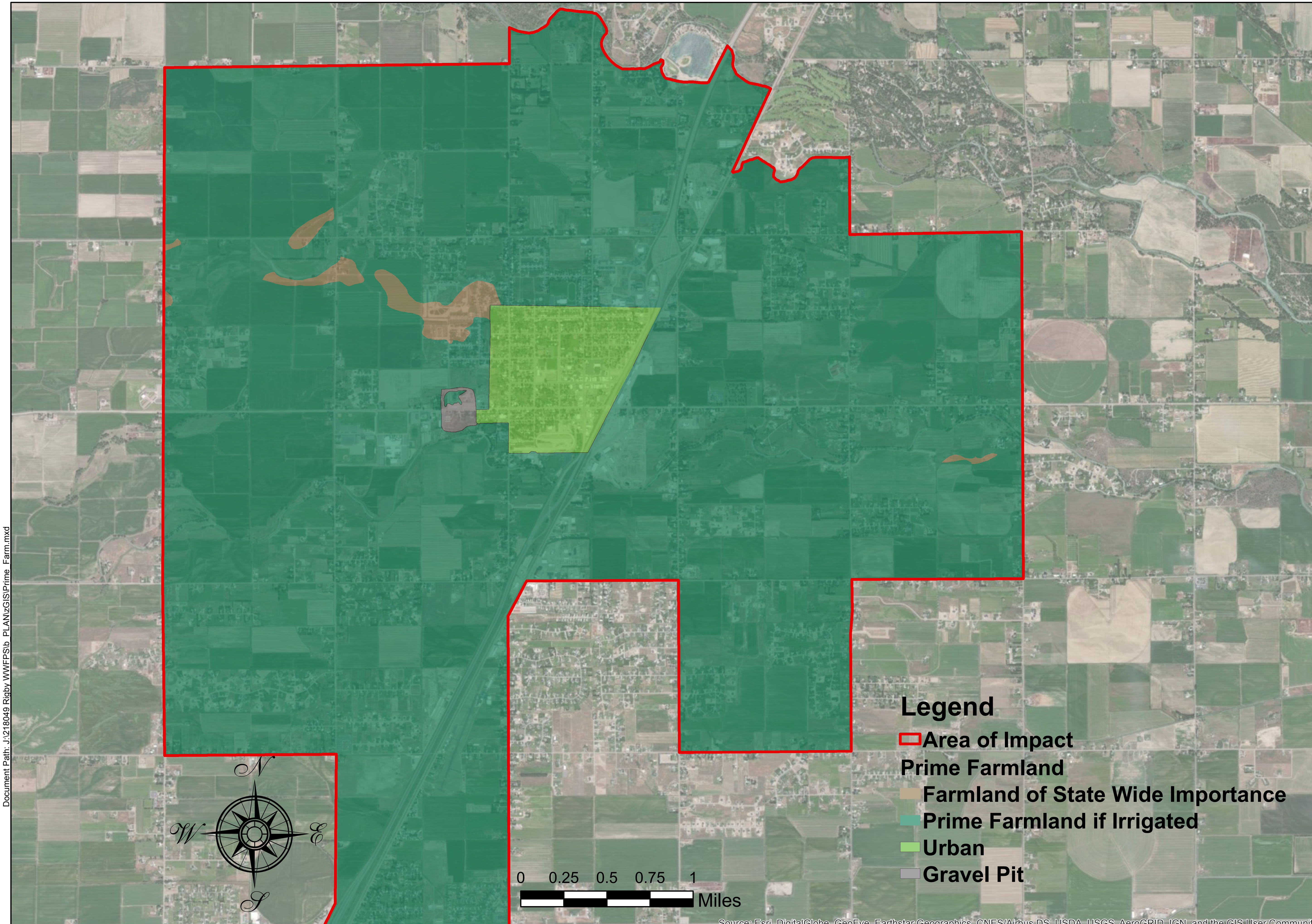

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Prepared for:

KELLER ASSOCIATES

Project Number: 218104-000

Project: Rigby Wastewater Facility Planning Study

Title: Prime Farmland

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USFWS IPaC Endangered Species, April 24, 2017

Symbol	Scientific Name	Common Name	Status
ASER4	Astragalus eremiticus Sheldon	hermit milkvetch	Threatened
ASAM14	*Astragalus ampullarioides* (S.L. Welsh) S.L. Welsh		Endangered
HOAQ	Howellia aquatilis A. Gray	water howellia	Threatened
ILRIR	Iliamna rivularis (Douglas ex Hook.) Greene var. rivularis	streambank wild hollyhock	Threatened
ILCO4	*Iliamna corei* Sherff		Endangered
MIMA2	Mirabilis macfarlanei Constance & Rollins	MacFarlane's four o'clock	Threatened
SISP2	Silene spaldingii S. Watson	Spalding's silene	Threatened
SPDI6	Spiranthes diluvialis Sheviak	Ute lady's tresses	Threatened

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USFWS IPaC Endangered/Threatened Plants, April 21, 2017

Group	Name	Population	Status
Birds	Yellow-billed Cuckoo (Coccyzus americanus)	Western U.S. DPS	Threatened
Fishes	Bull Trout (Salvelinus confluentus)	U.S.A., conterminous, lower 48 states	Threatened
Flowering Plants	Ute ladies'-tresses (Spiranthes diluvialis)	Wherever found	Threatened
Mammals	Gray wolf (Canis lupus)	Northern Rocky Mountain DPS	Recovery
Mammals	North American wolverine (Gulo gulo luscus)	Wherever found	Proposed

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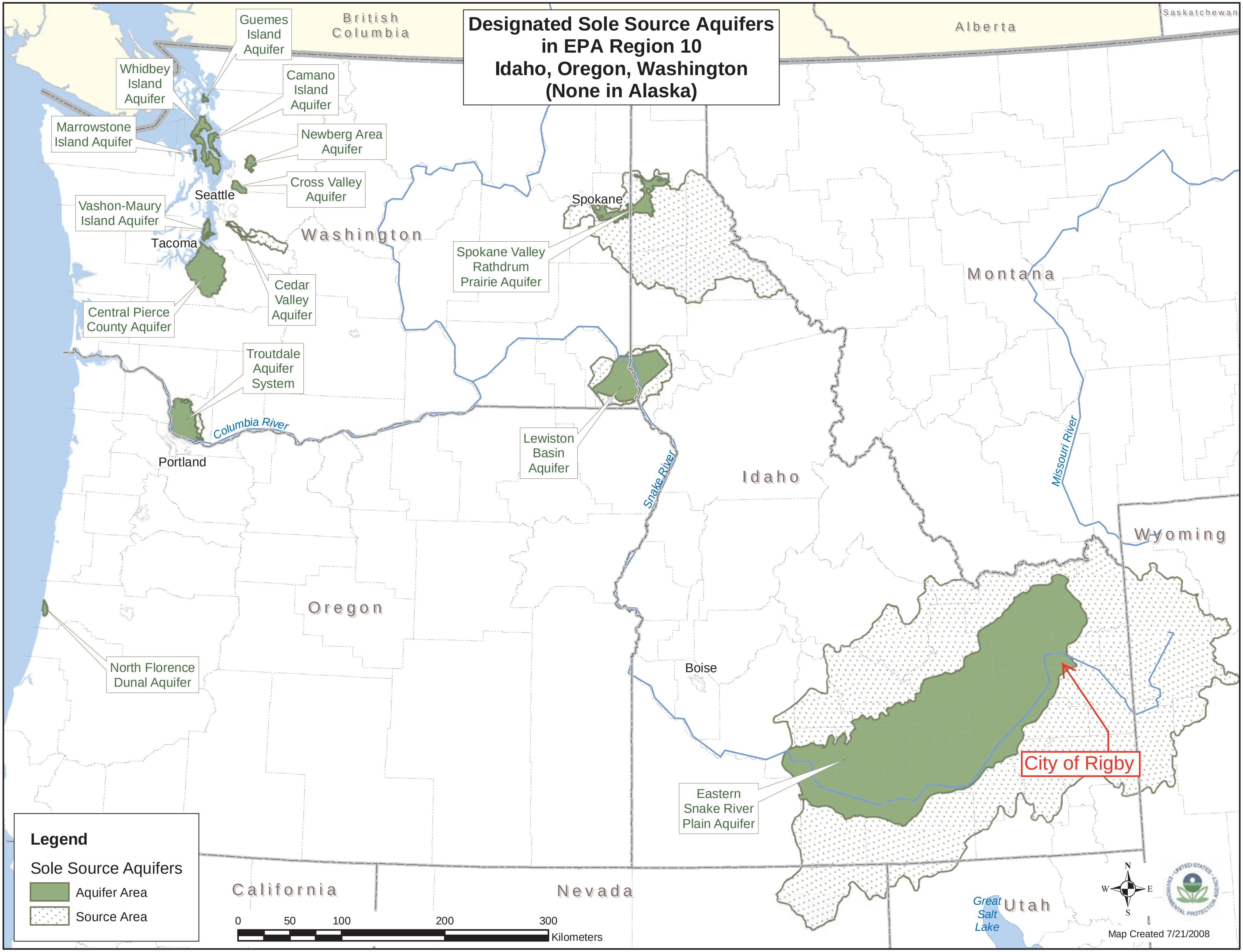

Designated Sole Source Aquifers in EPA Region 10
Idaho, Oregon, Washington
(None in Alaska)
British Columbia
Alberta
Saskatchewan
Guemes Island Aquifer
Whidbey Island Aquifer
Camano Island Aquifer
Marrowstone Island Aquifer
Newberg Area Aquifer
Cross Valley Aquifer
Seattle
Vashon-Maury Island Aquifer
Tacoma
Washington
Spokane
Spokane Valley Rathdrum Prairie Aquifer
Montana
Cedar Valley Aquifer
Central Pierce County Aquifer
Troutdale Aquifer System
Columbia River
Portland
Lewiston Basin Aquifer
Snake River
Idaho
Missouri River
Wyoming
Oregon
North Florence Dunal Aquifer
Boise
City of Rigby
Eastern Snake River Plain Aquifer
Legend
Sole Source Aquifers
Aquifer Area
Source Area
California
Nevada
Great Salt Lake
Utah
0 50 100 200 300 Kilometers
N S E W
Map Created 7/21/2008

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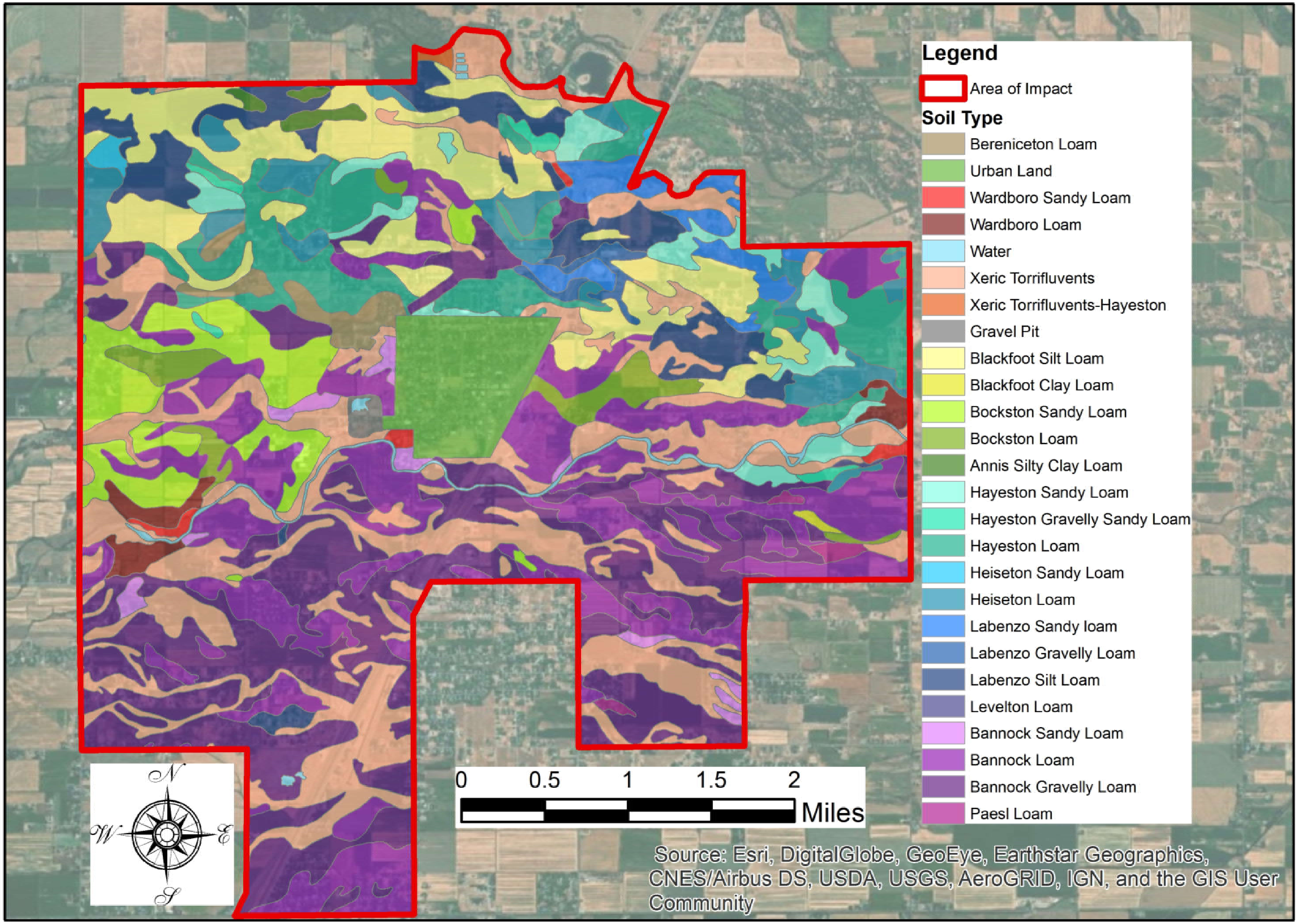
Soil Types in Study Area



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Peak Flow Calculations

Rigby WWFPS #218049-000

Collections Surcharge Upstream of Lift Station to WWTP

12/19/2018

Line/Manhole	MH Elevation	Water Depth	Length (ft)	Diamater (in)	# of Services	Volume (ft3)	Volume (gal)
Lift Station	-0.761	5.46		92.16	<-LS Floor SF	503.3	3764.9
B2-LS			380	18	0	671.5	5,023.6
MH: G2-B2	-0.305	5.00		48		62.9	470.5
C3-B2			254	18	3	454.1	3,397.1
MH: G2-C3	0	4.70		48		59.1	441.8
C7-C3			304	8	7	118.3	885.3
MH: G2-C7	1.216	3.48		48		43.8	327.5
C1-C3			278	18	2	494.8	3,701.3
MH: G2-C1	0.334	4.37		48		54.9	410.5
C2-C1			250	18	5	450.5	3,370.3
MH:G2-C2	0.634	4.07		48		51.1	382.3
C6-C1			217	8	2	79.2	592.8
MH: G2-C6	1.202	3.50		48		44.0	328.9
C8-C6			300	8	8	118.7	887.9
MH: G2-C8	2.402	2.30		48		28.9	216.1
C13-C8			356	8	6	134.7	1,008.0
MH: G2-C13	3.826	0.87		48		11.0	82.2
C18-C13			206	8	8	85.9	642.4
MH: G2-C18	4.650	0.05		48		0.6	4.7
Total Back Up Volume =						**3,467**	**25,938**

Scott Humpherys, Rigby WWTP Operator, reports that on years with high levels of sub-water he has seen the main lift station to the plant fall behind with all three pumps running. This is when influent flows exceed about 1.8 MGD. When he has pulled manhole lids to see the extent of the backup, he reports that manhole G2-C3 in the figure here has 3 ft of water in it and that the lines in Boulder are full (to the point where Cedar Meadows discharges into G2-C4) and that the line in 4th West backs up down to Carribou St., where the water level is just over the top of the pipe. Confirmed line sizes used here with Mitch Bradley, Rigby PW Director. He is unsure as to whether the line in Carribou connects to G2-C18 or goes south.
Actual manhole inverts were not known, so the elevations above are relative to manhole G2-C3 and based on the assumption that the lines between manholes were installed at the minimum slopes shown in the table. Assumptions for services are also shown.

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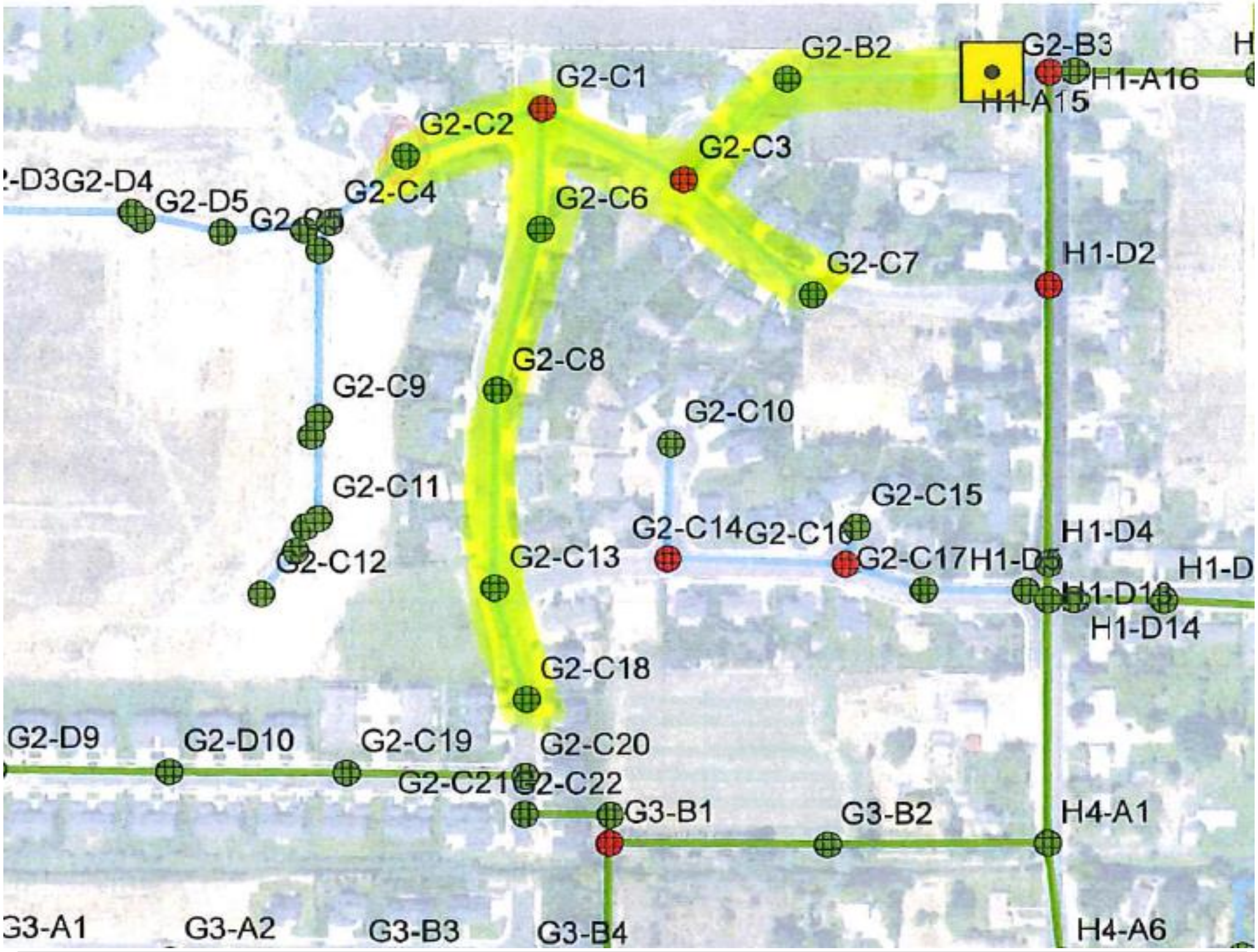
Image from Figure A-2 in Rigby's August 2015 City-Wide Capital Improvements Plan



Lines shaded in yellow show the extents of surcharged sewer when the existing pumps start falling behind (beyond about 1.8 MGD) as reported by City Staff.

Assumed Grades	
Dia. (in)	Slope
4	2.00%
6	1.00%
8	0.40%
10	0.28%
12	0.22%
15	0.15%
18	0.12%

Services	
Dia (in)	4
Length (ft)	20

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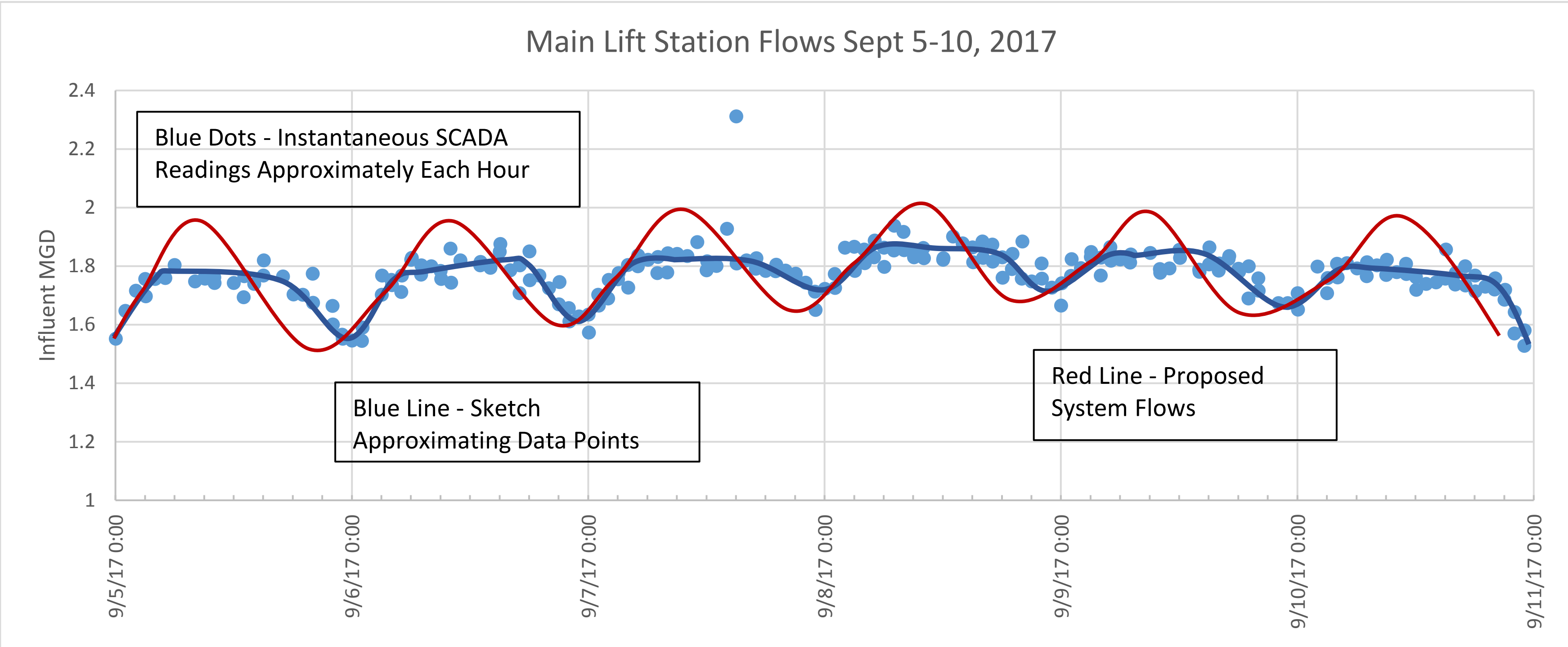


The graph above shows influent flows through the main lift station to the WWTP during the peak pumping of 2017, which was a high sub-water year. As was reported by the plant operator, the lift station with all three pumps running maxes out at about 1.8 MGD; this is illustrated by the flatlining of the pumping at about this level of flow. Coupled with reports of surcharging in the lines upstream of the lift station under these conditions, this trend suggests that the lift station cannot keep up with peak flows and is essentially shaving off the natural influent peak, storing the excess in the lines and then releasing it over time. The red line is a sketch of what the natural influent flow diurnal patter may look like. The area between the two curves represents volume that is being stored in the lines and then pumped over time and these two components should be approximately equal for each cycle.

The SCADA above shows September 8th having the highest pumping for this period. The area between the red peak and the blue peak on this day equates to a volume of roughly 36,000 gallons. While not a perfect match with the 26,000 gallons calculated for observed sewer surcharging, it is close enough to provide some confidence in the assumptions stated above and the conceptual red line sketch above. The purpose of the red line sketched onto the graph above is to illustrate conceptually what influent flows look like upstream of the lift station. If lift station pumps are replaced with higher capacity pumps (still on VFDs) then the influent flows into the WWTP should look similar to the red line shown. For this reason, a Peak Hour of 2.0 MGD for 2017 was selected for the study, rather than the 1.9 MGD flat-line or other higher outliers suggested by the SCADA. City staff should take note of actual measured Peak Hour readings once the lift station is upgraded.

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue Suite 900
Seattle, Washington 98101-3140

Authorization to Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, 33 USC §1251 *et seq.*, as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

The City of Rigby
Wastewater Treatment Plant
158 W. Fremont Avenue,
Rigby, Idaho 83442

is authorized to discharge from a waste water treatment facility located in Rigby, Idaho at the following location(s):

Outfall	Receiving Water	Latitude	Longitude
001	Dry Bed Creek	43° 42' 8" N	111° 55' 8" W

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective January 1, 2017

This permit and the authorization to discharge shall expire at midnight, December 31, 2021

The permittee shall reapply for a permit reissuance on or before June 30, 2021, 180 days before the expiration of this permit if the permittee intends to continue operations and discharges at the facility beyond the term of this permit.

Signed this 30 day of November, 2016.

Christine Psyk for

Daniel D. Opalski, Director
Office of Water and Watersheds

Schedule of Submissions

Item	Due Date
Discharge Monitoring Reports (DMR)	DMRs are due monthly and must be postmarked on or before the 20th of the month following the monitoring month.
Quality Assurance Plan (QAP)	The permittee must provide EPA and Idaho Department of Environmental Quality (IDEQ) with written notification that the Plan has been developed and implemented within 180 days after the effective date of the final permit (see Part II.B of this permit). The Plan must be kept on site and made available to EPA and IDEQ upon request.
Operation and Maintenance (O&M) Plan	The permittee must provide EPA and IDEQ with written notification that the Plan has been developed and implemented within 180 days after the effective date of the final permit (see Part II.A of this permit). The Plan must be kept on site and made available to EPA and IDEQ upon request.
Whole Effluent Toxicity Testing (WET) Report	The permittee must submit the results of the toxicity testing with the December DMR and with the next permit application.
NPDES Application Renewal	The application must be submitted at least 180 days before the expiration date of the permit (see Part V.B of this permit).
Twenty-Four Hour Notice of Noncompliance Reporting	The permittee must report certain occurrences of noncompliance by telephone within 24 hours from the time the permittee becomes aware of the circumstances (see Part III.G and Paragraph I.B.3. of this permit).
Emergency Response and Public Notification Plan	The permittee must develop and implement an overflow emergency response and public notification plan. The permittee must submit written notice to EPA and IDEQ that the plan has been developed and implemented within 180 days of the effective date of this permit. (See Part II.E. of this permit)

Table of Contents

I. Limitations and Monitoring Requirements

A. Discharge Authorization

During the effective period of this permit, the permittee is authorized to discharge pollutants from the outfalls specified herein to the Snake within the limits and subject to the conditions set forth herein including the conditions in the Idaho Department of Environmental Quality Water Quality Certification, incorporated as Appendix B of this permit. This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in the permit application process.

B. Effluent Limitations and Monitoring

1. The permittee must limit and monitor discharges from outfall 001 as specified in *Table 1. Effluent Limitations and Monitoring Requirements*, below. All figures represent maximum effluent limits unless otherwise indicated. The permittee must comply with the effluent limits in the tables at all times unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit.

Table 1. Effluent Limitations and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Parameters With Effluent Limits							
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Influent and Effluent	1/week	24-hour composite
	lbs/day	648	972	--			Calculation[1]
BOD_5 Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation[2]
Total Suspended Solids (TSS)	mg/L	30	45	--	Influent and Effluent	1/week	24-hour composite
	lbs/day	648	972	--			Calculation[1]
TSS Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation[2]
E. coli[3]	CFU/ 100 ml	126	--	460 (instant. max)[4]	Effluent	5/month	Grab
pH	std units	Between 6.5 – 9.0			Effluent	5/week	Grab
Total Ammonia (as N) May 1 – September 30[5]	mg /L	4.3	--	12.6[4]	Effluent	1/week	Grab
	lbs/day	93	--	272	Effluent	1/week	Calculation[1]

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Total Ammonia (as N) October 1 – April 30[5]	mg/L	0.65	--	1.7[4]	Effluent	1/week	Grab
	lbs/day	14	--	37	Effluent	1/week	Calculation[1]
Narrative	See Paragraph I.B.I.1.2 of this permit				Effluent	1/month	Visual Observation
Report Parameters							
Flow	mgd	Report	--	Report	Effluent	continuous	Meter
Whole Effluent Toxicity (WET)	See Part I.D. of this permit				Effluent	1/year[6]	24-hour composite
Effluent Testing for Permit Renewal							
Permit Application Effluent Testing Data[7]	--				Effluent	3x/5 years	--
Permit Application Expanded Effluent Testing	--				Effluent	1/year[8]	--

Notes

1. Loading (in lbs/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the *NPDES Self-Monitoring System User Guide* (EPA 833-B-85-100, March 1985).
2. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation: (average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration x 100. Influent and effluent samples must be taken over approximately the same time period.
3. The average monthly *E. coli* bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3 - 7 days within a calendar month. See Part VI of this permit for a definition of geometric mean.
4. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Paragraph III.G.1.d) and Part III.G of this permit.
5. Limit to be achieved by August 1, 2023. (see Part I.C.).
6. See monitoring described in Paragraph I.D.2. of this permit.
7. Effluent Testing Data - See NPDES Permit Application Form 2A, Part B.6 for the list of pollutants to be included in this testing. The Permittee must use sufficiently sensitive analytical methods in accordance with Part I.B.6. of this permit.
8. Expanded Effluent Testing - See NPDES Permit Application Form 2A, Part D for the list of pollutants to be included in this testing. Testing must be conducted annually during alternating quarters. The expanded effluent testing must occur on the same day as a whole effluent toxicity testing. Quarters are defined as: January 1 to March 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31. The Permittee must use sufficiently sensitive analytical methods in accordance with Part I.B.6. of this permit.

2. Narrative limitations for floating, suspended or submerged matter:

   The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

3. The permittee must report within 24 hours any violation of the maximum daily limits for the following pollutants: *E.coli* and ammonia. Violations of all other effluent limits are to be reported at the time that discharge monitoring reports are submitted (See Parts III.B. *Reporting of Monitoring Results* and III.H. *Twenty-four Hour Notice of Noncompliance Reporting* of this permit).
4. The permittee must conduct a monthly visual inspection of the effluent at the location where the effluent enters the surface water to confirm the effluent meets the narrative limitations for floating, suspended or submerged matter. A written log of the monthly inspection which includes the date, time, observer, and observation must be retained and made available to EPA or IDEQ upon request.
5. The permittee must collect effluent samples from the effluent stream after the last treatment unit prior to discharge into the receiving waters.
6. For all effluent monitoring, the permittee must use sufficiently sensitive analytical methods which meet the following:
    a) Parameters with an effluent limit. The method must achieve a minimum level (ML) less than the effluent limitation unless otherwise specified in *Table 1 Effluent Limitations and Monitoring Requirements*.
    b) Parameters that do not have effluent limitations.
        (i) The permittee must use a method that detects and quantifies the level of the pollutant, or
        (ii) The permittee must use a method that can achieve a maximum ML less than or equal to those specified in *Appendix A. Minimum Levels;*
    c) For parameters that do not have an effluent limit, the permittee may request different MLs. The request must be in writing and must be approved by EPA.
    d) See also Part III.C *Monitoring Procedures*
7. For purposes of reporting on the DMR for a single sample, if a value is less than the MDL, the permittee must report "less than {numeric value of the MDL}" and if a value is less than the ML, the permittee must report "less than {numeric value of the ML}."
8. For purposes of calculating monthly averages, zero may be assigned for values less than the MDL, and the {numeric value of the MDL} may be assigned for values between the MDL and the ML. If the average value is less than the MDL, the permittee must report "less than {numeric value of the MDL}" and if the average value is less than the ML, the permittee must report "less than {numeric value of the ML}." If a value is equal to or greater than the ML, the permittee must report and use the actual value. The resulting average value must be compared to the compliance level, the ML, in assessing compliance.

C. Total Ammonia Schedule of Compliance

The permittee must achieve compliance with the total ammonia limitations of Part I.B.1. *Table 1. Effluent Limitations and Monitoring Requirements*, by August 1, 2023.

1. While the schedule of compliance is in effect, the permittee must comply with the following interim requirements:

   a) The permittee must comply with the monitoring requirements in Part I.B. of this permit.

   b) Until compliance with the ammonia effluent limits are achieved, at a minimum, the permittee must complete the tasks and reports listed in Table 2.

Table 2: Tasks Required Under the Ammonia Schedule of Compliance

Task No.	Completion Date	Task Activity
1	January 1, 2018	Progress Report on Funding Deliverable: The permittee must provide the EPA with a Progress Report on obtaining funding.
2	January 1, 2019	Obtain Funding Deliverable: The permittee must provide the EPA with a Progress Report on obtaining funding.
3	June 1, 2020	Obtain Funding Deliverable: The permittee must provide the EPA with written notice that the necessary funding has been obtained.
4	December 1, 2020	Preparation and Submittal of a Preliminary Engineering Report (PER) • Finalize design criteria • Determine site locations and equipment sizing for proposed improvements Deliverable: Permittee must submit a preliminary engineering report to IDEQ for approval and notify EPA of the submission.
5	February 1, 2021	IDEQ review of PER: • IDEQ will review and comment on the PER. • IDEQ will submit any comment to Engineer and Rigby Deliverable: Engineer and Rigby will incorporate comments, and the PER will be resubmitted back to IDEQ for approval.
6	May 1, 2021	Design-Build Documentation (30% Design): • 30% design drawings and specifications will be produced by Engineer and Rigby • Submittal of 30% design to include civil, structural, mechanical, electrical, and instrumental design drawings and specifications. Deliverable: Permittee must submit Design-Build documents to IDEQ for review and approval and notify EPA of this submission.
7	October 1, 2021	Bid Process: • Solicit and evaluate design and build contractor bids. Deliverable: Notify IDEQ and EPA that the design and build contractors have been evaluated.

Task No.	Completion Date	Task Activity
8	March 1, 2022	60% Design-Build Plan and Equipment procurement Phase: • Design- Build Contractor is selected. • 60% design-build documents are prepared by contractor and submitted for approval. • Equipment purchase sheets are developed and submitted for approval. Deliverable: Permittee must submit 60% design-build and equipment purchase documents to IDEQ for approval and notify EPA of this submission.
9	May 1, 2023	Construction Phase: • Complete final design • Build foundations and buildings • Install treatment units Deliverable: Permittee must submit final design documents for IDEQ, including civil, structural, mechanical, electrical, and instrumental design drawing and specifications and notify EPA of this submittal. Permittee must provide IDEQ and the EPA with written notice that construction is complete.
10	August 1, 2023	Process optimization and achieve final effluent limitation: • Operate new equipment for an initial startup period to ensure proper operation • Adjust system controls to optimize chemical use and meet effluent limitations. Deliverable: Permittee must provide IDEQ and EPA with written notice that the facility has achieved compliance with the final effluent limitations.

D. Whole Effluent Toxicity Testing Requirements

The permittee must conduct chronic toxicity tests on effluent samples from outfall 001. Testing must be conducted in accordance with Paragraphs 1 through 4, below.

1. Toxicity testing must be conducted on 24-hour composite samples of effluent. In addition, a split of each sample collected must be analyzed for the chemical and physical parameters required in Part I.B of this permit, *Effluent Limitations and Monitoring*, with a required sampling frequency of monthly or more frequently, using the same sample type required in Part I.B. When the timing of sample collection coincides with that of the sampling required in Part I.B, analysis of the split sample will fulfill the requirements of Part I.B as well. For parameters for which grab samples are required in Part I.B, grab samples must be taken during the same 24-hour period as the 24-hour composite sample used for the toxicity tests. A split of the first discrete effluent sample collected for the 24-hour composite sample for the toxicity test cannot be used to satisfy the required grab sample in Part I.B.

2. Chronic Test Species and Methods

   a) For Outfall 001, chronic WET testing must be conducted annually while the permit remains in effect. WET testing must begin during the 1st quarter of the first full calendar year (January 1 – December 31) after the effective date of the permit. Annual testing shall be conducted on a rotating quarterly schedule, so that each annual test is conducted during a different quarter than the previous year's test. After four years of annual testing (one test per year, each during a different quarter), the cycle is repeated. For the purposes of WET testing, the annual testing schedule is defined as follows:

      First full calendar year: 1st Quarter (January 1—March 31);
      Second calendar year: 2nd Quarter (April 1—June 30);
      Third calendar year: 3rd Quarter (July 1—September 30);
      Fourth calendar year: 4th Quarter (October 1—December 31)
      Fifth calendar year, and thereafter: repeat rotating quarterly schedule, starting with annual testing during 1st Quarter.

   b) The permittee must conduct the following two chronic toxicity tests on each sample, using the species and protocols in *Table 3 Toxicity Test Species and Protocols.*

Table 3 Toxicity Test Species and Protocols

Freshwater Chronic Toxicity Tests	Species	Method
Fathead minnow larval survival and growth test (method 1000.0)	*Pimephales promelas*	EPA-821-R-02-013
Daphnid survival and reproduction test (method 1002.0)	*Ceriodaphnia dubia*	EPA-821-R-02-013

   c) The presence of chronic toxicity must be determined as specified in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.

   d) Results must be reported in TUc (chronic toxic units), which is defined as follows:

      (i) For survival endpoints, TUc = 100/NOEC.

      (ii) For all other test endpoints, TUc = 100/IC25

      (iii) IC25 means "25% inhibition concentration." The IC25 is a point estimate of the toxicant concentration, expressed in percent effluent, that causes a 25% reduction in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).

      (iv) NOEC means "no observed effect concentration." The NOEC is the highest concentration of toxicant, expressed in percent effluent, to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

3. Quality Assurance

   a) The toxicity testing on each organism must include a series of six test dilutions and a control. The dilution series must include 100, 50, 25, 12.5, 6.25 and the receiving water concentration (RWC), which is 18% effluent. Any test which does not include these dilutions will be considered invalid.

   b) All quality assurance criteria and statistical analyses used for chronic tests and reference toxicant tests must be in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002, and individual test protocols.

   c) In addition to those quality assurance measures specified in the methodology, the following quality assurance procedures must be followed:

      (i) If organisms are not cultured in-house, concurrent testing with reference toxicants must be conducted. If organisms are cultured in-house, monthly reference toxicant testing is sufficient. Reference toxicant tests must be conducted using the same test conditions as the effluent toxicity tests.

      (ii) If either of the reference toxicant tests or the effluent tests do not meet all test acceptability criteria as specified in the test methods manual, the permittee must re-sample and re-test within 14 days of receipt of the test results.

      (iii) Control and dilution water must be receiving water or lab water, as appropriate, as described in the manual. If the dilution water used is different from the culture water, a second control, using culture water must also be used. Receiving water may be used as control and dilution water upon notification of EPA and IDEQ. In no case shall water that has not met test acceptability criteria be used for either dilution or control.

4. Reporting

   a) The permittee must submit the results of the toxicity testing with the December DMR. All WET test results must be resubmitted with the next permit application.

   b) The report of toxicity test results must include all relevant information outlined in Section 10, Report Preparation, of Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002. In addition to toxicity test results, the permittee must report: dates of sample collection and initiation of each test; flow rate at the time of sample collection; and the results of the monitoring required in Part I.B.

E. Surface Water Monitoring

The permittee must conduct surface water monitoring. Surface water monitoring must start after the effective date of the permit and continue for the duration of the permit. The program must meet the following requirements:

1. Monitoring stations must be established in Dry Bed Creek at the following locations:

   Above the influence of the facility's discharge,

2. The permittee must seek approval of the surface water monitoring stations from IDEQ.
3. A failure to obtain IDEQ approval of surface water monitoring stations does not relieve the permittee of the surface water monitoring requirements of this permit.
4. To the extent practicable, surface water sample collection must occur on the same day as effluent sample collection.
5. Samples must be analyzed for the parameters listed in *Table 3 Surface Water Monitoring Requirements.*
6. For all surface water monitoring, the permittee must use sufficiently sensitive analytical methods which meet the following:
   a) The method must detect and quantify the level of the pollutant, or
   b) The permittee must use a method that can achieve MLs less than or equal to those specified in Appendix A. The permittee may request different MLs. The request must be in writing and must be approved by EPA.

Table 3: Surface Water Monitoring Requirements

Parameter	Units	Frequency	Sample Type
Copper	mg/L	1/quarter	grab
Dissolved Organic Carbon (DOC)	mg/L	1/quarter	grab
pH	Standard Units	1/quarter	grab
Temperature	°C	1/quarter	Grab
Hardness	mg/L	1/quarter	Grab
Conductivity	umhos/cm	1/quarter	Grab
Notes: 1. For quarterly monitoring frequency, quarters are defined as: January 1 to Mach 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31.			

7. Quality assurance/quality control (QA/QC) plans for all the monitoring must be documented in the Quality Assurance Plan required under Part II.B.

8. Samples for copper, pH, DOC, conductivity and hardness must be collected on the same day.

9. Submission of SW Monitoring

   a) Surface water monitoring results must be reported on the monthly DMR.

   b) In addition, the permittee must submit all surface water monitoring results for the previous calendar year for all parameters in an annual report to EPA and IDEQ by January 31st of the following year and with the application (see Part V.B of this permit, Duty to Reapply). The file must be in the format of one analytical result per row and include the following information: name and contact information of laboratory, sample identification number, sample location in latitude and longitude (decimal degrees format), method of location determination (i.e., GPS, survey etc.), date and time of sample collection, water quality parameter (or characteristic being measured), analysis result, result units, detection limit and definition (i.e., MDL etc.), analytical method, date completed, and any applicable notes.

II. Special Conditions

A. Operation and Maintenance Plan

In addition to the requirements specified in Part IV.E, *Proper Operation and Maintenance*, by 180 days of the effective date of this permit, the permittee must submit written notice to EPA and IDEQ that an operations and maintenance plan for the current wastewater treatment facility has been developed and implemented. The plan must be retained on site and made available to EPA and IDEQ upon request. Any changes occurring in the operation of the plant must be reflected within the Operation and Maintenance plan.

B. Quality Assurance Plan (QAP)

The permittee must develop a quality assurance plan (QAP) for all monitoring required by this permit. Within 180 days of the effective date of this permit, the permittee must submit written notice to EPA and IDEQ that the Plan has been developed and implemented. Any existing QAPs may be modified for compliance with this section.

1. The QAP must be designed to assist in planning for the collection and analysis of effluent and receiving water samples in support of the permit and in explaining data anomalies when they occur.

2. Throughout all sample collection and analysis activities, the permittee must use the EPA-approved QA/QC and chain-of-custody procedures described in *EPA Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5). The QAP must be prepared in the format that is specified in these documents.

3. At a minimum, the QAP must include the following:
   a) Details on the number of samples, type of sample containers, preservation of samples, holding times, analytical methods, analytical detection and quantitation limits for each target compound, type and number of quality assurance field samples, precision and accuracy requirements, sample preparation requirements, sample shipping methods, and laboratory data delivery requirements.
   b) Map(s) indicating the location of each sampling point.
   c) Qualification and training of personnel.
   d) Name(s), address(es) and telephone number(s) of the laboratories used by or proposed to be used by the permittee.
4. The permittee must amend the QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP.
5. Copies of the QAP must be retained on site and made available to EPA and IDEQ upon request.

C. Facility Planning Requirement

1. Design Criteria. The maximum design flows and waste loads for the permitted facility are:

Table 4 Facility Planning Values

Facility Design Criteria	Value	Units
Maximum Monthly Flow	2.59	mgd
Maximum monthly flow means the largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.		

2. Plan for maintaining adequate capacity
   a) Condition to trigger plan development
      (i) Each month, the Permittee must record the average daily flow, entering the facility for that month.
      (ii) When the actual flow for any two months during a 12-month period exceed the facility planning values listed in 4, , the permittee must develop a new or updated plan and schedule for continuing to maintain capacity and maintain compliance with effluent limits.
   b) Submittal. The plan must be submitted to IDEQ for approval within 18 months of exceeding the trigger.
   c) Plan and schedule content. The plan and schedule must identify the actions necessary to maintain adequate capacity and to meet the limits and requirements of the permit. The Permittee must consider the following topics and actions in its plan:
      (i) Analysis of the present design and proposed process modifications

(ii) Reduction or elimination of excessive infiltration and inflow of uncontaminated ground and surface water into the sewer system

(iii) Limits on future sewer extensions or connections or additional waste loads

(iv) Modification or expansion of facilities

(v) Reduction of industrial or commercial flows or waste loads

D. Industrial Waste Management

1. The Permittee must not authorize the introduction of pollutants that would inhibit, interfere, or otherwise be incompatible with operation of the treatment works including interference with the use or disposal of municipal sludge.

2. The Permittee must not authorize, under any circumstances, the introduction of the following pollutants to the POTW from any source of nondomestic discharge:

   a) Any pollutant which may cause Pass Through or Interference;

   b) Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 60° C (140° F) using the test methods specified in 40 CFR 261.21;

   c) Pollutants which will cause corrosive structural damage to the POTW, but in no case indirect discharges with a pH of lower than 5.0 s.u., unless the treatment facilities are specifically designed to accommodate such indirect discharges;

   d) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, or other interference with the operation of the POTW;

   e) Any pollutant, including oxygen demanding pollutants (e.g., BOD_5), released in an indirect discharge at a flow rate and/or pollutant concentration which will cause Interference with any treatment process at the POTW;

   f) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 40° C (104° F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits;

   g) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause Interference or Pass Through at the POTW;

   h) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

   i) Any trucked or hauled pollutants, except at discharge points designated by the POTW

   j) Any specific pollutant which exceeds a local limitation established by the Permittee in accordance with the requirements of 40 CFR 403.5(c) and (d).

3. The Permittee must develop and maintain a master list of the industrial users introducing pollutants to the POTW. Industrial user means any source of indirect discharge from a non-domestic source. This list must identify:
   a) Names and addresses of all industrial users;
   b) Which industrial users are significant industrial users (SIUs) (see Paragraph 5 of this Part);
   c) Which SIUs are subject to categorical Pretreatment Standards (see 40 CFR 405-471);
   d) Which standards are applicable to each industrial user (if any);
   e) Which industrial users are subject to local standards that are more stringent than the categorical Pretreatment Standards; and
   f) Which industrial users are subject only to local requirements.

4. The Permittee must submit this list, along with a summary description of the sources and information gathering methods used to develop this list, to EPA within two years following the effective date of the NPDES permit.
5. For the purposes of this list development, the term SIU means:
   a) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and
   b) Any other industrial user that:
      (i) discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater);
      (ii) contributes a process waste stream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or
      (iii) is designated as such by EPA or the Permittee on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violation any Pretreatment Standard or requirement in accordance with 40 CFR 403.8(f)(6).

E. Emergency Response and Public Notification Plan

1. The permittee must develop and implement an overflow emergency response and public notification plan that identifies measures to protect public health from overflows that may endanger health and unanticipated bypasses or upsets that exceed any effluent limitation in the permit. At a minimum the plan must include mechanisms to:
   a) Ensure that the permittee is aware (to the greatest extent possible) of all overflows from portions of the collection system over which the permittee has

ownership or operational control and unanticipated bypass or upset that exceed any effluent limitation in the permit;

b) Ensure appropriate responses including assurance that reports of an overflow or of an unanticipated bypass or upset that exceed any effluent limitation in the permit are immediately dispatched to appropriate personnel for investigation and response;

c) Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;

d) Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained; and

e) Provide emergency operations.

2. The permittee must submit written notice to EPA and IDEQ that the plan has been developed and implemented within180 days of the effective date of this permit. Any existing emergency response and public notification plan may be modified for compliance with this section.

III. Monitoring, Recording and Reporting Requirements

A. Representative Sampling (Routine and Non-Routine Discharges)

Samples and measurements must be representative of the volume and nature of the monitored discharge.

In order to ensure that the effluent limits set forth in this permit are not violated at times other than when routine samples are taken, the permittee must collect additional samples at the appropriate outfall whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample.

The permittee must analyze the additional samples for those parameters limited in Part I.B of this permit that are likely to be affected by the discharge.

The permittee must collect such additional samples as soon as the spill, discharge, or bypassed effluent reaches the outfall. The samples must be analyzed in accordance with Part III.C of this permit, *Monitoring Procedures*. The permittee must report all additional monitoring in accordance with Part III.D of this permit, *Additional Monitoring by Permittee*.

B. Reporting of Monitoring Results

During the period between the effective date of the permit and the submission of the October, 2016 DMR, the permittee must either submit monitoring data and other reports in paper form, or must report electronically using NetDMR, a web-based tool that allows permittees to electronically submit DMRs and other required reports via a secure internet connection.

Beginning with the submission of the November DMR (due December 20, 2016), the permittee must submit monitoring data and other reports electronically using NetDMR.

Specific requirements regarding submittal of data and reports in paper form and submittal using NetDMR are described below.

1. Paper Copy Submissions. Monitoring data must be submitted using the DMR form (EPA No. 3320-1) or equivalent and must be postmarked by the 20th day of the month following the completed reporting period. The permittee must sign and certify all DMRs, and all other reports, in accordance with the requirements of Part V.E, of this permit Signatory Requirements. The permittee must submit the legible originals of these documents to the Director, Office of Compliance and Enforcement, with copies to insert IDEQ at the following addresses:

   US EPA Region 10
   Attn: ICIS Data Entry Team
   1200 Sixth Avenue, Suite 900
   OCE-101
   Seattle, Washington 98101-3140

   Idaho Department of Environmental Quality
   Idaho Falls Regional Office
   900 N. Skyline Drive, Suite B
   Idaho Falls, ID 83402

2. Electronic Copy Submissions

   a) Monitoring data must be submitted electronically to EPA no later than the 20th of the month following the completed reporting period. All reports required under this permit must be submitted to EPA as a legible electronic attachment to the DMR. The permittee must sign and certify all DMRs, and all other reports, in accordance with the requirements of Part V.E, of this permit Signatory Requirements. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit paper copies of DMRs or other reports to EPA and IDEQ.

   b) The permittee may use NetDMR after requesting and receiving permission from US EPA Region 10. NetDMR is accessed from: https://netdmr.epa.gov/netdmr/public/home.htm

C. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR 136, unless another method is required under 40 CFR subchapters N or O, or other test procedures have been specified in this permit or approved by EPA as an alternate test procedure under 40 CFR 136.5.

D. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the permittee must include the results of this monitoring in the calculation and reporting of the data submitted in the DMR.

Upon request by EPA, the permittee must submit results of any other sampling, regardless of the test method used.

E. Records Contents

Records of monitoring information must include:

3. the date, exact place, and time of sampling or measurements;
4. the name(s) of the individual(s) who performed the sampling or measurements;
5. the date(s) analyses were performed;
6. the names of the individual(s) who performed the analyses;
7. the analytical techniques or methods used; and
8. the results of such analyses.

F. Retention of Records

The permittee must retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of DMRs, a copy of the NPDES permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of EPA or IDEQ at any time.

G. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee must report the following occurrences of noncompliance by telephone within 24 hours from the time the permittee becomes aware of the circumstances:
   a) any noncompliance that may endanger health or the environment;
   b) any unanticipated bypass that exceeds any effluent limitation in the permit (See Part IV.F of this permit, *Bypass of Treatment Facilities*);
   c) any upset that exceeds any effluent limitation in the permit (See Part IV.G of this permit, *Upset Conditions*); or
   d) any violation of a maximum daily discharge limitation for applicable pollutants identified by Footnote 4 of Table 1 of Part I.B.2.
   e) any overflow prior to the treatment works over which the permittee has ownership or has operational control. An overflow is any spill, release or diversion of municipal sewage including:

(i) an overflow that results in a discharge to waters of the United States; and

(ii) an overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral) that does not reach waters of the United States.

2. The permittee must also provide a written submission within five days of the time that the permittee becomes aware of any event required to be reported under Paragraph 1 above. The written submission must contain:

   a) a description of the noncompliance and its cause;

   b) the period of noncompliance, including exact dates and times;

   c) the estimated time noncompliance is expected to continue if it has not been corrected; and

   d) steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

   e) if the noncompliance involves an overflow, the written submission must contain:

      (i) The location of the overflow;

      (ii) The receiving water (if there is one);

      (iii) An estimate of the volume of the overflow;

      (iv) A description of the sewer system component from which the release occurred (e.g., manhole, constructed overflow pipe, crack in pipe);

      (v) The estimated date and time when the overflow began and stopped or will be stopped;

      (vi) The cause or suspected cause of the overflow;

      (vii) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;

      (viii) An estimate of the number of persons who came into contact with wastewater from the overflow; and

      (ix) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps.

3. The Director of the Office of Compliance and Enforcement may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the NPDES Compliance Hotline in Seattle, Washington, by telephone, (206) 553-1846.

4. Reports must be submitted in paper form. The permittee must sign and certify the report in accordance with the requirements of Part V.E, of this permit *Signatory Requirements.* The permittee must submit the legible originals of these

documents to the Director, Office of Compliance and Enforcement, with copies to IDEQ at the following addresses:

US EPA Region 10
Attn: ICIS Data Entry Team
1200 Sixth Avenue, Suite 900
OCE-133
Seattle, Washington 98101-3140

Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline Drive, Suite B
Idaho Falls, ID 83402

H. Other Noncompliance Reporting

The permittee must report all instances of noncompliance, not required to be reported within 24 hours, at the time that monitoring reports for Part III.B of this permit, *Reporting of Monitoring Results* are submitted. The reports must contain the information listed in Paragraph III.GG.2 of this permit.

I. Public Notification

The permittee must immediately notify the public, health agencies and other affected entities (e.g., public water systems) of any overflow which the permittee owns or has operational control; or any unanticipated bypass or upset that exceeds any effluent limitation in the permit in accordance with the notification procedures developed in accordance with Part II.E. of this permit.

J. Notice of New Introduction of Toxic Pollutants

The permittee must notify the Director of the Office of Water and Watersheds and IDEQ in writing of:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to Sections 301 or 306 of the Act if it were directly discharging those pollutants; and
2. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For the purposes of this section, adequate notice must include information on:
   a) The quality and quantity of effluent to be introduced into the POTW, and
   b) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
4. The permittee must notify the Director of the Office of Water and Watersheds at the following address:

US EPA Region 10
Attn: NPDES Permits Unit Manager
1200 6th Avenue
Suite 900 OWW-133
Seattle, WA 98101-3140

K. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date.

IV. Compliance Responsibilities

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions

1. Civil and Administrative Penalties. Pursuant to 40 CFR Part 19 and the Act, any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 USC § 2461 note) as amended by the Debt Collection Improvement Act (31 USC § 3701 note) (currently $37,500 per day for each violation).

2. Administrative Penalties. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Pursuant to 40 CFR Part 19 and the Act, administrative penalties for Class I violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 USC § 2461 note) as amended by the Debt Collection Improvement Act (31 USC § 3701 note) (currently $16,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $37,500). Pursuant to 40 CFR Part 19 and the Act, penalties for Class II violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 USC § 2461 note) as amended by the Debt Collection Improvement Act (31 USC § 3701 note) (currently $16,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $187,500).

3. Criminal Penalties:

   a) Negligent Violations. The Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

   b) Knowing Violations. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

   c) Knowing Endangerment. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

   d) False Statements. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

C. Need To Halt or Reduce Activity not a Defense

It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this permit.

D. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Paragraphs 2 and 3 of this Part.

2. Notice.

   a) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it must submit prior written notice, if possible at least 10 days before the date of the bypass.

   b) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required under Part III.G of this permit, *Twenty-four Hour Notice of Noncompliance Reporting.*

3. Prohibition of bypass.

   a) Bypass is prohibited, and the Director of the Office of Compliance and Enforcement may take enforcement action against the permittee for a bypass, unless:

      (i) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under Paragraph 2 of this Part.

b) The Director of the Office of Compliance and Enforcement may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in Paragraph 3.a. of this Part.

G. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee meets the requirements of Paragraph 2 of this Part. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
2. Conditions necessary for a demonstration of upset. To establish the affirmative defense of upset, the permittee must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
   a) An upset occurred and that the permittee can identify the cause(s) of the upset;
   b) The permitted facility was at the time being properly operated;
   c) The permittee submitted notice of the upset as required under Part III.G of this permit, *Twenty-four Hour Notice of Noncompliance Reporting* and
   d) The permittee complied with any remedial measures required under Part IV.D of this permit, *Duty to Mitigate*.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

H. Toxic Pollutants

The permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

I. Planned Changes

The permittee must give written notice to the Director of the Office of Water and Watersheds as specified in Paragraph III.J.4 of this permit, and IDEQ as soon as possible of any planned physical alterations or additions to the permitted facility whenever:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this permit.
3. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application site.

J. Anticipated Noncompliance

The permittee must give written advance notice to the Director of the Office of Compliance and Enforcement and IDEQ of any planned changes in the permitted facility or activity that may result in noncompliance with this permit.

K. Reopener

This permit may be reopened to include any applicable standard for sewage sludge use or disposal promulgated under section 405(d) of the Act. The Director may modify or revoke and reissue the permit if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or controls a pollutant or practice not limited in the permit.

V. General Provisions

A. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR 122.62, 122.64, or 124.5. The filing of a request by the permittee for a permit modification, revocation and reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B. Duty to Reapply

If the permittee intends to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. In accordance with 40 CFR 122.21(d), and unless permission for the application to be submitted at a later date has been granted by the Regional Administrator, the permittee must submit a new application at least 180 days before the expiration date of this permit.

C. Duty to Provide Information

The permittee must furnish to EPA and IDEQ, within the time specified in the request, any information that EPA or IDEQ may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee must also furnish to EPA or IDEQ, upon request, copies of records required to be kept by this permit.

D. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or that it submitted incorrect information in a permit application or any report to EPA or IDEQ it must promptly submit the omitted facts or corrected information in writing.

E. Signatory Requirements

All applications, reports or information submitted to EPA and IDEQ must be signed and certified as follows.

1. All permit applications must be signed as follows:
   a) For a corporation: by a responsible corporate officer.
   b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
   c) For a municipality, state, federal, Indian tribe, or other public agency: by either a principal executive officer or ranking elected official.
2. All reports required by the permit and other information requested by EPA or IDEQ must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   a) The authorization is made in writing by a person described above;
   b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; and
   c) The written authorization is submitted to the Director of the Office of Compliance and Enforcement and IDEQ.
3. Changes to authorization. If an authorization under Paragraph 2 of this Part is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Paragraph 2 of this Part must be submitted to the Director of the Office of Compliance and Enforcement and IDEQ prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this Part must make the following certification:

   > "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my

knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

F. Availability of Reports

In accordance with 40 CFR Part 2, information submitted to EPA pursuant to this permit may be claimed as confidential by the permittee. In accordance with the Act, permit applications, permits and effluent data are not considered confidential. Any confidentiality claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice to the permittee. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR 2, Subpart B (Public Information) and 41 Fed. Reg. 36902 through 36924 (September 1, 1976), as amended.

G. Inspection and Entry

The permittee must allow the Director of the Office of Compliance and Enforcement, EPA Region 10; IDEQ; or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

H. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, nor any infringement of federal, tribal, state or local laws or regulations.

I. Transfers

This permit is not transferable to any person except after written notice to the Director of the Office of Water and Watersheds as specified in Part III.J.4. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the

Act. (*See* 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory).

J. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

VI. Definitions

1. "Act" means the Clean Water Act.
2. "Acute Toxic Unit" ("TUa") is a measure of acute toxicity. TUa is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e., 100/"LC50").
3. "Administrator" means the Administrator of the EPA, or an authorized representative.
4. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.
5. "Average weekly discharge limitation" means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.
6. "Best Management Practices" (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.
7. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
8. "Chronic toxic unit" ("TUc") is a measure of chronic toxicity. TUc is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e., 100/"NOEC").
9. "Composite" - see "24-hour composite".
10. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of

measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

11. "Director of the Office of Compliance and Enforcement" means the Director of the Office of Compliance and Enforcement, EPA Region 10, or an authorized representative.
12. "Director of the Office of Water and Watersheds" means the Director of the Office of Water and Watersheds, EPA Region 10, or an authorized representative.
13. "DMR" means discharge monitoring report.
14. "EPA" means the United States Environmental Protection Agency.
15. "Geometric Mean" means the n^{th} root of a product of n factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.
16. "Grab" sample is an individual sample collected over a period of time not exceeding 15 minutes.
17. "IDEQ" means the Idaho Department of Environmental Quality.
18. "Inhibition concentration", IC, is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).
19. "Indirect Discharge" means the introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c) or (d) of the Act.
20. "Interference" means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.
21. "LC50" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the test organisms exposed in the time period prescribed by the test.
22. "Maximum daily discharge limitation" means the highest allowable "daily discharge."
23. "Method Detection Limit (MDL)" means the minimum concentration of a substance (analyte) that can be measured and reported with 99 percent confidence

that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

24. "Minimum Level (ML)" means the concentration at which the entire analytical system must give a recognizable signal and an acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed.

25. "NOEC" means no observed effect concentration. The NOEC is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

26. "NPDES" means National Pollutant Discharge Elimination System, the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits . . . under sections 307, 402, 318, and 405 of the Act.

27. "Pass Through" means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

28. Receiving Water Concentration (RWC) is the concentration of a toxicant or effluent in the receiving water after mixing. The RWC is the inverse of the dilution factor. It is sometimes referred to as the instream waste concentration (IWC).

29. "QA/QC" means quality assurance/quality control.

30. "Regional Administrator" means the Regional Administrator of Region 10 of the EPA, or the authorized representative of the Regional Administrator.

31. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

32. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

33. "24-hour composite" sample means a combination of at least 8 discrete sample aliquots of at least 100 milliliters, collected over periodic intervals from the same

location, during the operating hours of a facility over a 24 hour period. The composite must be flow proportional. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.

Appendix A. Minimum Levels

The Table below lists the maximum Minimum Level (ML) for pollutants that may have monitoring requirements in the permit. The permittee may request different MLs. The request must be in writing and must be approved by EPA.

CONVENTIONAL PARAMETERS

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
Biochemical Oxygen Demand	2 mg/L
Soluble Biochemical Oxygen Demand	2 mg/L
Chemical Oxygen Demand	10 mg/L
Dissolved Organic Carbon	1 mg/L
Total Organic Carbon	1 mg/L
Total Suspended Solids	5 mg/L
Total Ammonia (as N)	50
Dissolved oxygen	0.2 mg/L
Temperature (max. 7-day avg.)	0.2° C
pH	N/A

NONCONVENTIONAL PARAMETERS

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
Total Alkalinity	5 mg/L as CaCO3
Chlorine, Total Residual	50.0
Color	10 color units
Fluoride (16984-48-8)	100
Nitrate + Nitrite Nitrogen (as N)	100
Nitrogen, Total Kjeldahl (as N)	300
Soluble Reactive Phosphorus (as P)	10
Phosphorus, Total (as P)	10
Oil and Grease (HEM) (Hexane Extractable Material)	5,000
Salinity	3 practical salinity units or scale (PSU or PSS)
Settleable Solids	500 (or 0.1 mL/L)
Sulfate (as mg/L SO4)	0.2 mg/L
Sulfide (as mg/L S)	0.2 mg/L
Sulfite (as mg/L SO3)	2 mg/L
Total dissolved solids	20 mg/L
Total Hardness	200 as CaCO3

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
Aluminum, Total (7429-90-5)	10
Barium Total (7440-39-3)	2.0
BTEX (benzene +toluene + ethylbenzene + m,o,p xylenes)	2
Boron Total (7440-42-8)	10.0
Cobalt, Total (7440-48-4)	0.25
Iron, Total (7439-89-6)	50
Magnesium, Total (7439-95-4)	50
Molybdenum, Total (7439-98-7)	0.5
Manganese, Total (7439-96-5)	0.5
Tin, Total (7440-31-5)	1.5
Titanium, Total (7440-32-6)	2.5

PRIORITY POLLUTANTS

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
METALS, CYANIDE & TOTAL PHENOLS	
Antimony, Total (7440-36-0)	1.0
Arsenic, Total (7440-38-2)	0.5
Beryllium, Total (7440-41-7)	0.5
Cadmium, Total (7440-43-9)	0.1
Chromium (hex) dissolved (18540-29-9)	1.2
Chromium, Total (7440-47-3)	1.0
Copper, Total (7440-50-8)	2.0
Lead, Total (7439-92-1)	0.16
Mercury, Total (7439-97-6)	0.0005
Nickel, Total (7440-02-0)	0.5
Selenium, Total (7782-49-2)	1.0
Silver, Total (7440-22-4)	0.2
Thallium, Total (7440-28-0)	0.36
Zinc, Total (7440-66-6)	2.5
Cyanide, Total (57-12-5)	10
Cyanide, Weak Acid Dissociable	10
Cyanide, Free Amenable to Chlorination (Available Cyanide)	10
Phenols, Total	50
2-Chlorophenol (95-57-8)	2.0
2,4-Dichlorophenol (120-83-2)	1.0
2,4-Dimethylphenol (105-67-9)	1.0

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
4,6-dinitro-o-cresol (534-52-1) (2-methyl-4,6,-dinitrophenol)	2.0
2,4 dinitrophenol (51-28-5)	2.0
2-Nitrophenol (88-75-5)	1.0
4-nitrophenol (100-02-7)	1.0
Parachlorometa cresol (59-50-7) (4-chloro-3-methylphenol)	2.0
Pentachlorophenol (87-86-5)	1.0
Phenol (108-95-2)	4.0
2,4,6-Trichlorophenol (88-06-2)	4.0
VOLATILE COMPOUNDS	
Acrolein (107-02-8)	10
Acrylonitrile (107-13-1)	2.0
Benzene (71-43-2)	2.0
Bromoform (75-25-2)	2.0
Carbon tetrachloride (56-23-5)	2.0
Chlorobenzene (108-90-7)	2.0
Chloroethane (75-00-3)	2.0
2-Chloroethylvinyl Ether (110-75-8)	2.0
Chloroform (67-66-3)	2.0
Dibromochloromethane (124-48-1)	2.0
1,2-Dichlorobenzene (95-50-1)	7.6
1,3-Dichlorobenzene (541-73-1)	7.6
1,4-Dichlorobenzene (106-46-7)	17.6
Dichlorobromomethane (75-27-4)	2.0
1,1-Dichloroethane (75-34-3)	2.0
1,2-Dichloroethane (107-06-2)	2.0
1,1-Dichloroethylene (75-35-4)	2.0
1,2-Dichloropropane (78-87-5)	2.0
1,3-dichloropropene (mixed isomers) (1,2-dichloropropylene) (542-75-6) 6	2.0
Ethylbenzene (100-41-4)	2.0
Methyl bromide (74-83-9) (Bromomethane)	10.0
Methyl chloride (74-87-3) (Chloromethane)	2.0
Methylene chloride (75-09-2)	10.0

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
1,1,2,2-Tetrachloroethane (79-34-5)	2.0
Tetrachloroethylene (127-18-4)	2.0
Toluene (108-88-3)	2.0
1,2-Trans-Dichloroethylene (156-60-5) (Ethylene dichloride)	2.0
1,1,1-Trichloroethane (71-55-6)	2.0
1,1,2-Trichloroethane (79-00-5)	2.0
Trichloroethylene (79-01-6)	2.0
Vinyl chloride (75-01-4)	2.0
BASE/NEUTRAL COMPOUNDS	
Acenaphthene (83-32-9)	0.4
Acenaphthylene (208-96-8)	0.6
Anthracene (120-12-7)	0.6
Benzidine (92-87-5)	24
Benzyl butyl phthalate (85-68-7)	0.6
Benzo(a)anthracene (56-55-3)	0.6
Benzo(b)fluoranthene (3,4-benzofluoranthene) (205-99-2) 7	1.6
Benzo(j)fluoranthene (205-82-3) 7	1.0
Benzo(k)fluoranthene (11,12-benzofluoranthene) (207-08-9) 7	1.6
Benzo(r,s,t)pentaphene (189-55-9)	1.0
Benzo(a)pyrene (50-32-8)	1.0
Benzo(ghi)Perylene (191-24-2)	1.0
Bis(2-chloroethoxy)methane (111-91-1)	21.2
Bis(2-chloroethyl)ether (111-44-4)	1.0
Bis(2-chloroisopropyl)ether (39638-32-9)	0.6
Bis(2-ethylhexyl)phthalate (117-81-7)	0.5
4-Bromophenyl phenyl ether (101-55-3)	0.4
2-Chloronaphthalene (91-58-7)	0.6
4-Chlorophenyl phenyl ether (7005-72-3)	0.5
Chrysene (218-01-9)	0.6
Dibenzo (a,h)acridine (226-36-8)	10.0
Dibenzo (a,j)acridine (224-42-0)	10.0

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
Dibenzo(a-h)anthracene (53-70-3)(1,2,5,6-dibenzanthracene)	1.6
Dibenzo(a,e)pyrene (192-65-4)	10.0
Dibenzo(a,h)pyrene (189-64-0)	10.0
3,3-Dichlorobenzidine (91-94-1)	1.0
Diethyl phthalate (84-66-2)	7.6
Dimethyl phthalate (131-11-3)	6.4
Di-n-butyl phthalate (84-74-2)	1.0
2,4-dinitrotoluene (121-14-2)	0.4
2,6-dinitrotoluene (606-20-2)	0.4
Di-n-octyl phthalate (117-84-0)	0.6
1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	20
Fluoranthene (206-44-0)	0.6
Fluorene (86-73-7)	0.6
Hexachlorobenzene (118-74-1)	0.6
Hexachlorobutadiene (87-68-3)	1.0
Hexachlorocyclopentadiene (77-47-4)	1.0
Hexachloroethane (67-72-1)	1.0
Indeno(1,2,3-cd)Pyrene (193-39-5)	1.0
Isophorone (78-59-1)	1.0
3-Methyl cholanthrene (56-49-5)	8.0
Naphthalene (91-20-3)	0.6
Nitrobenzene (98-95-3)	1.0
N-Nitrosodimethylamine (62-75-9)	4.0
N-Nitrosodi-n-propylamine (621-64-7)	1.0
N-Nitrosodiphenylamine (86-30-6)	1.0
Perylene (198-55-0)	7.6
Phenanthrene (85-01-8)	0.6
Pyrene (129-00-0)	0.6
1,2,4-Trichlorobenzene (120-82-1)	0.6
DIOXIN	
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin (176-40-16) (2,3,7,8 TCDD)	5 pg/L
PESTICIDES/PCBs	

Pollutant & CAS No. (if available)	Minimum Level (ML) µg/L unless specified
Aldrin (309-00-2)	0.05
alpha-BHC (319-84-6)	0.05
beta-BHC (319-85-7)	0.05
gamma-BHC (58-89-9)	0.05
delta-BHC (319-86-8)	0.05
Chlordane (57-74-9)	0.05
4,4'-DDT (50-29-3)	0.05
4,4'-DDE (72-55-9)	0.05
4,4' DDD (72-54-8)	0.05
Dieldrin (60-57-1)	0.05
alpha-Endosulfan (959-98-8)	0.05
beta-Endosulfan (33213-65-9)	0.05
Endosulfan Sulfate (1031-07-8)	0.05
Endrin (72-20-8)	0.05
Endrin Aldehyde (7421-93-4)	0.05
Heptachlor (76-44-8)	0.05
Heptachlor Epoxide (1024-57-3)	0.05
PCB-1242 (53469-21-9)	0.5
PCB-1254 (11097-69-1)	0.5
PCB-1221 (11104-28-2)	0.5
PCB-1232 (11141-16-5)	0.5
PCB-1248 (12672-29-6)	0.5
PCB-1260 (11096-82-5)	0.5
PCB-1016 (12674-11-2)	0.5
Toxaphene (8001-35-2)	0.5

Fact Sheet

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

The City of Rigby
Wastewater Treatment Plant

Public Comment Start Date: July 20, 2016
Public Comment Expiration Date: August 19, 2016

Technical Contact: John Drabek
206-553-8257
800-424-4372, ext. 8257 (within Alaska, Idaho, Oregon and Washington)
drabek.john@epa.gov

The EPA Proposes To reissue NPDES Permit
The EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

State Certification
The EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Regional Administrator
Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline Drive, Suite B
Idaho Falls, ID 83402

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://EPA.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-191
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

EPA Idaho Operations Office
950 W Bannock
Suite 900
Boise, ID 83702
Phone: 208-378-5746

Idaho Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline Drive, Suite B
Idaho Falls, ID 83402
(208) 528-2650

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BOD_{5u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor
FR	Federal Register
gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System

NSPS	New Source Performance Standards
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit

Water Quality Standards	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

Facility Name:	City of Rigby Wastewater Treatment Plant
Mailing Address:	158 W. Fremont Avenue, Rigby, Idaho 83442
Facility Address:	3939 East 500 North, Rigby, Idaho
Contact:	Scott Humpherys, Chief Operator, City of Rigby, Wastewater Treatment Plant 208-569-7541

B. Permit History

The most recent NPDES permit for the Rigby Facility was issued on June 15, 2005, became effective on August 1, 2005, and expired on July 31, 2010.

The permittee submitted an NPDES application for permit renewal, which the EPA received on February 1, 2010. The EPA determined that the application was timely and complete, as of the receipt date. Therefore, pursuant to 40 CFR 122.6., the permit was administratively extended and remains fully effective and enforceable.

However, the application reported construction of a new wastewater treatment plant, and the EPA requested additional information because the design flow for the new facility was over 1.0 million gallons per day (mgd). By letter of February 9, 2012, the EPA informed the City of Rigby that the additional information was acceptable; and accordingly, the permit remained fully effective and enforceable.

II. Facility Information

A. Treatment Plant Description

Service Area

The City of Rigby owns and operates the City of Rigby Wastewater Treatment Plant (WWTP) located in Rigby, Idaho. The collection system has a separate sanitary sewer system. The facility serves a resident population consisting of 3,394.

Treatment Process

The design flow of the facility is 2.59 mgd on an average day maximum monthly basis. The new wastewater treatment plant was substantially complete by the end of 2010. The primary treatment process consists of screening and grit removal followed by parallel oxidation ditches. Disinfection is by ultra violet radiation (UV). Because the discharge is over 1.0 mgd, the facility is considered a major facility.

B. Background Information

Effluent Characterization

In order to determine pollutants of concern for further analysis, EPA evaluated the application form, additional discharge data, and the nature of the discharge. Pollutants typical of a sewage treatment plant are five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), *E. coli* bacteria, pH and ammonia. Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- *E. coli* bacteria
- pH
- Ammonia

The concentrations of pollutants in the discharge were reported in the NPDES application and in DMRs and were used in determining reasonable potential for several parameters (see Appendix D and E).

Compliance History

The EPA reviewed the last five plus years of effluent monitoring data (January 2010 through July 2015) from the discharge monitoring report (DMR).

Overall, the facility has had a good compliance record. Only one violation was found. Monthly removal of BOD_5 was 82 percent during April 2010, compared to the minimum monthly limit of 85 percent. No violations were detected since then.

III. Receiving Water

This facility discharges to Dry Bed Creek tributary to the Snake River.

A. Low Flow Conditions

The Technical Support Document for Water Quality-Based Toxics Control (hereafter referred to as the TSD) (EPA, 1991) and the Idaho Water Quality Standards (WQS) recommend the flow conditions for use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the Idaho WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. The EPA used ambient flow data collected at the Station USGS 13038000 DRY BED NR RIRIE ID to calculate the low flow conditions for the Dry Bed Creek at Rigby. This USGS Station is about 8 miles upstream of the City of Rigby WWTP, but the only other USGS station on Dry Bed Creek lies downstream and is inactive.

Because the chronic criterion for ammonia is a 30-day average concentration not to be exceeded more than once every three years, EPA has used the 30B3 for the chronic ammonia criterion instead of the 7Q10. The 30B3 is a biologically-based flow rate designed to ensure an excursion frequency of no more than once every three years for a 30-day average flow rate. For human health criteria, the Idaho WQS recommend the 30Q5 flow rate for noncarcinogens, and the harmonic mean flow rate for carcinogens. (see Appendix C of this fact sheet for additional information on flows).

B. Receiving Water Quality

The EPA reviews receiving water quality data when assessing the need for and developing water quality based effluent limits. In granting assimilative capacity of the receiving water, the EPA must account for the amount of the pollutant already present in the receiving water. In situations where some of the pollutant is actually present in the upstream waters, an assumption of "zero background" concentration overestimates the available assimilative capacity of the receiving water and could result in limits that are not protective of applicable water quality standards.

Receiving water data were available from ambient monitoring required in the existing permit. Table 1 summarizes the receiving water data used to evaluate the need for and develop water quality based effluent limits.

Table 1: Receiving Water Quality Data

Parameter	Units	Percentile	Value	
			Summer	Winter
Temperature	°C	95th	19.4	17.0
pH	Standard units	95th	8.93	8.64
Ammonia	mg/L	95th	0.1	0.1

C. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

Designated Beneficial Uses

This facility discharges to Dry Bed Creek, which eventually flows into the Snake River, Idaho Falls Subbasin, HUC 17040201, Water Body Unit US-20. Dry Bed Creek is undesignated. The surface water quality standards state at IDAPA 58.01.02.101.01:

Undesignated Surface Waters. Surface waters not designated in Sections 110 through 160 shall be designated according to Section 39-3604, Idaho Code, taking into consideration the use of the surface water and such physical, geological, chemical, and biological measures as may affect the surface water. Prior to designation, undesignated waters shall be protected for beneficial uses, which includes all recreational use in and on the water and the protection and propagation of fish, shellfish, and wildlife, wherever attainable.

Because the EPA presumes most waters in Idaho will support cold water aquatic life and primary or secondary contact recreation beneficial uses, the EPA will apply cold water aquatic life and primary or secondary contact recreation criteria to Dry Bed Creek.

In addition, Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats and aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

Surface Water Quality Criteria

The criteria are found in the following sections of the Idaho Water Quality Standards:

- The narrative criteria applicable to all surface waters of the State are found at IDAPA 58.01.02.200 (General Surface Water Quality Criteria).

- The numeric criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at IDAPA 58.01.02.210 (Numeric Criteria for Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use).

- Additional numeric criteria necessary for the protection of aquatic life can be found at IDAPA 58.01.02.250 (Surface Water Quality Criteria for Aquatic Life Use Designations).

- Numeric criteria necessary for the protection of recreation uses can be found at IDAPA 58.01.02.251 (Surface Water Quality Criteria for Recreation Use Designations).

- Water quality criteria for agricultural water supply can be found in the EPA's *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA R3-73-033) (See IDAPA 58.01.02.252.02)

The numeric and narrative water quality criteria applicable to Snake River at the point of discharge are provided in Appendix B of this fact sheet.

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix F for the State's draft 401 water quality certification. The EPA has reviewed this antidegradation review and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification including the antidegradation review should be submitted to the IDEQ as set forth above (see State Certification).

D. Water Quality Limited Waters

Any waterbody for which the water quality does not, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment."

Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

Based on a review of Idaho's Integrated Report Dry Bed Creek is not limited for any pollutant. No TMDLs apply to Rigby as stated by IDEQ in an email dated October 3, 2015 from Troy Saffle, Regional Manager, Idaho Falls Office, Department of Environmental Quality to John Drabek, EPA Region 10.

"We haven't assessed the AU containing the City's outfall. Assessment Unit ID17040201SK004_06 appears as "unassessed" on the 2012 Integrated Report. There are no WLAs existing or proposed."

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendix D.

B. Proposed Effluent Limitations

The following summarizes the proposed effluent limits that are in the draft permit.

Narrative Limitations to Implement Idaho's Narrative Criteria for Floating, Suspended or Submerged Matter

The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

Numeric Limitations

Table 2 below presents the proposed effluent limits for Five Day Biochemical Oxygen Demand (BOD_5), TSS, *E. coli*, pH and ammonia.

Table 2: Proposed Effluent Limits				
Parameter	**Units**	**Effluent Limits**		
		Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**
BOD_5	mg/L	30	45	---
	lbs/day	648	972	---
BOD_5 Removal	percent	85 minimum	---	---
Total Suspended Solids (TSS)	mg/L	30	45	---
	lbs/day	648	972	---
TSS Removal	percent	85 minimum	---	---
E. coli	#/100 ml	126 (geometric mean)	---	460
pH	standard units	6.5 – 9.0		
Total Ammonia as N (5/1 – 9/30) (as N)[1]	mg/L	4.3	---	12.6
	lbs/day	93	---	272
Total Ammonia as N (10/1 – 4/30) (as N)[1]	mg/L	0.65	---	1.7
	lb/L	14	---	37

[1]Limit beginning June 1, 2019

Changes in Effluent Limits from the previous permit are shown in Table 4.

Table 4. Changes in Permit Effluent Limits		
Parameter	**Existing Permit**	**Draft Permit**
BOD_5 Average Monthly Limit	133 lbs/day	648 lbs/day
BOD_5 Average Weekly Limit	199 lbs/day	972 lbs/day
TSS Average Monthly Limit	133 lbs/day	648 lbs/day
TSS Average Weekly Limit	199 lbs/day	972 lbs/day
Total Residual Chlorine, Average Monthly Limit	9.2 µg/L	Switched to UV disinfection
Total Residual Chlorine, Maximum Daily Limit	17.5 µg/L	Switched to UV disinfection
Total Ammonia as N (5/1 – 9/30) (as N)	none	4.3 AML/12.6 MDL mg/L
Total Ammonia as N (10/1 – 4/30) (as N)	none	0.65 AML/1.7 MDL mg/L
Total Ammonia as N (5/1 – 9/30) (as N)	none	93 AML/272 MDL lbs/day
Total Ammonia as N (10/1 – 4/30) (as N)	none	14 AML/37 MDL lbs/day

C. Compliance Schedules

Compliance schedules are authorized by federal NPDES regulations at 400 CFR 122.47 and Idaho WQS at IDAPA 58.01.02.400.03. Compliance schedules allow a discharger to phase in, over time, compliance with water quality-based effluent limitations when limitations are in the permit for the first time. Additionally, the federal regulations at 40 CFR 122.47 require that the compliance schedules require compliance with effluent limitations as soon as possible and that, when the compliance schedule is longer than 1 year, the schedule shall set forth interim requirements and the dates for their achievement. The time between the interim dates shall generally not exceed 1 year, and when the time necessary to complete any interim requirement is more than one year, the schedule shall require reports on progress toward completion of these interim requirements. In order to grant a compliance schedule the permitting authority must make a reasonable finding that the discharger cannot immediately comply with the water quality-based effluent limit upon the effective date of the permit and that a compliance schedule is appropriate (see 40 CFR 122.47 (a). The EPA has found that a compliance schedule is appropriate for total ammonia.

A reasonable potential calculation showed that the Rigby discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit contains water quality-based effluent limits for ammonia.

The proposed effluent limits and 95th percentile values since the January, 2011 upgrade are shown below:

Ammonia Effluent		
Season	**Limit**	**95th Percentile Since Upgrade**
Average Monthly Summer	4.3 mg/L	7.21 mg/L
Average Monthly Winter	0.65 mg/L	15.7 mg/L

A review of the data shows that the permittee will not be able to meet the limits upon the effective date of the permit. Therefore, a compliance schedule is appropriate. See Appendices D and E for the reasonable potential and effluent limit calculations for ammonia.

The permit requires the facility to meet final effluent limits in six years and seven months. The time is required to obtain funding, allow proper evaluation of alternatives in the facilities planning process and approval by the Idaho Department of Environmental Quality. Pursuant to 40 CFR 122.47(a)(3), a permit with a compliance schedule must have interim requirements and dates for achievement. EPA has included interim requirements, dates for their achievement and reports of progress.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permit also requires the permittee to perform effluent monitoring required by Parts B.6 and Part D of the NPDES Form 2A application, so that these data will be available when the permittee applies for a reissuance of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 5 below presents the proposed effluent monitoring requirements in the draft permit. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 5: Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	Mgd	Effluent	Continuous	recording
BOD_5	mg/L	Influent & Effluent	2/week	24-hour composite
	lbs/day	Influent & Effluent	2/week	calculation[1]
	% Removal	--	--	calculation[2]
TSS	mg/L	Influent & Effluent	2/week	24-hour composite
	lbs/day	Influent & Effluent	2/week	calculation[1]
	% Removal	--	--	calculation[2]
pH	standard units	Effluent	5/week	grab
E. Coli	#/100 ml	Effluent	5/month	grab
Total Ammonia as N	mg/L	Effluent	1/week	24-hour composite
	lbs/day	Effluent		calculation[1]
NPDES Application Form 2A[3].	---	Effluent	3x/5 years	---
NPDES Application Form 2A, Part D Expanded Effluent Testing[4]	---	Effluent	Annual[4]	---

Notes:
1. Loading is calculated by multiplying the concentration (in mg/L) by the flow (in mgd) on the day sampling occurred and a conversion factor of 8.34.
2. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month, i.e.:
   (average monthly influent – average monthly effluent) ÷ average monthly influent.
   Influent and effluent samples must be taken over approximately the same time period.
3. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part B.6.
4. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part D
   Annual testing shall be conducted on a rotating quarterly schedule, so that each annual test is conducted during a different quarter than the previous year's test.

Monitoring Changes from the Previous Permit

Monitoring frequencies for certain parameters have been reduced, relative to the previous permit. Chlorine disinfection ended and the chlorine system removed therefore chlorine monitoring is discontinued. Total phosphorus and temperature monitoring are discontinued. Surface water monitoring is discontinued for flow, total phosphorus and ammonia. Monitoring to assess reasonable potential under the copper Biotic Ligand Model (BLM) criteria is added. Surface monitoring meeting the requirements of NPDES Application Form 2A, Part B.6., Effluent Testing Data and Form 2A, Part D, Expanded Effluent Testing is added to the permit to ensure the data are available for the next permit reissuance. Toxicity testing is added to the permit.

C. Surface Water Monitoring

The permittee must conduct surface water monitoring. Surface water monitoring must start six months after the effective date of the permit and continue until the permit is reissued. The program must meet the following requirements:

1. Monitoring stations must be established in Dry Bed Creek at the following location:

   Above the influence of the facility's discharge
2. The permittee must seek approval of the surface water monitoring stations from IDEQ.
3. A failure to obtain IDEQ approval of surface water monitoring stations does not relieve the permittee of the surface water monitoring requirements of this permit.
4. To the extent practicable, surface water sample collection must occur on the same day as effluent sample collection.
5. Samples must be analyzed for the parameters listed in *Table 6. Surface Water Monitoring Requirements.*
6. For all surface water monitoring, the permittee must use sufficiently sensitive analytical methods which meet the following:
   a) The method must detect and quantify the level of the pollutant, or
   b) The permittee must use a method that can achieve MLs less than or equal to those specified in Appendix A of the permit. The permittee may request different MLs. The request must be in writing and must be approved by EPA.

Table 6. Surface Water Monitoring Requirements

Parameter	Units	Frequency	Sample Type
Copper	µg/L	Quarterly	Grab
Dissolved Organic Carbon (DOC)	mg/L	Quarterly	Grab
pH	Standard Units	Quarterly	Grab
Temperature	°C	Quarterly	Grab
Hardness	mg/L	Quarterly	Grab
Conductivity	umhos/cm	Quarterly	Grab

Notes:
1. For quarterly monitoring frequency, quarters are defined as: January 1 to Mach 31; April 1 to June 30; July 1 to September 30; and, October 1 to December 31.
2. Copper, DOC, pH, hardness and conductivity must be collected on the same day.

7. Quality assurance/quality control (QA/QC) plans for all the monitoring must be documented in the Quality Assurance Plan required under Part II.B

8. Samples for copper, dissolved organic carbon and conductivity must be collected on the same day.
9. Submission of SW Monitoring
    a) Surface water monitoring results must be reported on the monthly DMR.
    b) In addition, the permittee must submit all surface water monitoring results for the previous calendar year for all parameters in an annual report to EPA IDEQ by January 31st of the following year and with the application (see Part V.B. of this permit, *Duty to Reapply*). The file must be in the format of one analytical result per row and include the following information: name and contact information of laboratory, sample identification number, sample location in latitude and longitude (decimal degrees format), method of location determination (i.e., GPS, survey etc.), date and time of sample collection, water quality parameter (or characteristic being measured), analysis result, result units, detection limit and definition (i.e., MDL etc.), analytical method, date completed, and any applicable notes.

The permit includes new surface water quality monitoring requirements to evaluate the impact of the discharge with copper criteria. IDEQ intends to adopt new copper criteria in 2017 that incorporates the BLM. The BLM is a metal bioavailability model that uses receiving water body characteristics and monitoring data to develop site-specific water quality criteria. Input data for the BLM include: temperature, pH, dissolved organic carbon (DOC), major cations (Ca, Mg, Na, & K), major anions (SO4 & Cl), alkalinity, and sulfide. EPA's 2007 aquatic life freshwater quality criteria for copper is based on the Biotic Ligand Model (BLM). EPA is currently updating these BLM criteria.

The BLM is most sensitive to DOC and pH. The remaining parameters may be estimated using conductivity measurements. The surface water data will be used to assess reasonable potential under the copper BLM criteria. Additional information may be found on the EPA website at: http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/

D. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity (WET) tests are laboratory tests that measure the total toxic effect of an effluent on living organisms. Whole effluent toxicity tests use small vertebrate and invertebrate species and/or plants to measure the aggregate toxicity of an effluent. There are two different types of toxicity test: acute and chronic. An acute toxicity test is a test to determine the concentration of effluent or ambient waters that causes an adverse effect (usually death) on a group of test organisms during a short-term exposure (e.g., 24, 48, or 96 hours). A chronic toxicity test is a short-term test, usually 96 hours or longer in duration, in which sublethal effects (e.g., significantly reduced growth or reproduction) are usually measured in addition to lethality. Both acute and chronic toxicity are measured using statistical procedures such as hypothesis testing (i.e., no observable effect concentration, NOEC and lowest observable effect concentration, LOEC) or point estimate techniques (i.e., lethal concentration to 50 percent of organisms, $LC_{50;}$ and inhibition concentration in a biological measurement to 25 percent of organisms, IC_{25}).

Federal regulations at 40 CFR §122.44(d) (1) require that NPDES permits contain limits on whole effluent toxicity when a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a State's numeric or narrative water quality criteria for toxicity. In Idaho, the relevant water quality standards for toxicity states that surface waters of the State shall be free from toxic substances in concentrations that impair designated beneficial uses. Since Idaho does not have numeric water quality criteria for toxicity, the EPA Region 10 uses the Toxic Units (TU) approach for acute (0.3 TUa) and chronic criteria (1 TUc). The use of TU as a mechanism for quantifying instream toxicity when a State lacks numeric criteria is described in Sections 2 and 3 of the 1991 Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001) (TSD).

The current permit does not contain effluent limitations because the EPA has determined that the discharge does not have the reasonable potential to cause or contribute to an excursion above Idaho's narrative criteria for toxicity. As a result, the EPA is not including an effluent limitation for WET in this permit reissuance. However, the EPA is requiring WET monitoring for chronic toxicity**.** The rationale for the EPA's reasonable potential determination and WET monitoring requirements are provided below.

Rationale for Reasonable Potential Determination:

When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criteria for toxicity, the permitting authority can use a variety of factors and information. Some of these factors include, but are not limited to, the amount of available dilution, type of industry or POTW, existing data, type of receiving water and designated uses and history of compliance.

Existing Data

Table 6 summarizes the results from toxicity testing from the previous permit term..

Table 6
Whole Effluent Toxicity Testing Results

Date	Species	Lowest Observed Effect Concentration (LOEC) (Percent Effluent)	No Observable Effect Concentration (NOEC) (Percent Effluent)
6/15-18/2010 acute	*Ceriodaphnia dubia*	100%	100%
6/15-18/2010 acute	Fat head minnow	100%	100%
10/6-10/2010 acute	*Ceriodaphnia dubia*	100%	100%
10/6-10/2010 acute	fathead minnow	100%	100%
6/28/2011-7/2/2011 acute	*Ceriodaphnia dubia*	100%	100%
6/28/2011-7/2/2011 acute	fat head minnow	100%	100%

Type of POTW

There are no significant industrial users under 40 CFR Part403.3(t). Significant discharges are defined as discharging more than 25,000 gallons per day of process wastewater to a POTW. No pollutant was detected by the 126 pollutant scan required by Application 2A, Part D. Given the existing data that indicates that the effluent does not contain individual toxics, the type of POTW in question and only one violation since the upgrade the EPA has determined that the Rigby WWTP does not have a reasonable potential to cause or contribute to an excursion above Idaho's water quality standard for toxics. Therefore, an effluent limitation for WET is not included in this permit reissuance.

Rationale for WET Monitoring:

As previously mentioned, the EPA is requiring WET monitoring for chronic toxicity in this permit reissuance. Section 3.3 of the TSD recommends that WET monitoring be repeated at a frequency of at least once every five years. Applications for reissuance of NPDES permits for POTWs greater than or equal to 1.0 MGD require at a minimum quarterly testing for a 12-month period within the last year of the expiration date or one test each year in the last four and one-half years of the permit. To account for seasonal variability, the EPA is requiring alternate quarterly monitoring each year for the term of the permit.

Section 3.3 of the TSD recommends that a discharger conduct chronic toxicity testing if the dilution of the effluent is less than 100:1 at the edge of the mixing zone. The dilution ratio of the effluent is 1.026 acute and 1.0348 chronic. Therefore, the EPA is requiring WET monitoring for chronic toxicity only.

D. Electronic Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically beginning with the submission of the November DMR (due December 20, 2016), using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR 122.41 and 403.12. Under NetDMR, all reports required under the permit are submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to EPA.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: http://www.epa.gov/netdmr. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

VI. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. The EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are selfimplementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions

A. Quality Assurance Plan

In order to ensure compliance with the federal regulation at 40 CFR 122.41(e) for proper operation and maintenance, the draft permit requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The City of Rigby is required to update the Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan must include of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the IDEQ upon request.

B. Operation and Maintenance Plan

The permit requires the City of Rigby to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility within 180 days of the effective date of the final permit. The plan must be retained on site and made available to the EPA and the IDEQ upon request.

C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet the EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

Written Reports – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure; or unanticipated bypass and upset that exceeds any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

Record Keeping – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by the EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

D. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." The EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, the EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/ .

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The Rigby WWTP is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

Regardless of whether a facility is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

E. Design Criteria

The permit includes design criteria requirements. This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds 85% of the design criteria values for three consecutive months.

F. Industrial Waste Management Requirements

EPA implements and enforces the National Pretreatment Program regulations of 40 CFR 403, per authority from sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b, 405, and 501(a) of the Federal Water Pollutant Control Act as amended by the CWA of 1977.

The proposed permit contains requirements that the WWTP control industrial dischargers, pursuant to 40 CFR 403. Indirect dischargers to the treatment plant must comply with the applicable requirements of 40 CFR 403, any categorical pretreatment standards promulgated by the EPA, and any additional or more stringent requirements imposed by the WWTP as part of its approved pretreatment program or sewer use ordinance (e.g., local limits).

G. Standard Permit Provisions

Sections **III, IV and V** of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife

Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. In an e-mail dated January 21, 2009, NOAA Fisheries stated that there are no threatened or endangered species under NOAA's jurisdiction in the Snake River drainage upstream of the Hells Canyon Dam, which is located at river mile 247.5. The Snake River in the vicinity of Rigby is upstream of river mile 700 and more than 400 miles from the nearest ESA-listed threatened or endangered species under NOAA's jurisdiction. Therefore, the reissuance of this permit will have no effect on any listed threatened or endangered species under NOAA's jurisdiction.

Based on the USFWS no listed species are in Jefferson County. Therefore, the EPA determines the discharges from Rigby will have no effect on listed species.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH).

The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. There are no designated critical habitats in the vicinity of Rigby. For this reason the City of Rigby discharges will have no effect on EFH.

C. State Certification

Section 401 of the CWA requires the EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation.

D. Permit Expiration

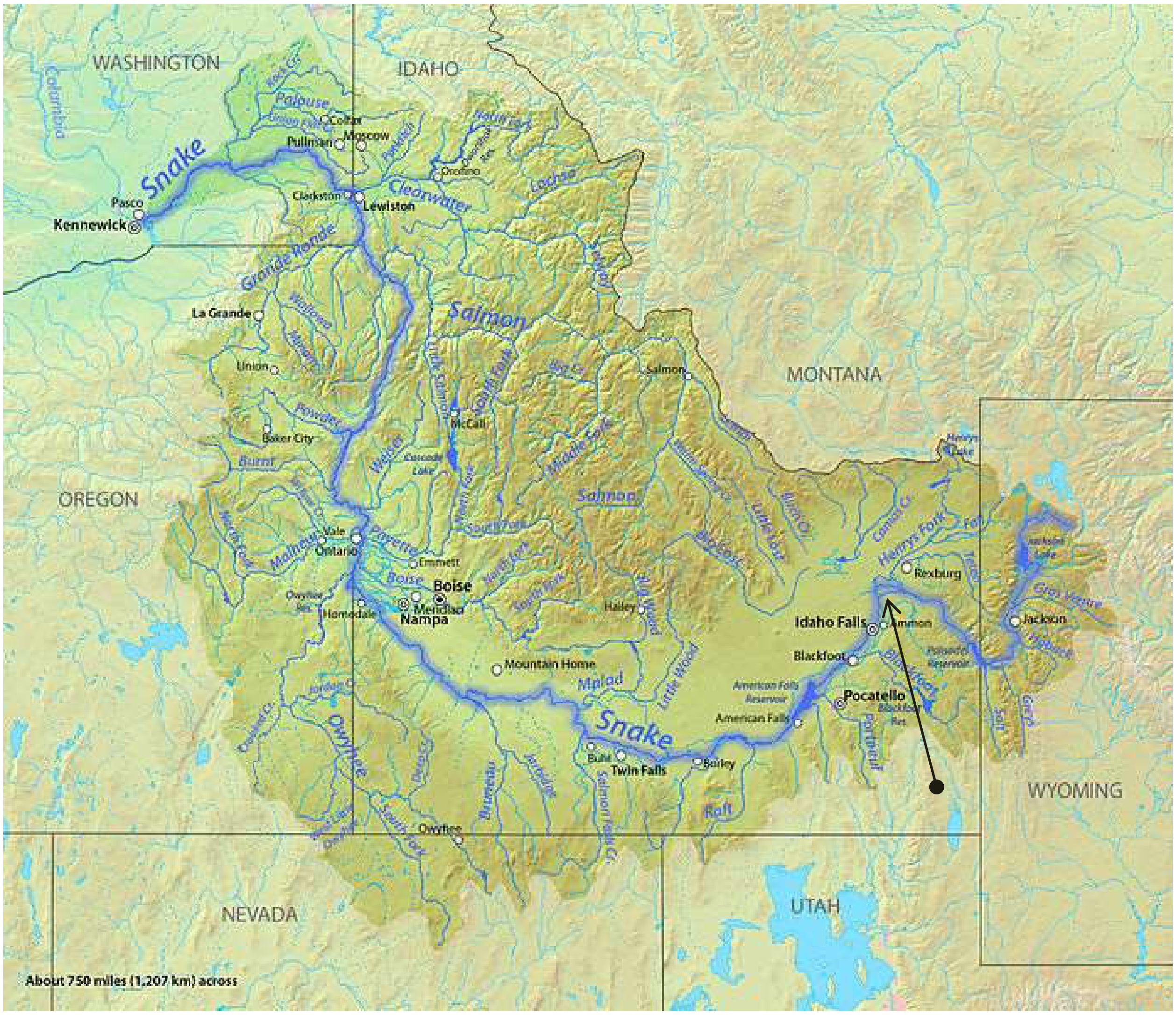
The permit will expire five years from the effective date.

IX. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

EPA. 2010. *NPDES Permit Writers' Manual.* Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001.

Appendix A: Facility Information



Appendix B: Water Quality Criteria Summary

This appendix provides a summary of water quality criteria applicable to the Snake River.

Idaho water quality standards include criteria necessary to protect designated beneficial uses. The standards are divided into three sections: General Water Quality Criteria, Surface Water Quality Criteria for Use Classifications, and Site-Specific Surface Water Quality Criteria. The EPA has determined that the criteria listed below are applicable to the Snake River. This determination was based on (1) the applicable beneficial uses of the river (i.e., cold water aquatic life, primary contact recreation, salmonid spawning, agricultural water supply, industrial water supply, wildlife habitats, and aesthetics), (2) the type of facility, (3) a review of the application materials submitted by the permittee, and (4) the quality of the water in the Snake River.

A. General Criteria (IDAPA 58.01.02.200)

Surface waters of the state shall be free from:

- hazardous materials,
- toxic substances in concentrations that impair designated beneficial uses,
- deleterious materials,
- radioactive materials,
- floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses,
- excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses,
- oxygen demanding materials in concentrations that would result in an anaerobic water condition

Surface water level shall not exceed allowable level for:

- radioactive materials, or
- sediments

B. Numeric Criteria for Toxics (IDAPA 58.01.02.210)

This section of the Idaho Water Quality Standards provides the numeric criteria for toxic substances for waters designated for aquatic life, recreation, or domestic water supply use. Monitoring of the effluent has shown that the following toxic pollutants have been present at detectable levels in the effluent.

Ammonia

C. Surface Water Criteria To Protect Aquatic Life Uses (IDAPA 58.01.02.250)

1. pH: Within the range of 6.5 to 9.0
2. Total Dissolved Gas: <110% saturation at atm. pressure.
3. Dissolved Oxygen: Exceed 6 mg/L at all times.

4. Ammonia:

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. The table below details the equations used to determine water quality criteria for ammonia.

The City of Rigby has collected pH and temperature data in Dry Bed Creek upstream of the facility from 2005 through 2015. These data were used to determine the appropriate pH and temperature values to calculate the ammonia criteria.

As with any natural water body the pH and temperature of the water will vary over time. Therefore, to protect water quality criteria it is important to develop the criteria based on pH and temperature values that will be protective of aquatic life at all times. The EPA used the 95th percentile of the pH and temperature data for the calculations, which were calculated to be 8.64 and 17.0 in the winter and 8.93 and 19.4 in the summer.

Table B-1: Water Quality Criteria for Ammonia		
	Acute Criterion[1]	**Chronic Criterion**
Equations:	$\frac{0.275}{1+10^{7.204-\mathrm{pH}}}+\frac{39}{1+10^{\mathrm{pH}-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-\mathrm{pH}}}+\frac{2.487}{1+10^{\mathrm{pH}-7.688}}\right)\times \mathrm{MIN}\left(2.85, 1.45\times 10^{0.028\times(25-\mathrm{T})}\right)$

D. Surface Water Quality Criteria For Recreational Use Designation (IDAPA 58.01.02.251)

a. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain *E. coli* in concentrations exceeding a geometric mean of 126 *E. coli* organisms per 100 ml based on a minimum of 5 samples taken every 3 to 7 days over a 30 day period.

b. Use of Single Sample Values: This section states that that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.). for primary and contact recreation.

Appendix C: Low Flow Conditions and Dilution

A. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits:

Acute aquatic life	1Q10
Chronic aquatic life	7Q10
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3

1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 5 years.
2. The 1B10 is biologically based and indicates an allowable exceedence of once every 3 years.
3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 5 years.
4.The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

Idaho's water quality standards do not specify a low flow to use for acute and chronic ammonia criteria, however, the EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia; Notice* (64 FR 719769 December 22, 1999) identifies the appropriate flows to be used.

The EPA determined critical low flows upstream of the discharge from the following USGS Station: Station USGS 13038000 DRY BED NR RIRIE ID.

The estimated low flows for the station are presented in Table C-1.

Table C-1: Critical Flows

Flows	**cfs**	
	Summer	**Winter**
1Q10	209	0.5
7Q10	746	0.67
30B3	1700	33.1
Harmonic Mean	1880	47.1

B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality standards may be exceeded as long as acutely toxic conditions are prevented (the EPA, 1994). The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances." The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges.

In the State 401 Certification, the IDEQ proposes to authorize a mixing zone of 25% of the stream flow volume for ammonia.

The following formula is used to calculate a dilution factor based on the allowed mixing zone.

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$

Where:

D = Dilution Factor
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10, 30B3, etc)
%MZ = Percent Mixing Zone

The EPA calculated dilution factors for summer and winter critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 2.59 mgd. The dilution factors are listed in Table C-2.

Table C-2: Dilution Factors

Flows	Winter	Summer
1Q5	1.031	14.0
7Q5	1.042	47.5
30B3	3.1	107.1
Harmonic Mean	3.8	3.7

Appendix D: Basis for Effluent Limits

The following discussion explains the derivation of technology and water quality based effluent limits proposed in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, Part C discusses anti-backsliding provisions, Part D discusses the effluent limits imposed due to the State's anti-degradation policy, and Part E presents a summary of the facility specific limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table C-1.

Table D-1: Secondary Treatment Effluent Limits (40 CFR 133.102)

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	---
pH	within the limits of 6.0 - 9.0 s.u.	

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lbs/day) = concentration limit (mg/L) × design flow (mgd) × 8.34[1]

Since the design flow for this facility is 2.59 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 2.59 mgd × 8.34 = 648 lbs/day

Average Weekly Limit = 45 mg/L × 2.59 mgd × 8.34 = 972 lbs/day

[1] 8.34 is a conversion factor with units $(lb \times L)/(mg \times gallon \times 10^6)$

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if the pollutant parameters in the effluent are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State/Tribal water quality criterion, the EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State.

The reasonable potential analysis for Rigby was based on a mixing zone of 25% based on the IDEQ's draft certification. If IDEQ revises the allowable mixing zone in its final certification of this permit, reasonable potential analysis will be revised accordingly.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based Wasteload Allocation

Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

No TMDLs apply to Rigby.

2. Mixing zone based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant. The WLAs for ammonia and cadmium were derived using a mixing zone.

3. Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an exceedance of the criteria. The WLA for ammonia and cadmium were derived using this method.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

Summary - Water Quality-based Effluent Limits

The water quality based effluent limits in the draft permit are summarized below.

<u>Ammonia</u>

A reasonable potential calculation showed that the Rigby discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit contains a water quality-based effluent limit for ammonia. See Appendices D and E for reasonable potential and effluent limit calculations for ammonia.

<u>pH</u>

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were collected daily at the facility from 2009 to 2014, a total of over 1800 samples were collected. The data ranged from 7.0–9.0 standard units. The pH range of the effluent is within the State's water quality criterion of 6.5 – 9.0 standard units, therefore no mixing zone is necessary for this discharge.

<u>*E. coli*</u>

The Idaho water quality standards state that waters of the State of Idaho, that are designated for recreation, are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a thirty day period. Therefore, the draft permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 406 organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

Residues

The Idaho water quality standards require that surface waters of the State be free from floating, suspended or submerged matter of any kind in concentrations impairing designated beneficial uses. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

C. Anti-backsliding Provisions

Section 402(o) of the Clean Water Act and federal regulations at 40 CFR §122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)), but in this case, the effluent limits being revised are water quality-based effluent limits (WQBELs).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the EPA NPDES Permit Writers' Manual (EPA-833-K-10-001) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4). Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

D. Antidegradation

The proposed issuance of an NPDES permit triggers the need to ensure that the conditions in the permit ensure that Tier I, II, and III of the State's antidegradation policy are met. An anti-degradation analysis was conducted by the IDEQ as part of the State's CWA Section 401 certification (see Appendix F).

Appendix E: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Part A of this appendix explains the process the EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. Part B demonstrates how the water quality-based effluent limits (WQBELs) in the draft permit were calculated.

A. Reasonable Potential Analysis

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This following section discusses how the maximum projected receiving water concentration is determined

Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{Equation 1}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = Q_e+Q_u
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times Q_u}{Q_e + Q_u} \qquad \text{Equation 2}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with 100% of the receiving stream.

If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)} \qquad \text{Equation 3}$$

Where:

% MZ = the percentage of the receiving water flow available for mixing.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{Equation 4}$$

A dilution factor (D) can be introduced to describe the allowable mixing. Where the dilution factor is expressed as:

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e} \qquad \text{Equation 5}$$

After the dilution factor simplification, the mass balance equation becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{Equation 6}$$

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as follows:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u \qquad \text{Equation 7}$$

Where C_e is expressed as total recoverable metal, C_u and C_d are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

The above equations for C_d are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's Technical Support Document for Water Quality-based Toxics Controls (TSD, 1991) recommends using the maximum projected effluent concentration (Ce) in the mass balance calculation (see equation 3). To determine the maximum projected effluent concentration (Ce) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration (Ce) can be calculated using the following equations:

First, the percentile represented by the highest reported concentration is calculated.

$p_n = (1 - \text{confidence level})^{1/n}$ Equation 8

where,

p_n = the percentile represented by the highest reported concentration
n = the number of samples
confidence level = 99% = 0.99

and

$$\text{RPM} = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}}$$ Equation 9

Where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile)
Z_{Pn} = z-score for the P_n percentile (inverse of the normal cumulative distribution function at a given percentile)
CV = coefficient of variation (standard deviation ÷ mean)

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$C_e = (\text{RPM})(\text{MRC})$ Equation 10

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

Once the maximum projected effluent concentration is calculated, the maximum projected effluent concentration at the edge of the acute and chronic mixing zones is calculated using the mass balance equations presented previously.

Reasonable Potential

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

Results of Reasonable Potential Calculations

It was determined that both ammonia and cadmium have reasonable potential to cause or contribute to an exceedance of water quality criteria at the edge of the mixing zone. The results of the calculations are presented at the end of this appendix.

B. WQBEL Calculations

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated. The draft permit includes WQBELs for ammonia and cadmium. The following discussion presents the general equations used to calculate the water quality-based effluent limits.

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis (Equations 9 and 10). To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation 6 is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{Equation 11}$$

Idaho's water quality criteria for some metals are expressed as the dissolved fraction, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, the EPA must calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation 12. The criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = WLA = \frac{D \times (C_d - C_u) + C_u}{CT} \qquad \text{Equation 12}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\,\sigma)} \qquad \text{Equation 13}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \qquad \text{Equation 14}$$

where,

σ^2	=	$\ln(CV^2 + 1)$
Z_{99}	=	2.326 (z-score for the 99th percentile probability basis)
CV	=	coefficient of variation (standard deviation ÷ mean)
σ_4^2	=	$\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \qquad \text{Equation 15}$$

where,

$\sigma_{30}^2 = \ln(CV^2/30 + 1)$

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below.

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \qquad \text{Equation 16}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)} \qquad \text{Equation 17}$$

where σ, and σ^2 are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1$

z_a = 1.645 (z-score for the 95th percentile probability basis)

z_m = 2.326 (z-score for the 99th percentile probability basis)

n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 30.

The table below detail the calculations for reasonable potential analysis and water quality-based effluent limits.

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Rigby
Design Flow (MGD)	2.59

Dilution Factors	(IDAPA 58.01.02 03. b)	Annual Crit. Flows	Seasonal Winter	Seasonal Summer
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	1Q10	1.0	1.03	14.0
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	7Q10 or 4B3	1.0	1.0	47.5
Ammonia	30B3/30Q10 (seasonal)	4.5	3.1	107.1
Human Health - Non-Carcinogen	30Q5	4.7	3.9	118.3
Human Health - carcinogen	Harmonic Mean Flow	3.8	3.8	3.7

Receiving Water Data		Notes:	Annual Crit. Flows	Seasonal Winter	Seasonal Summer
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***	5th % at critical flows			
Temperature, °C	Temperature, °C	95th percentile	19.4	17.0	19.4
pH, S.U.	pH, S.U.	95th percentile	8.85	8.64	8.93

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages present	AMMONIA, default: cold water, fish early life stages present	AMMONIA, default: cold water, fish early life stages present
Effluent Data	Number of Samples in Data Set (n)		54	32	22
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.24	1.08	1.57
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		1,574	15,780.00	7,216.00
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only				
Dilution Factors	Aquatic Life - Acute	1Q10	1.026	1.031	14.041
	Aquatic Life - Chronic	7Q10 or 4B3	-	-	-
	Ammonia	30B3 or 30Q10	4.519	3.065	107.072
	Human Health - Non-Carcinogen	30Q5	-	-	-
	Human Health - carcinogen	Harmonic Mean	-	-	-
Receiving Water Data	90th Percentile Conc., µg/L - (C_u)		100	100	100
	Geometric Mean, µg/L, Human Health Criteria Only				
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	1,131	1,644	989
	Aquatic Life Criteria, µg/L	Chronic	446	733	394
	Human Health Water and Organism, µg/L		--	--	--
	Human Health, Organism Only, µg/L		--	--	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	--	--	--
		Chronic	--	--	--
	Carcinogen (Y/N), Human Health Criteria Only		--	--	--

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		0.965	0.879	1.115
P_n	$=(1\text{-confidence level})^{1/n}$, where confidence level =	99%	0.918	0.866	0.811
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)-0.5\sigma^2]$, where	99%	2.5	2.9	5.0
Statistically projected critical discharge concentration (C_e)			3872.45	46080.63	36100.94
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	3776.12	44689.54	2664.07
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	934.78	15100.49	436.23
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)			4	4	4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			4	4	4
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		1.240	1.080	1.570
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		1.240	1.080	1.570
Acute WLA, ug/L	C_d = (Acute Criteria x MZ_a) - C_u x (MZ_a-1)	Acute	1,157.6	1,692.0	12,586.8
Chronic WLA, ug/L	C_d = (Chronic Criteria x MZ_c) - C_u x (MZ_c-1)	Chronic	1,662.1	2,039.9	31,564.2
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-z\sigma)$, Acute	99%	195.4	322.1	1,751.9
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	99%	1,013.1	1,320.0	17,078.1
Limiting LTA, ug/L	used as basis for limits calculation		195.4	322.1	1,751.9
Applicable Metals Criteria Translator (metals limits as total recoverable)			--	--	--
Average Monthly Limit (AML), ug/L , where % occurrence prob =		95%	**424**	**651**	**4,307**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		99%	**1,158**	**1,692**	**12,587**
Average Monthly Limit (AML), mg/L			**0.4**	**0.65**	**4.3**
Maximum Daily Limit (MDL), mg/L			**1.2**	**1.7**	**12.6**
Average Monthly Limit (AML), lb/day			**9**	**14.07**	**93**
Maximum Daily Limit (MDL), lb/day			**25**	**37**	**272**

Appendix G: IDEQ Draft 401 Certification

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

900 North Skyline, Suite B • Idaho Falls, ID 83402 • (208) 528-2650

C. L. "Butch" Otter, Governor
John H. Tippets, Director

July 7, 2016

Mr. Michael Lidgard
US Environmental Protection Agency, Region 10
1200 6th Avenue, OW-130
Seattle, Washington 98101

RE: Public Comment Draft §401 Water Quality Certification for the draft NPDES Permit # ID-000020010 City of Rigby

Dear Mr. Lidgard:

The State of Idaho Department of Environmental Quality (DEQ) received a revised preliminary draft National Pollutant Discharge Elimination Program (NPDES) permit and draft Fact Sheet and subsequent effluent limits for the city of Rigby's wastewater treatment plant on January 26, 2016.

After review of the limits proposed, DEQ submits the public comment draft § 401 water quality certification containing an antidegradation review.

Please direct any questions to me at: Troy Saffle at 208.528.2650 or troy.saffle@deq.idaho.gov.

Sincerely,

Troy Saffle
Regional WQ Manager
Idaho Falls Regional Office

enclosures (1)

c: Nicole Deinarowicz, TRIM References
John Drabek, EPA R10 Seattle w/enclosures

Idaho Department of Environmental Quality
Draft §401 Water Quality Certification

July 7, 2016

NPDES Permit Number(s): ID0020010 City of Rigby Wastewater Treatment Plant

Receiving Water Body: Dry Bed Creek

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheet, and published reports from the Idaho Department of Fish and Game (IDFG), DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).

- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).

- Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Description of Dry Bed Creek

Dry Bed Creek is an historic meander of the Snake River. The Dry Bed Creek, referred to as the "Great Feeder", was the main river channel before the South Fork Snake River moved to its present course in 1902. The Dry Bed Creek is now operated as a feeder canal, utilizing head works to control the flow (Idaho Water Resource Board, 1996). When the irrigation season ends, Dry Bed Creek goes dry from the headgate on the Snake River to below the town of Menan. Between the towns of Menan and Roberts, ground water becomes shallow and re-wets Dry Bed Creek for the remainder of its course to the confluence with the Snake, below Roberts. Photographic documentation is provided in Appendix A capturing the dry stream channel during the non-irrigation season. The antidegradation analysis below addresses protection afforded when Dry Bed Creek is flowing.

Changes in Treatment Capacity and Technology

During the current permit cycle, the City of Rigby wastewater treatment plant (WWTP) upgraded the treatment plant from a lagoon-based treatment system to a mechanical treatment process. This upgrade modified the effluent bacteria removal from chlorine treatment to UV disinfection, and increased the design capacity from 0.53 million gallon per day (mgd) to 2.59 mgd. The technology change for bacteria treatment resulted in the removal of the Total Residual Chlorine (TRC) effluent limit from the current permit to the proposed. This modification also results in increased mass load of pollutants of concern—BOD_5, E. *coli* and TSS. These increases are discussed in the sections below.

Pollutants of Concern

The City of Rigby WWTP discharges the following pollutants of concern: biological oxygen demand (BOD_5), total suspended solids (TSS), E. *coli,* pH, temperature, ammonia, phosphorus, copper and chronic whole effluent toxicity (WET_c). Effluent limits have been developed for BOD_5, TSS, E. *coli,* pH, and ammonia. No effluent limits are proposed for phosphorus, temperature, WET_c, or copper, although monitoring is required, with the exception of phosphorus where monitoring has been discontinued.

Receiving Water Body Level of Protection

The City of Rigby WWTP discharges to the Dry Bed Creek within the Idaho Falls subbasin assessment unit (AU) ID17040201SK004_06 (Dry Bed Creek – source to mouth). Dry Bed Creek is undesignated. DEQ presumes undesignated waters in the state will support cold water aquatic life and primary or secondary contact recreation beneficial uses; therefore, undesignated waters that are not man-made are protected for these uses (IDAPA 58.01.02.101.01.a). There is no available information indicating the presence of any existing beneficial uses aside from those that are already designated.

According to DEQ's 2012 Integrated Report, this AU is included in Category 3 (Unassessed Waters). Therefore, DEQ must provide an appropriate level of protection on a case-by-case basis using information available at this time (IDAPA 58.01.02.052.05.b). Water quality data collected for the draft NPDES permit indicate no exceedance of temperature, pH or ammonia criteria. DEQ collected bacteria samples from stagnant areas of Dry Bed Creek in March, 2016 and found no instantaneous exceedances of the primary contact recreation trigger value of 406 cfu/100 mL. Additionally, salmonid species of fish use Dry Bed Creek as refuge when water levels are sufficiently high (IDFG, 2009, 2010 and 2012); annual fish salvage operations are conducted when water levels are reduced to unsustainable levels for salmonids. Lastly, Idahoan Foods, Inc. Plant 1 in Lewisville annually collects surface water samples for compliance with their DEQ reuse permit. This sampling, conducted approximately 1.5 miles below the City of Rigby WWTP reported nitrogen and phosphorus levels not sufficiently high to impair Dry Bed Creek. As such, DEQ will provide Tier 2 protection, in addition to Tier 1, for aquatic life and recreation uses (IDAPA 58.01.02.051.02; 58.01.02.051.01).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the City of Rigby WWTP permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS. Therefore, the permit will ensure that existing uses and the water quality necessary to protect existing uses are maintained and protected.

High-Quality Waters (Tier 2 Protection)

The Dry Bed Creek is considered high quality for aquatic life and contact recreation. As such, the water quality relevant to these uses of the Dry Bed Creek must be maintained and protected, unless a lowering of water quality is deemed necessary to accommodate important social or economic development.

To determine whether degradation will occur, DEQ must evaluate how the permit issuance will affect water quality for each pollutant that is relevant to aquatic life and contact recreation uses of the Dry Bed Creek (IDAPA 58.01.02.052.05). These include the following: BOD_5, TSS, E. *coli*, pH, temperature, ammonia, phosphorus, copper and WET_c. Effluent limits are established in the proposed and existing permit for BOD_5, E.*coli*, pH, and TSS. An effluent limit for ammonia is established in the proposed permit; WET_c, is required to be monitored and reported (See EPA's Permit, pages 9-13) and; temperature and copper monitoring is required above the influence of the outfall. For a reissued permit or license, the effect on water quality is determined by looking at the difference in water quality that would result from the activity or discharge as authorized in the current permit and the water quality that would result from the activity or discharge as proposed in the reissued permit or license (IDAPA 58.01.02.052.06.a). For a new permit or license, the effect on water quality is determined by reviewing the difference between the existing receiving water quality and the water quality that would result from the activity or discharge as proposed in the new permit or license (IDAPA 58.01.02.052.06.a).

Pollutants with Limits in the Current and Proposed Permit: BOD_5, E. coli, pH, TSS

For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.06.a.i), and the future discharge quality is based on the proposed permit limits (IDAPA 58.01.02.052.06.a.ii). For the City of Rigby WWTP permit, this means determining the permit's effect on water quality based upon the limits for BOD_5, E. *coli, pH,* and TSS in the current and proposed permits. Table 1 provides a summary of the current permit limits and the proposed or reissued permit limits.

Table 1. New and Existing Effluent Limits and Changes in Limits for Outfall 001

		Draft Permit			2005 Permit (Current)			Change[1]		
Parameters	Units	AML[2]	AWL[3]	MDL[4]	AML	AWL	MDL	AML	AWL	MDL
	Pollutants with limits in the proposed permit									
Biochemcial Oxygen Demand (BOD_5)	mg/L	30	45	---	30	45	---	NC	NC	---
	lbs/day	648	972	---	133	199	---	I	I	---
BOD_5 Percent Removal	%	85% minimum	--	---	No limits Monitor and report			N	---	---
Total Suspended Solids (TSS)	mg/L	30	45	---	30	45		NC	NC	---
	lbs/day	648	972	---	133	199		I	I	---
TSS Percent Removal	%	85% minimum	---	---	---	---	---	N	---	---
E. *coli*	CFU/100 mL	126	---	406[5]	126	---	406	NC	---	NC
pH	standard units	Between 6.5-9.0						NC	NC	NC
Total ammonia (as N) May 1-September 30[6]	mg/L	4.3	---	12.6	No limits Monitor and report			N	---	N
	lbs/day	93	---	272				N	---	N
Total ammonia (as N) October 1- April 30	mg/L	0.65	---	1.7	No limits Monitor and report			N	---	N
	lbs/day	14	---	37				N	---	N
	Pollutants with no limits in both the current and proposed permit									
Copper	mg/L	No Limits. Monitor and report only		---	---			N		
Whole Effluent Toxicity (WET)	TUc[7]	No limits Monitor and report		---	---			N		
Temperature	°C	No Limits. Monitor and report only		---	---			N		

[1] Change defined as: I-increased limit, D-decreased limit, NC-no change from current permit, N-new in draft permit
[2]AML is Average Monthly Limit
[3]AWL is Average Weekly Limit
[4]MDL is Maximum Daily Limit
[5]Instantaneous value
[6]Final limit achieved by August 1, 2021
[7]TUc is Toxicity Units, chronic

The concentration based effluent limits for BOD_5, E. *coli,* pH, and TSS in the proposed permit are the same as the previous permit. However, the increased capacity of the WWTP results in increased loads for BOD_5, E. *coli* and TSS. Therefore, the new permit will result in some level of degradation.

If the degradation is deemed insignificant, however, then no further Tier 2 analysis is required (IDAPA 58.01.02.52.08.a.iii). Degradation may be deemed insignificant if the discharge results in a cumulative decrease in assimilative capacity of ten percent (10%) or less (IDAPA 58.01.02.52.08.a.i). Table 2 displays the loss of assimilative capacity for these pollutants. Using the 7Q10 flow values for the summer critical flow, there is less than a 10 percent loss in assimilative capacity and DEQ has determined the degradation to be insignificant. A full explanation of those calculations can be found in Appendix B.

Table 2: Dry Bed Creek Change in Assimilative Capacity for Existing Limits

Dry Bed Creek Summer Critical Flow (7Q10) 746 cfs										
		Draft Permit (2016)			2005 Permit (Current)			% change in Assimilative Capacity		
Parameters	**units**	**AML**	**AWL**	**MDL**	**AML**	**AWL**	**MDL**	**AML**	**AWL**	**MDL**
BOD_5	mg/L	30	45	---	30	45	---	0.4%	0.4%	---
	lbs/d	648	972	---	133	199	---			
TSS	mg/L	30	45		30	45		0.4%	0.4%	---
	lbs/d	648	972	---	133	199				
E. *coli*	CFU/100 mL	126	---	406	126	---	406	0.4%	---	0.4%

New Permit Limits for Pollutants Currently Discharged: Ammonia

When new limits are proposed in a reissued permit for pollutants in the existing discharge, the effect on water quality is based upon the current discharge quality and the proposed discharge quality resulting from the new limits. Current discharge quality for pollutants that are not currently limited is based upon available discharge quality data (IDAPA 58.01.02.052.06.a.i). Future discharge quality is based upon proposed permit limits (IDAPA 58.01.02.052.06.a.ii).

The proposed permit for the City of Rigby WWTP includes new limits for ammonia (Table 1). DEQ compared the water quality resulting from the existing level of ammonia discharged (based upon discharge monitoring report data) and the water quality resulting from the proposed ammonia effluent limits. The limits proposed are calculated using pH and temperature data collected near the WWTP, and represent the 95- percentile of all existing pH and temperature data. This data includes values measured after the 2008 upgrades to the WWTP. The May-September limit represents a 5% decrease in assimilative capacity, while the October-April limits represent an increase in assimilative capacity of 1300% (Table 3). The 5% degradation is less than the 10% threshold established by DEQ for significant degradation. Therefore, the new limits proposed result in no significant degradation with respect to ammonia. A full explanation of those calculations can be found in Appendix C.

Table 3: Dry Bed Creek Change in Assimilative Capacity for Ammonia				
Ammonia Average Monthly Limit				
Parameters	units	Ammonia Average Monthly Limit AML	Current Discharge 95% Percentile since upgrade	% change in Assimilative Capacity[1]
Total ammonia (as N) May 1-September 30	mg/L	4.3	7.21	5%
Total ammonia (as N) October 1- April 30	mg/L	0.65	15.7	-1300%

[1]**Negative values indicate an INCREASE in Assimilative Capacity**

Pollutants with No Limits: Temperature, Phosphorus, WET_c and Copper

There are four pollutants of concern relevant to Tier 2 protection of aquatic life that currently are not limited and for which the proposed permit also contains no limit: temperature, phosphorus, WET_c and copper. Temperature and phosphorus effluent monitoring was found to be unnecessary in the proposed permit cycle. Effluent water monitoring is proposed for WET_c due to the upgrade in the facility above 1 mgd. Surface water monitoring, above the impact of the outfall, is required for copper, including constituents required for the Biotic Ligand Model (BLM). Using the BLM requires the collection of copper and also dissolved organic carbon, hardness and conductivity. Temperature monitoring is only required upstream of the outfall as part of the surface water monitoring requirements. For such pollutants without effluent limits, a change in water quality is determined by reviewing whether changes in production, treatment, or operation that will increase the discharge of these pollutants are likely (IDAPA 58.01.02.052.04.a.ii). The City of Rigby WWTP increased design flows from 0.53 mgd to 2.59 mgd. There have been no new connections to the City of Rigby WWTP which may have increased levels of these pollutants. However, the increase in design flow may increase the concentration of these pollutants at the edge of a mixing zone. A Tier 2 analysis, however, is only required if the degradation is significant; this only occurs when the discharge of the pollutant will cumulatively decrease the assimilative capacity by more than 10%. There is no information available concerning current levels of WET_c or copper concentration, either in Dry Bed Creek or the City of Rigby WWTP's effluent, therefore making the assimilative capacity analysis impossible to complete. The proposed permit requires monitoring of these pollutants. The next permit cycle will include the assimilative capacity evaluation, once the existing levels of each pollutant are known.

Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes a mixing zone that utilizes 25% of the critical flow volumes of Dry Bed Creek for ammonia.

Compliance Schedule

Ammonia limit compliance will require modifications to the City of Rigby WWTP. EPA considered these upgrades and proposed a schedule of compliance with interim tasks related to planning, funding and modifying the WWTP and outlined them in the draft permit. DEQ authorizes this compliance schedule pursuant to IDAPA 58.01.02.400.03, except that the City of Rigby WWTP must comply with the final ammonia limits by **August 1, 2023**.

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to Troy Saffle, Idaho Falls Regional Office at 208.528.2650 or troy.saffle@deq.idaho.gov.

DRAFT

Eric Neher

Regional Administrator

Idaho Falls Regional Office

References

Idaho Water Resources Board. December 13, 1996. Comprehensive State Water Plan SWP: South Fork Snake River Basin.

Idaho Department of Fish and Game. 2009, 2010, 2012. Annual Fisheries Report. https://collaboration.idfg.idaho.gov/FisheriesTechnicalReports/Forms/AllItems.aspx

Appendix A: Photographic Documentation of Dry Bed Creek

Figure 1 Great Feeder Diversion Maintenance 2016

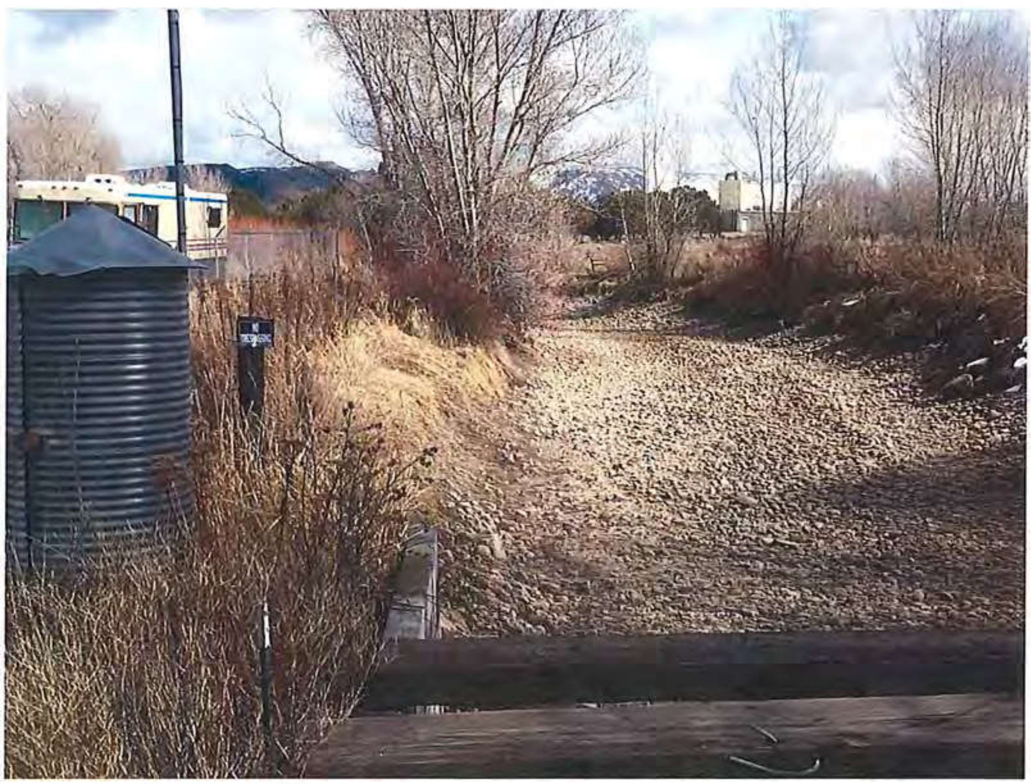


Figure 2 Dry Bed Creek at Ririe

Figure 3 Dry Bed Creek between Ririe and Rigby

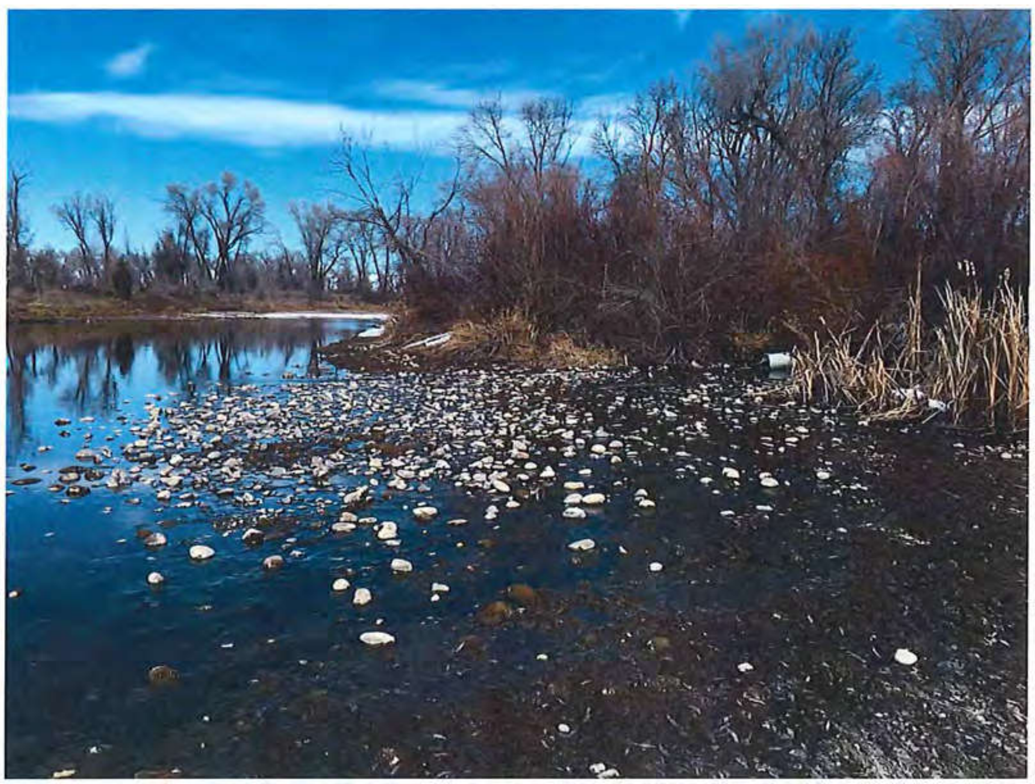


Figure 4 Rigby Outfall into Dry Bed Creek Depression (Outfall Flow approx. 0.3 mgd)

Figure 5 Dry Bed Creek at Menan

Figure 6 Dry Bed Creek at Roberts

Appendix B: Antidegradation calculations for Pollutants of Concern with Increase Loads

Three pollutants had no change in the effluent limits, but do have increasing mass limits. Table B displays the results of insignificant degradation for BOD_5, TSS and E. *coli.* These limits are technology based and part of all municipal waste water treatment plants and identify the minimum levels of effluent quality for these pollutants

Table B: Dry Bed Creek Change in Assimilative Capacity for Existing Limits

Dry Bed Creek Summer Critical Flow (7Q10) 746 cfs

		Draft Permit (2016)			2005 Permit (Current)			% change in Assimilative Capacity		
Parameters	**units**	**AML**	**AWL**	**MDL**	**AML**	**AWL**	**MDL**	**AML**	**AWL**	**MDL**
BOD_5	mg/L	30	45	---	30	45	---	0.4%	0.4%	---
	lbs/d	648	972	---	133	199	---			
TSS	mg/L	30	45		30	45		0.4%	0.4%	---
	lbs/d	648	972	---	133	199				
E. *coli*	CFU/100 mL	126	---	406	126	---	406	0.4%	---	0.4%

These values were calculated using DEQ's draft Antidegradation Guidance Document (2012). The calculations for each pollutant are below.

<u>BOD_5 and TSS Percentage Change in Assimilative Capacity</u>

Technology based limits for these pollutants are the same, at 30 mg/L and 45 mg/L respectively. Because the loading increases due to design capacity upgrades, degradation will occur. DEQ quantifies degradation by the percentage loss of assimilative capacity through the following equations and input parameters:

Background concentrations: 0 mg/L
Effluent Limits: 30 mg/L (AML) and 45 mg/L (AWL)
Remaining assimilative capacity: 30 mg/L (AML) and 45 mg/L (AWL)
10% of remaining assimilative capacity: 3.0 mg/L (AML) and 4.5 mg/L (AWL)
Increase in design flow: 0.53 mgd (0.82 cfs) to 2.59 mgd (4.0 cfs)
Receiving water flow: 746 cfs

Current Mixed Concentration: 0.03 mg/L (AML)
Proposed Mixed Concentration: 0.16 mg/L (AML)

0.16 – 0.03 = 0.13 mg/L (0.43%) is the reduction in assimilative capacity for the AML

Current Mixed Concentration: 0.05 mg/L (AWL)
Proposed Mixed Concentration: 0.24 mg/L (AWL)

0.24-0.05 = 0.19 mL (0.42%) is the loss of assimilative capacity for the AWL

Formula used to calculate mixed concentrations:

Mixed Concentration = Cm = [(Ce * Qe) +(Cu * Qu)] / (Qe+Qu)

Where:

Cm = Mixed Concentration (μg/L)
Ce = Effluent Concentration (μg/L)
Qe = Effluent Volume (liters, calculated as flow rate in cfs * constant 28.316)
Cu = Upstream concentration (μg/L)
Qu = Upstream Volume (liters, calculated as flow rate in cfs * constant 28.316)

E. *coli* Percentage Change in Assimilative Capacity

Water quality based limits for E. *coli* are 126 cfu/100 mL (AWL) and 406 cfu/100 mL (MDL) respectively.

Because the loading increases due to design capacity upgrades, degradation will occur. DEQ quantifies degradation by the percentage loss of assimilative capacity through the following equations and input parameters:

Background concentrations: 0 cfu/100mL
Effluent Limits: 126 cfu/100 mL (AML) and 406 cfu/100 mL (MDL)
Remaining assimilative capacity: 126 cfu/100 mL (AML) and 406 cfu/100 mL (MDL)
10% of remaining assimilative capacity: 12.6 cfu/100 mL (AML) and 40.6 cfu/100 mL (MDL)
Increase in design flow: 0.53 mgd (0.82 cfs) to 2.59 mgd (4.0 cfs)
Receiving water flow: 746 cfs

Current Mixed Concentration: 0.14 cfu/100 mL (AML)
Proposed Mixed Concentration: 0.67 mg/L (AML)

0.67-0.14= 0.53 cfu/100mL (0.42%) reduction in assimilative capacity for the AML

Current Mixed Concentration: 0.45 cfu/100 mL (MDL)
Proposed Mixed Concentration: 2.17 cfu/100 mL (MDL)

2.17-0.45 = 1.7 cfu/100 mL (0.4%) is the loss of assimilative capacity for the MDL

Formula used to calculate mixed concentrations:

Mixed Concentration = Cm = [(Ce * Qe) +(Cu * Qu)] / (Qe+Qu)

Where:
Cm = Mixed Concentration (μg/L)
Ce = Effluent Concentration (μg/L)
Qe = Effluent Volume (liters, calculated as flow rate in cfs * constant 28.316)

Cu = Upstream concentration (µg/L)
Qu = Upstream Volume (liters, calculated as flow rate in cfs * constant 28.316)

Appendix C: Antidegradation Calculations for Pollutants of Concern with New Limits

The proposed permit for the City of Rigby WWTP includes new limits for ammonia (Table C). DEQ compared the water quality resulting from the existing level of ammonia discharged (based upon discharge monitoring report data) and the water quality resulting from the proposed ammonia effluent limits. The limits proposed are calculated using pH and temperature data collected near the WWTP, and represent the 95th percentile of all existing pH and temperature data. This data includes values measured after the 2008 upgrades to the WWTP. Antidegradation calculations are also based on the monitored ammonia values using DEQ's draft Antidegradation Guidance Document (2012).

Table C: Dry Bed Creek Change in Assimilative Capacity for Ammonia				
Ammonia Average Monthly Limit				
Parameters	units	Ammonia Average Monthly Limit AML	Current Discharge 95 Percentile since upgrade	% change in Assimilative Capacity[1]
Total ammonia (as N) May 1-September 30	mg/L	4.3	7.21	5%
Total ammonia (as N) October 1- April 30	mg/L	0.65	15.7	-1300%

[1]Negative values indicate an INCREASE in Assimilative Capacity

Background concentrations: 7.21 mg/L May-Sep and 15.7 mg/L Oct-Apr
Proposed Effluent Limits: 4.3 mg/L (AML) May-Sep
Proposed Effluent Limits: 0.65 (AML) Oct-Apr
Remaining assimilative capacity: 2.91 mg/L May-Sep and 6.65 mg/L Oct-Apr
0.294 mg/L May-Sep and 0.633 mg/L (AML)
10% of remaining assimilative capacity: 0.291 mg/L (AML) and 0.665mg/L (AML)
Increase in design flow: 0.53 mgd (0.82 cfs) to 2.59 mgd (4.0 cfs)
Receiving water flow: 746 cfs May-Sep, 0.65 cfs Oct-Apr

Current Mixed Concentration: 0.1 mg/L May-Sep and 8.8 mg/L Oct-Apr
Proposed Mixed Concentration: 0.1 mg/L May-Sep and 0.6 mg/L Oct-Apr

0.1-0.1 = 0.0 mg/L (5%) is the reduction in assimilative capacity for the May-Sep AML
0.6-8.8= -8.2 mg/L (-1300%) is the increase in assimilative capacity for Oct-Apr AML

Formula used to calculate mixed concentrations:

Mixed Concentration = Cm = [(Ce * Qe) +(Cu * Qu)] / (Qe+Qu)

Where:

Cm = Mixed Concentration (µg/L)
Ce = Effluent Concentration (µg/L)
Qe = Effluent Volume (liters, calculated as flow rate in cfs * constant 28.316)

Cu = Upstream concentration (µg/L)
Qu = Upstream Volume (liters, calculated as flow rate in cfs * constant 28.316

IDAHO PUBLIC WASTEWATER TREATMENT PLANT CLASSIFICATION WORKSHEET

OFFICE USE DO NOT WRITE HERE
System Class __________
Upgrade ___ STD 5 Yr ___
Approved by __________
Date________________

Name of System: Rigby WWTP

Legal Owner of Treatment System City of Rigby

System Address: 158 West Fremont

City: Rigby **State:** Idaho **Zip Code:** 83442

Contact Person: Scott Humpherys **Title:** WW Superintendent

Business Phone Number: (208)745-8111 **Email** wwtp@cityofrigby.com

Treatment System - Design Flow/Actual Flow 0.65 / 0.66
(MGD) (MGD)

Treatment Plant Classification Worksheet is (Check one):

☐ **Initial System Rating** ☒ **System Upgrade** ☐ **Standard 5 Year Rating**

Date of last system classification rating (if applicable) _____

☐ **Attach a flow schematic or hydraulic flow diagram of the treatment facility to this treatment plant classification worksheet when submitting to DEQ.**

Instructions:

Use this rating form for all types of public wastewater treatment plants, facilities, or systems[D-16] that treat domestic and/or industrial wastewater including, but not limited to traditional biological and mechanical treatment processes, large soil absorption systems, community drainfields, and wastewater lagoon systems. Fill out ONE form for the wastewater treatment facility including all sequential, parallel or multiple treatment processes for both effluent and solids that provide treatment of all wastewater introduced into the system.

How to Assign Points:

Evaluate each item listed in the table below and place the specified point value next to each item selected. ***Each unit process should have points assigned only once*** **.Add the total number of points selected to determine the class of the treatment system. Definitions describing all configurations, names, and/or reasons why rating points are or are not assigned to a particular item are provided for those items with a small D-number behind the item, i.e. D-1. Check the definition if unsure whether a particular treatment plant process qualifies for the point value shown.**

Treatment facilities will be classified as VSWW, Class I, Class II, Class III or Class IV with IV being the largest and most complex. ***Mail the completed, signed form to the Department of Environmental Quality 1410 N. Hilton, Boise, ID 83706 Attention: Adam Bussan. Keep a photocopy of the original form for your files.***

Item	Points	Your System
System Size (2 to 20 points)		
Number of Connections (for information only)	(not scored)	1,600
Maximum population served, peak day (1 point minimum to 10 point maximum)	1 point/10,000 or part	1
Design flow (average/day) or peak months (average/day) Whichever is larger (1 point min to 10 point max)	1 point/MGD or part	2

Item	Points	Your System
Variation in Raw Wastewater (0 to 6 points) [1]		
Variations do not exceed those normally or typically expected	0 points	
Recurring deviations/excessive variations of 100% to 200% in strength/flow	2 points	
Recurring deviations/excessive variations of more than 200% in strength/flow	4 points	4
Raw wastewater subject to toxic waste discharges	6 points	
Impact of septage or truck-hauled wastewater (0 to 4 points)	0-4 points	1
Preliminary Treatment Process		
Plant pumping of main flow	3 points	3
Screening, comminution	3 points	3
Grit removal	3 points	3
Equalization	1 point	
Primary Treatment Process		
Primary clarifiers	5 points	
Imhoff tanks, septic tanks, or similar (combined sedimentation/digestion)[D-8]	5 points	
Secondary Treatment Process		
Fixed-film reactor[D-7]	10 points	
Activated sludge[D-1]	15 points	15
Stabilization ponds or lagoon without aeration	5 points	
Stabilization ponds or lagoon with aeration	8 points	
Membrane Biological Reactor (MBR) – Basic MBR which combines activated sludge (minus secondary clarification) and membrane filtration.[D-17]	15 points	
Tertiary Treatment Process		
Polishing ponds for advanced wastewater treatment	2 points	
Chemical/physical advanced wastewater treatment w/o secondary[D-5]	15 points	
Chemical/physical advanced wastewater treatment following secondary[D-4]	10 points	
Biological or chemical/biological advanced wastewater treatment[D-2]	12 points	12
Nitrification by designed extended aeration only	2 points	
Ion exchange for advanced wastewater treatment	10 points	
Reverse osmosis, electrodialysis and other membrane filtration techniques for advanced wastewater treatment	15 points	
Advanced wastewater treatment chemical recovery, carbon regeneration	4 points	
Media filtration (removal of solids by sand or other media) [D-13]	5 points	
Additional Treatment Processes		
Chemical additions (2 points each for a max of 6 points)[D-3]	0-6 points	
Dissolved air floatation (for other than sludge thickening)	8 points	
Intermittent sand filter	2 points	
Recirculating intermittent sand filter	3 points	
Microscreens	5 points	
Generation of oxygen	5 points	

Solids Handling		
Solids stabilization (used to reduce pathogens, volatile organic chemicals & odors include lime or similar treatment and thermal conditioning)[D-15]	5 points	
Gravity thickening	2 points	2
Mechanical dewatering of solids[D-11]	8 points	8
Anaerobic digestion of solids	10 points	
Aerobic digestion of solids	6 points	6
Evaporative sludge drying	2 points	
Solids reduction (including incineration, wet oxidation)	12 points	
On-site landfill for solids	2 points	
Solids composting[D-14]	10 points	
Land application of biosolids by contractor [D-9]	2 points	
Land application of biosolids by facility operator in responsible charge	10 points	
Disinfection (0 to 10 points maximum)		
No disinfection	0 points	
Chlorination (including chlorine dioxide or chloramines) or ultraviolet irradiation	5 points	5
Ozonation	10 points	
Effluent Discharge (0 to 10 points maximum)		
No discharge	0 points	
Discharge to surface water receiving stream[D-6]	0 points	0
Mechanical post aeration[D-12]	2 points	
Land treatment with surface disposal or land treatment with subsurface disposal [D-10]	4 points	
Direct recycle and reuse	6 points	
Instrumentation (0 to 6 point maximum)		
SCADA or similar instrumentation systems to provide data with no process operation	0 points	
SCADA or similar instrumentation systems to provide data with limited process operation	2 points	
SCADA or similar instrumentation systems to provide data with moderate process operation	4 points	4
SCADA or similar instrumentation systems to provide data with extensive or total process operation	6 points	
Laboratory Control (0 to 15 point maximum) [2]		
Bacteriological/Biological Laboratory Control (0 to 5 point maximum)		
Lab work done outside the treatment plant	0 points	0
Membrane filter procedures	3 points	
Use of fermentation tubes or any dilution method; fecal coliform determination	5 points	
Chemical/Physical Laboratory Control (0 to 10 point maximum)		
Lab work done outside the treatment plant	0 points	0
Push-button or visual (colorimetric) methods for simple tests such as pH, settleable solids	3 points	
Additional procedures such as DO, COD, BOD, gas analysis, titrations,		

solids, volatile content	5 points	
More advanced determinations such as specific constituents; nutrients, total oils, phenols	7 points	
Highly sophisticated instrumentation such as atomic absorption, gas chromatography	10 points	
TOTAL POINTS FOR YOUR SYSTEM		69

System Classification Key	Classification
A system comprised of only one of the following wastewater treatment processes: aerated lagoon (s), non-aerated lagoons, primary treatment, or LSAS; and associated collection system also meets the definition of a very small wastewater system (VSWWS).	☐ VSWWS
0-30 points	☐ Class I
31-55 points	☐ Class II
56-75 points	☐ Class III
76 or greater	☐ Class IV

Footnote [1] The key concept is frequency and/or intensity of deviation or excessive variation from normal or typical fluctuations; such deviation can be in terms of strength, toxicity, shock loads, I/I, with points from 0-6.

Footnote [2] The key concept is to credit laboratory analyses done on-site by plant personnel under the direction of the operator in direct responsible charge with points from 0-15.

_____________________________________/8-5-19

Signature of Legal Owner or Owner's Representative Date

Wastewater Treatment Definitions

D-1. **Activated Sludge** - Wastewater treatment by aeration of suspended organisms followed by secondary clarification, including extended aeration, oxidation ditches, Intermittent Cycle Extended Aeration system (ICEAS), and other similar processes. A sequencing batch reactor with the purpose of providing this form of treatment would be rated under this category.

D-2. **Biological or chemical/biological advanced wastewater treatment** - The advanced treatment of wastewater for nutrient removal including nitrification, denitrification, or phosphorus removal utilizing biological or chemical processes or a combination. If the facility is designed to nitrify based solely on detention time in an extended aeration system, only the points for nitrification by designed extended aeration should be given.

D-3. **Chemical addition** - The addition of a chemical to wastewater at an application point for the purposes of adjusting pH or alkalinity, improving solids removal, dechlorinating, removing odors, providing nutrients, or otherwise enhancing treatment, excluding chlorination for disinfection of effluent and the addition of enzymes or any process included in the Tertiary Chemical/Physical Processes. The capability to add a chemical at different application points for the same purpose should be rated as one application; the capability to add a chemical(s) to dual units should be rated as one application; and the capability to add a chemical at different application points for different purposes should be rated as separate applications.

D-4. **Chemical/physical advanced treatment following secondary** - The use of chemical or physical advanced treatment processes following (or in conjunction with) a secondary treatment process. This would include processes such as carbon adsorption, air stripping, chemical coagulation, and precipitation, etc.

D-5. **Chemical/physical advanced treatment without secondary** - The use of chemical or physical advanced treatment processes without the use of a secondary treatment process. This would include processes such as carbon adsorption, air stripping, chemical coagulation, precipitation, etc.

D-6. **Discharge to Receiving Water** - Treatment processes present at the facility are designed to achieve NPDES permit limitations that have already factored in the sensitivity of the receiving stream. Consequently, no additional points are assigned to rate the receiving stream separately from the facility treatment processes.

D-7. **Fixed-film reactor** - Biofiltration by trickling filters or rotating biological contactors followed by secondary clarification.

D-8. **Imhoff tanks (or similar)** - Imhoff tanks, septic tanks, spirogester, clarigester, or other single unit for combined sedimentation and digestion.

D-9. **Land application of biosolids by contractor** - The land application or beneficial reuse of biosolids by a contractor outside of the control of the operator in direct responsible charge of the wastewater treatment facility.

D-10. **Land treatment and disposal (surface or subsurface)** - The ultimate treatment and disposal of the effluent onto the surface of the ground by rapid infiltration or rotary distributor or by spray irrigation. Subsurface treatment and disposal would be accomplished by infiltration gallery, injection, or gravity or pressurized drainfield.

D-11. **Mechanical dewatering** - The removal of water from sludge by any of the following processes and including the addition of polymers in any of the following: vacuum filtration; frame, belt, or plate filter presses; centrifuge; or dissolved air floatation.

D-12. **Mechanical post-aeration** - The introduction of air into the effluent by mechanical means such as diffused or mechanical aeration. Cascade aeration would not be assigned points.

D-13. **Media Filtration** - The advanced treatment of wastewater for removal of solids by sand or other media or mixed media filtration.

D-14. **Solids composting** - The biological decomposition process producing carbon dioxide, water, and heat. Typical methods are windrow, forced air-static pile, and mechanical.

D--15. **Solids stabilization** - The processes to oxidize or reduce the organic matter in the sludge to a more stable form. These processes reduce pathogens or reduce the volatile organic chemicals and thereby reduce the potential for odor. These processes would include lime (or similar) treatment and thermal conditioning. Other stabilization processes such as aerobic or anaerobic digestion and composting are listed individually.

D-16 **Wastewater Treatment Facility**. Any physical facility or land area for the purpose of collecting, treating, neutralizing or stabilizing pollutants including treatment plants, the necessary intercepting, outfall and outlet sewers, pumping stations integral to such plants or sewers, equipment and furnishing thereof and their appurtenances. A treatment facility may also be known as a treatment system, wastewater treatment system, wastewater treatment facility, or wastewater treatment plant (IDAPA 58.01.16.010).

D-17 **Membrane Biological Reactor (MBR) Point Factoring -** The points assigned to the basic MBR unit does not include points for any additional treatment processes such as phosphorus removal, nitrification, denitrification, land application, rapid infiltration basins, lagoons, etc. Points must be assigned separately to each additional treatment process beyond the basic MBR unit. Additional treatment processes may vary on a case-by-case basis.

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RIGBY WWTP LOADING

BOD_5: Biochemical Oxygen Demand; a measure of wastewater strength

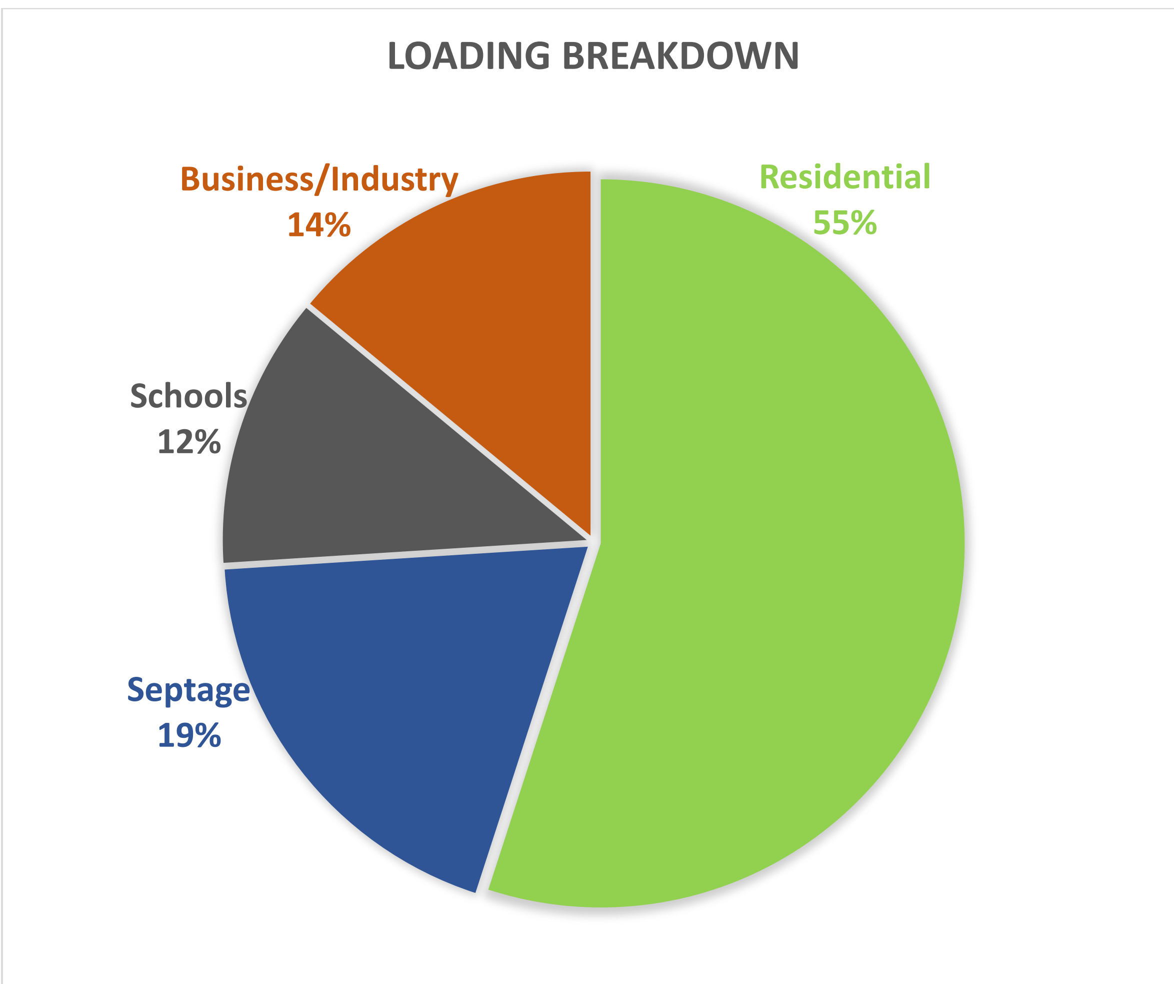
Ammonia: Nutrient that requires additional treatment

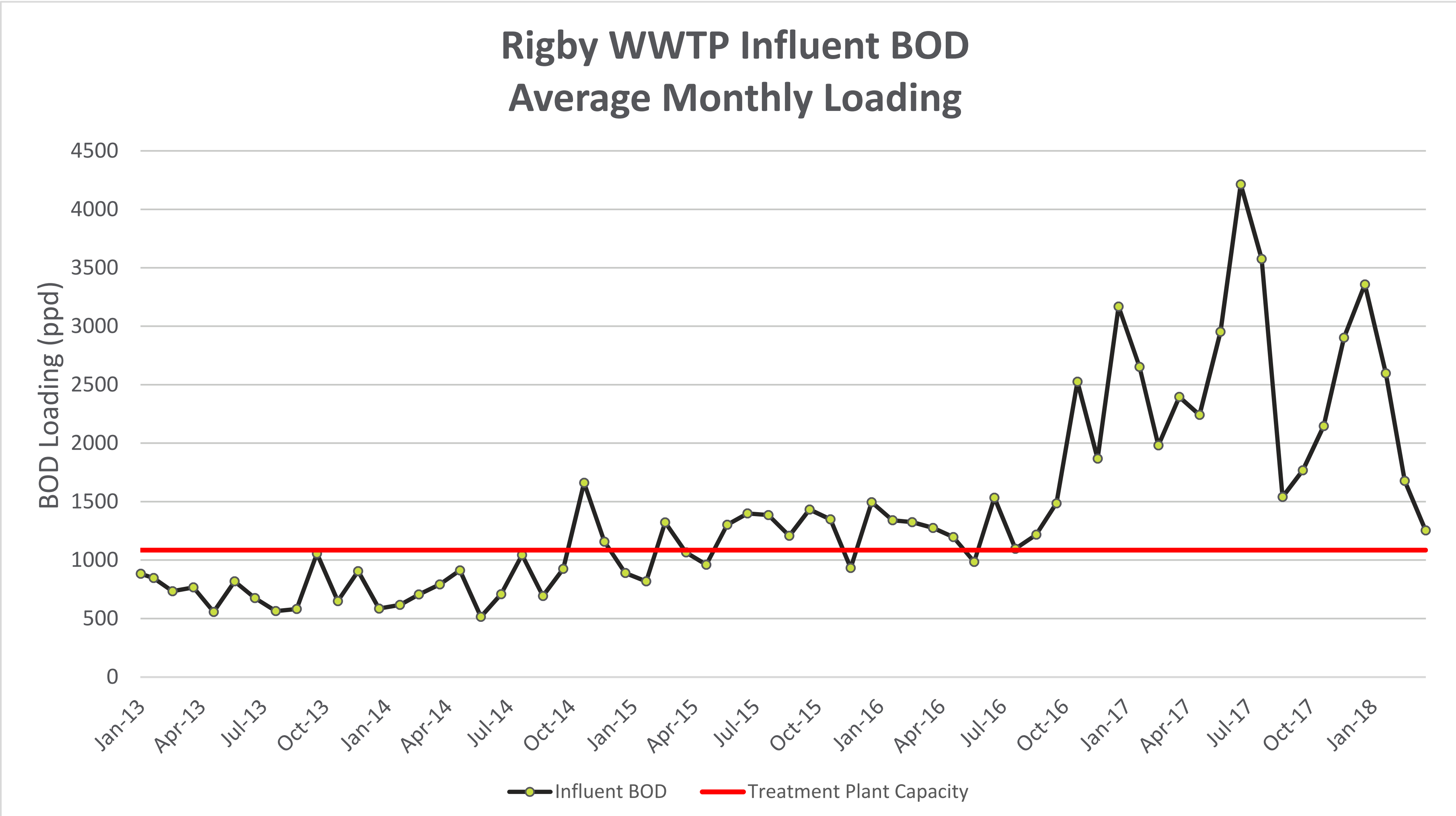
Per Capita BOD_5 Loading: 0.22 lbs/day where garbage grinders are used

0.17 lbs/day without garbage grinders

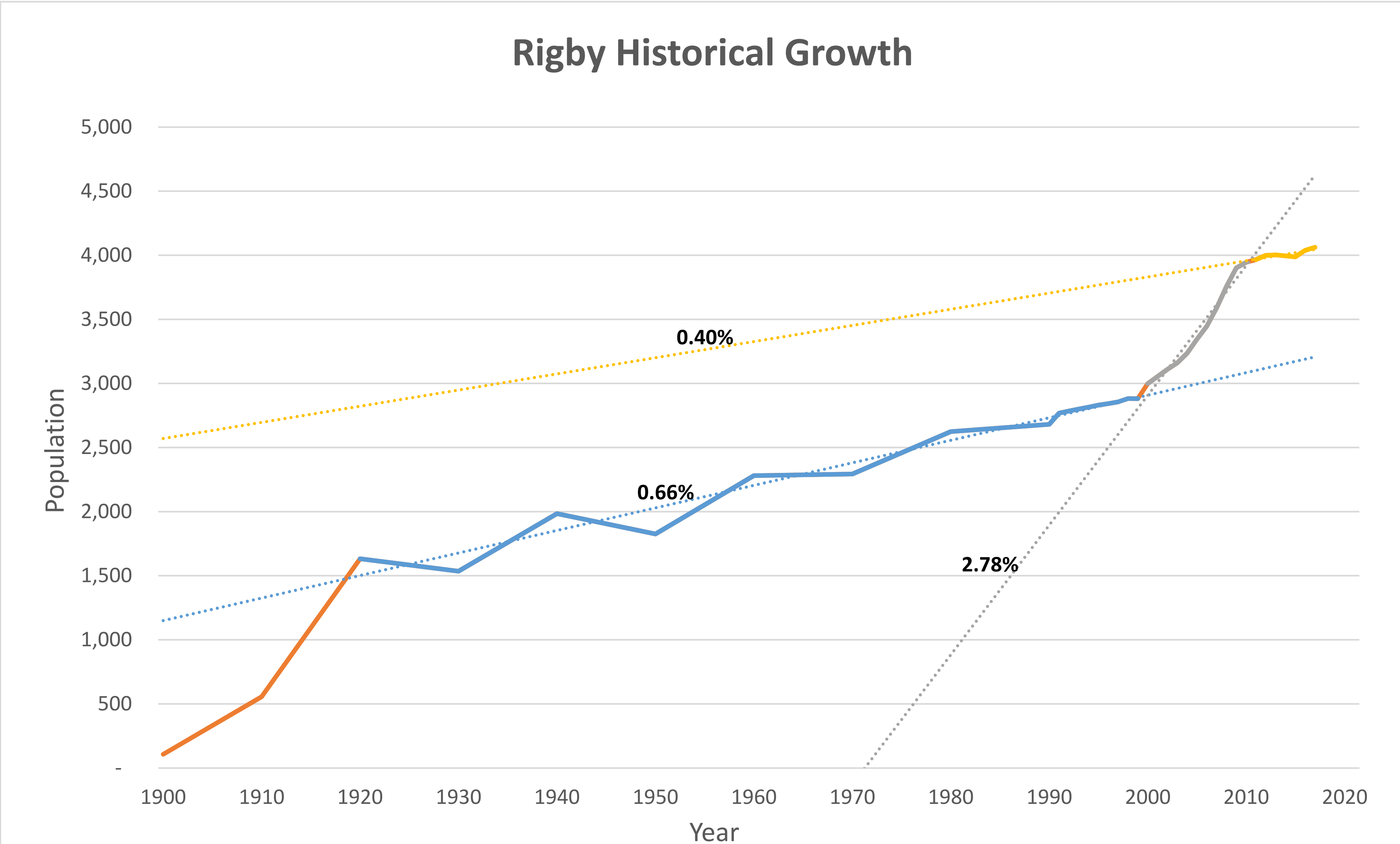
Rigby WWTP Capacity: 1,085 lbs/day BOD_5

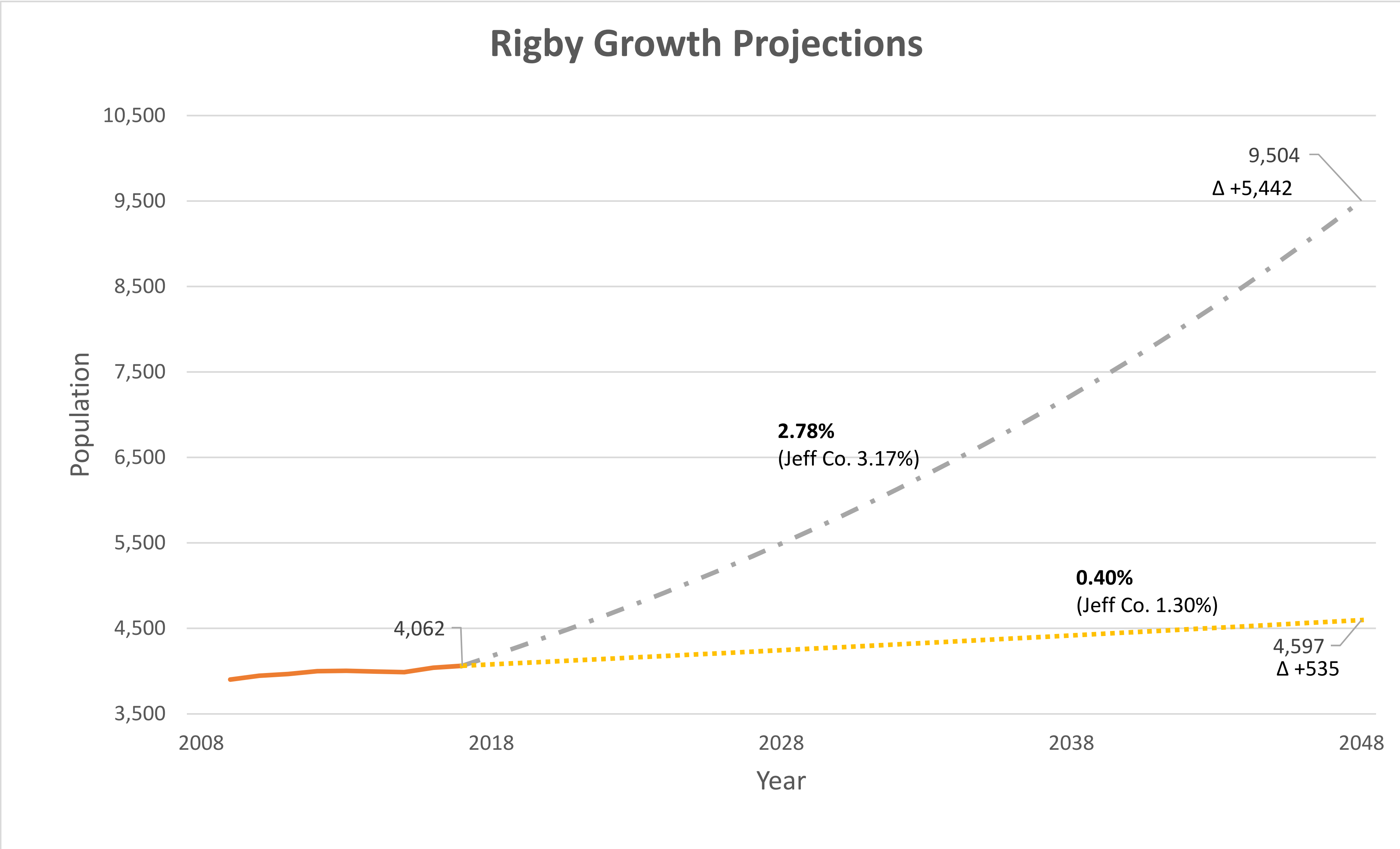
Current Loading: ~ 1600 lbs/day BOD_5




Rigby WWTP Influent BOD
Average Monthly Loading
BOD Loading (ppd)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Influent BOD
Treatment Plant Capacity

TREATMENT COSTS		
	2008	Current
WWTP Costs:	~ $10,000,000	
Design Flow:	650,000 gal/day	
Design BOD_5:	1,085 lbs/day	
Two Oxidation Ditches	325,000 gal/day Each 542 lbs/day BOD_5 Each	
Flow Capacity Cost:	$15.38/gal/day	Up to $25/gal depending on technology
BOD_5 Capacity Cost:	$9,217/lb/day	~$15,000/lb/day
Per Capita Capacity Cost:(0.22/ppcd, 130gpcd)	$2,000/person	~$3,300/person
Nutrient Removal Costs: (Ammonia & Phosphorus)	Increases treatment cost	


Rigby Historical Growth
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Population
0.40%
0.66%
2.78%
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year


Rigby Growth Projections
10,500
9,500
8,500
7,500
6,500
5,500
4,500
3,500
Population
2008
2018
2028
2038
2048
Year
9,504
Δ +5,442
2.78%
(Jeff Co. 3.17%)
0.40%
(Jeff Co. 1.30%)
4,062
4,597
Δ +535

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RIGBY WWTP LOADING

BOD_5: Biochemical Oxygen Demand; a measure of wastewater strength

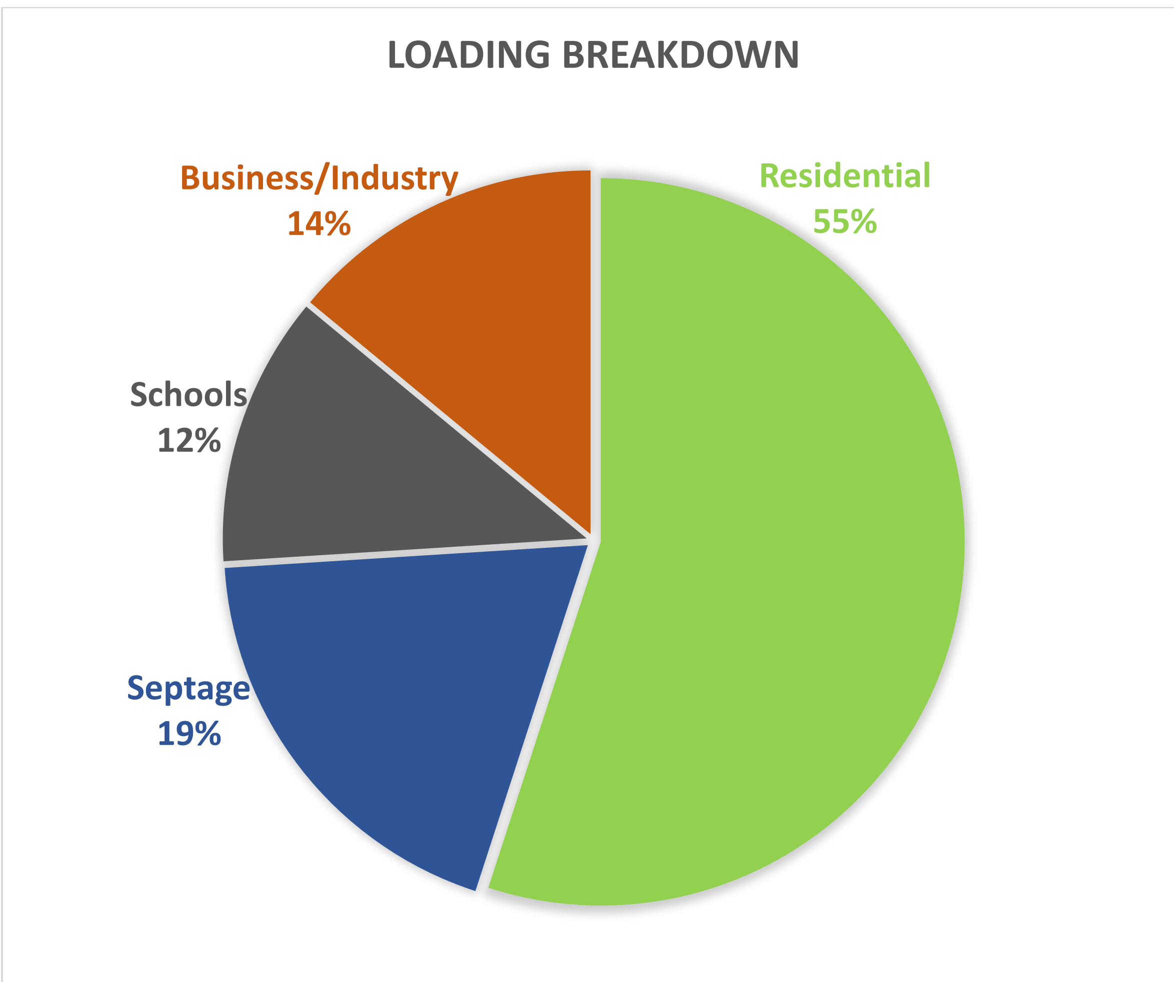
Ammonia: Nutrient that requires additional treatment

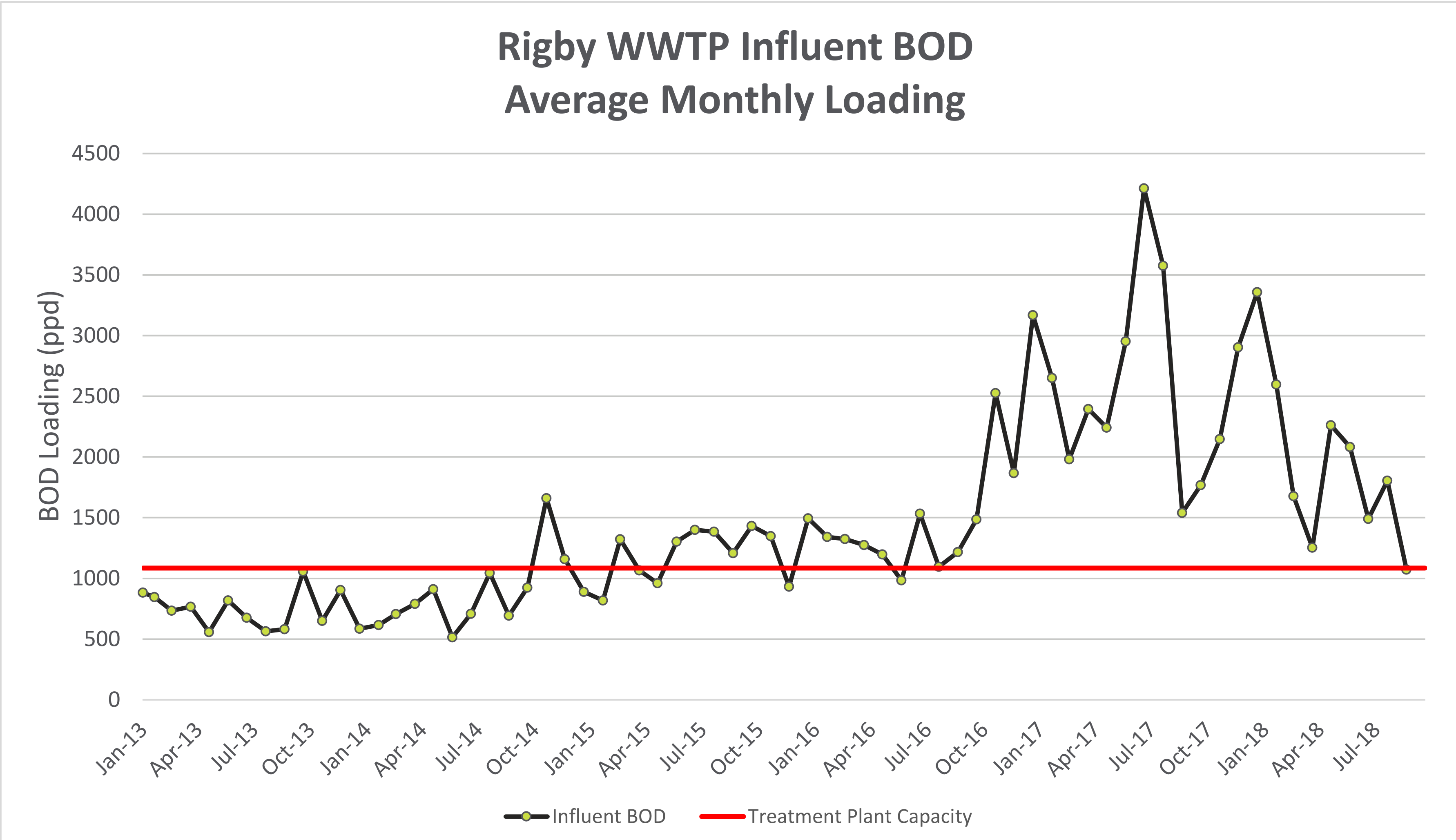
Per Capita BOD_5 Loading: 0.22 lbs/day where garbage grinders are used

0.17 lbs/day without garbage grinders

Rigby WWTP Capacity: 1,085 lbs/day BOD_5

Current Loading: ~ 1600 lbs/day BOD_5




Rigby WWTP Influent BOD
Average Monthly Loading
BOD Loading (ppd)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Apr-17
Jul-17
Oct-17
Jan-18
Apr-18
Jul-18
Influent BOD
Treatment Plant Capacity

TREATMENT COSTS		
	2008	Current
WWTP Costs:	~ $10,000,000	
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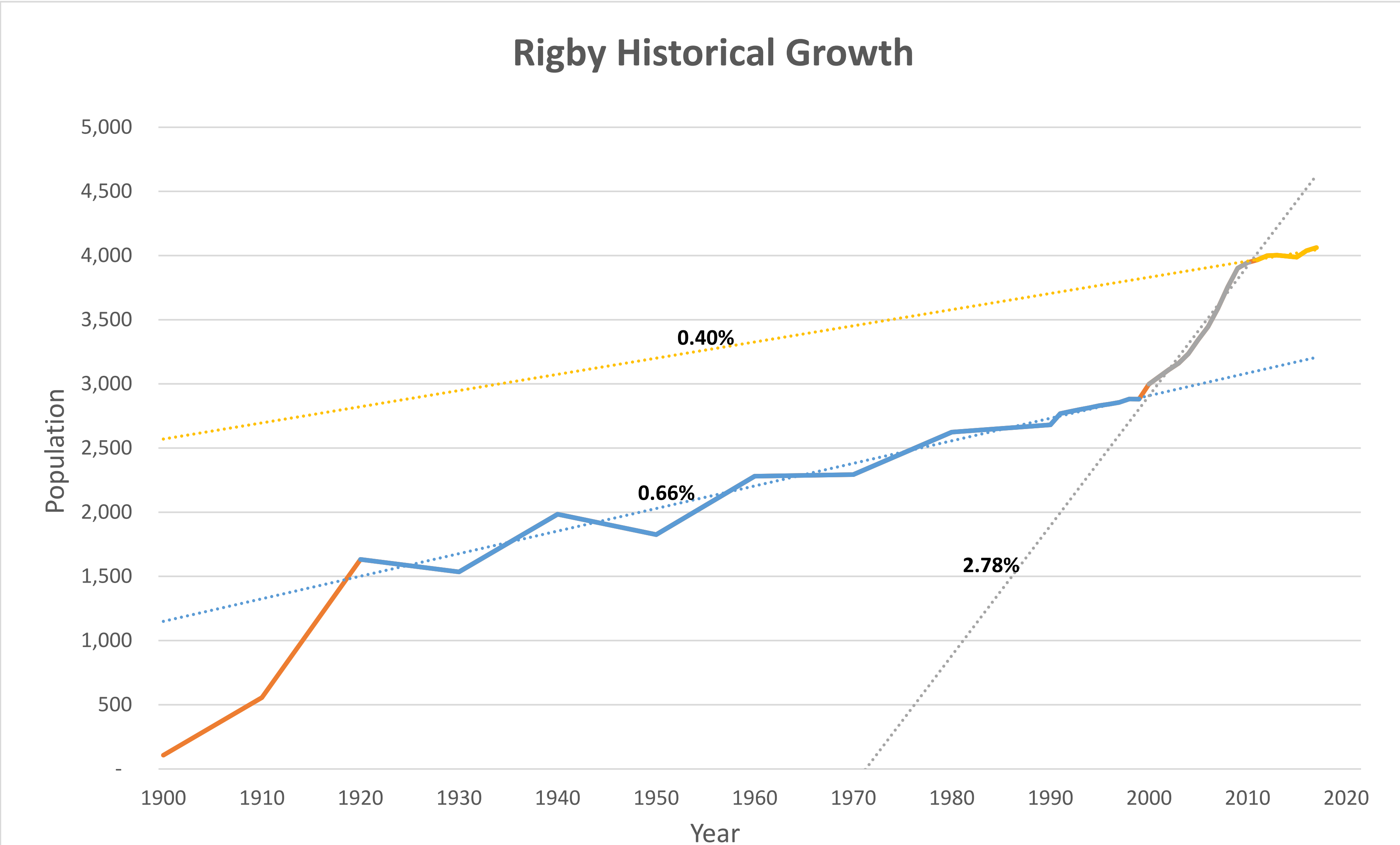
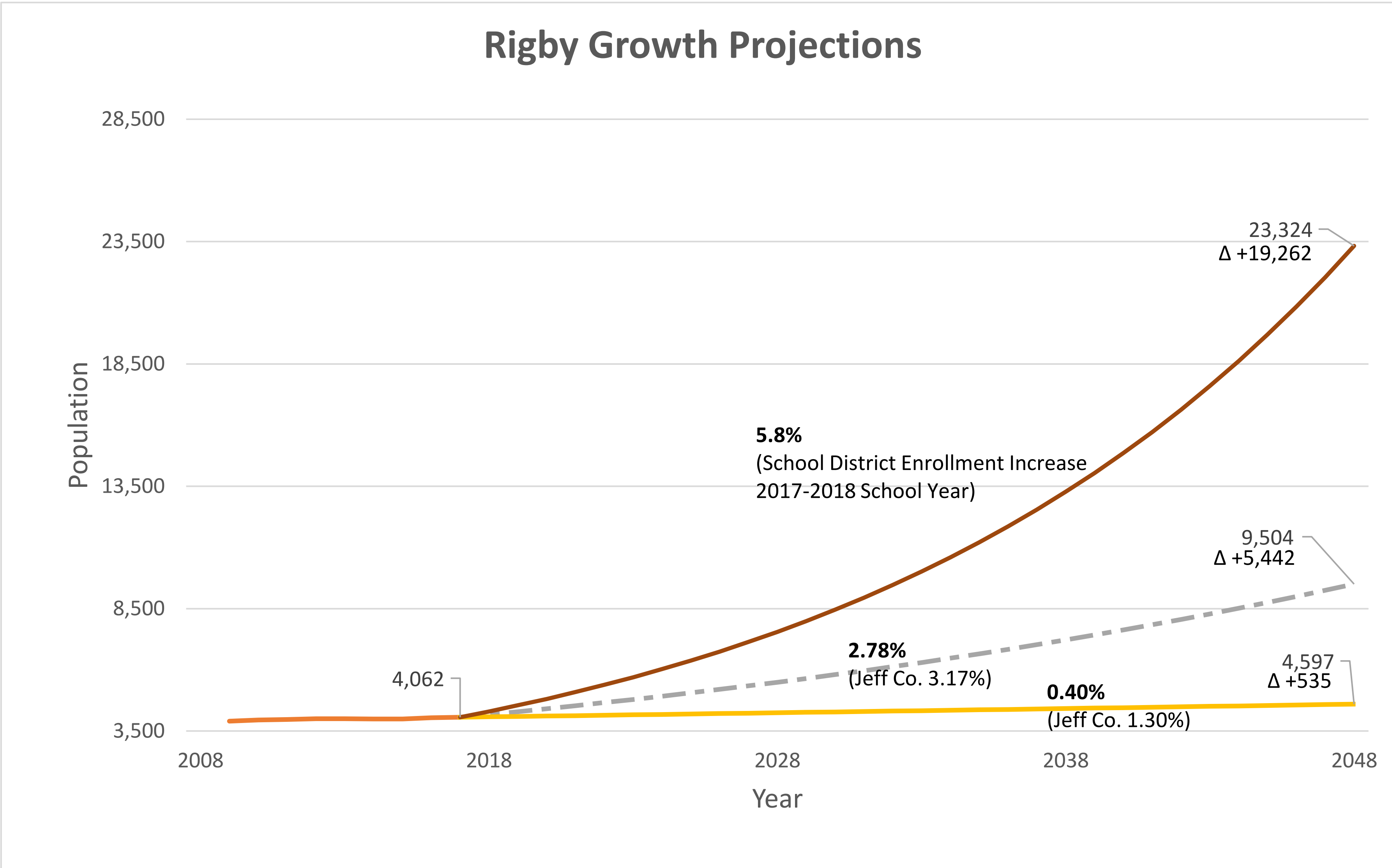
Nutrient Removal Costs: (Ammonia & Phosphorus)	Increases treatment cost	


Rigby Historical Growth
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Population
0.40%
0.66%
2.78%
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year


Rigby Growth Projections
28,500
23,500
18,500
13,500
8,500
3,500
Population
2008
2018
2028
2038
2048
Year
23,324
Δ +19,262
5.8%
(School District Enrollment Increase
2017-2018 School Year)
9,504
Δ +5,442
4,062
2.78%
(Jeff Co. 3.17%)
0.40%
(Jeff Co. 1.30%)
4,597
Δ +535

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CITY OF RIGBY
REVISED COUNCIL AGENDA
March 7, 2019
7:00 PM

1. Pledge and Prayer

2. Roll Call

3. Amend Agenda: Joint County/City Traffic Study

4. <u>Ordinance #2019-598</u> – Annexation J&L Legacy LLC. – 2nd Reading

5. <u>Ordinance #2019-599</u> – Creating Urban Renewal Agency- 1st Reading/Suspend rules – *Action Item*

6. <u>Resolution #191-2019</u> - Reestablishing Urban Renewal Board – *Action Item*
   a. URA – terms of office

7. <u>Public Works: Water Project</u>:
   a. Complete IDBG grant process for pump & well house – *Action Item* COMMIT ONLY TO WELL & WELLHOUSE
   **b. Approve engineer contract – pump & well house – *Action Item* CONTRACT BY NEXT COUNCIL MTG.
   c. Amending WWTP Study – Increase contract $6,000 – *Action Item* Approved 3:2
   d. Joint City/County Traffic Study – *Action Item*

8. <u>Planning & Zoning:</u>
   a. Nomination Kevin Cowley as P/Z commission member / Approval – *Action Item*
   b. City Code Revisions- *Action Items*
      1. Adding Title 10-2-1 – Development Agreements between city and developer
      2. Amending Title 11-15-18A-1: Delivery of Irrigation Water upon subdividing.
      3. Modifying Title 1-12-1 – Amending city code to include comprehensive plan to area of impact; amending definition referring to comprehensive plan map.

9. <u>Clerks' Report:</u>
   a. Jan 19 Financial Report –
   b. Jan 19 Journal Entries-
   c. Reschedule July 4, 2019 Council Meeting – *Action Item*

10. <u>Other Council Business</u>: (Items can be discussed but no action can be taken at this time.)

11. <u>Public Comment</u> (Time is limited to 3 minutes- per individual)

12. <u>Approval of Minutes</u>
    February 7, 2019 – *Action Item* Voice Roll
    February 21, 2019 – *Action Item*

13. <u>Review and Approval of Bills</u> – *Action Item* Roll Call

14. <u>2018 Audit Report –</u> Sheri Poulsen CPA –
    a. Motion to approve audit report – *Action Item*

15. <u>Adjourn</u>- *Action Item* Voice Roll

RIGBY WWTP LOADING

BOD_5: Biochemical Oxygen Demand; a measure of wastewater strength

Ammonia: Nutrient that requires additional treatment

Typical Per Capita BOD_5 Loading: 0.17-0.22 lbs/day are used

Rigby Per Capita BOD_5 Loading:

Year	Est. Pop.	Incoming lbs/day	PPCD
2013	4003	560	0.14
2014	3995	651	0.16
2015	3988	964	0.24
2016	4039	1,201	0.30
2017	4062	1,545	0.38
2018	4075	1,566	0.38

Rigby WWTP Capacity: 1,085 lbs/day BOD_5

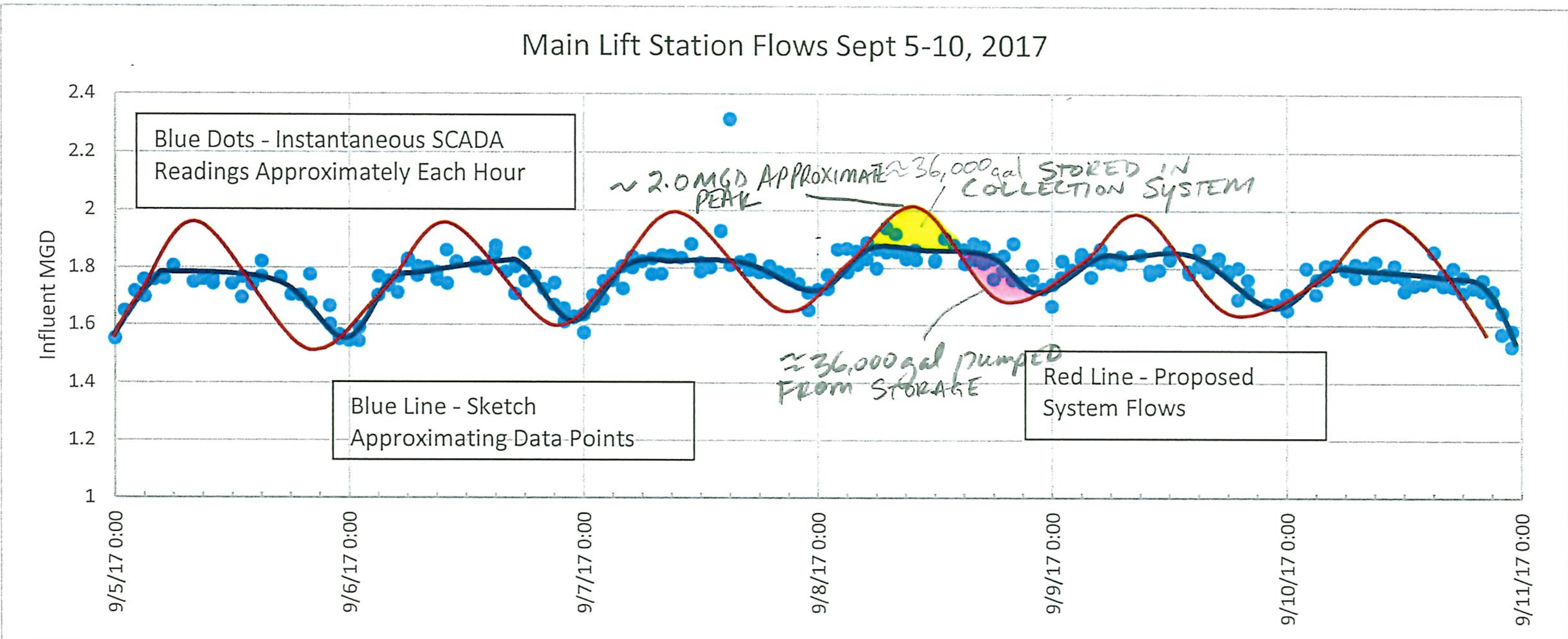
Septic Haulers: 200-300 lbs/day during heavy months

PPI: 20-30 lbs/day

Projected loading:

	2018	2040	
Population	4,075	8,476	3.25 % Growth
BOD_5 Loading (lbs/day)	1,550	2,430-3,220	

WWTP Flows: See Attached



The graph above shows influent flows through the main lift station to the WWTP during the peak pumping of 2017, which was a high sub-water year. As was reported by the plant operator, the lift station with all three pumps running maxes out at about 1.8 MGD; this is illustrated by the flatlining of the pumping at about this level of flow. Coupled with reports of surcharging in the lines upstream of the lift station under these conditions, this trend suggests that the lift station cannot keep up with peak flows and is essentially shaving off the natural influent peak, storing the excess in the lines and then releasing it over time. The red line is a sketch of what the natural influent flow diurnal pattern may look like. The area between the two curves represents volume that is being stored in the lines and then pumped over time and these two components should be approximately equal for each cycle.

The SCADA above shows September 8th having the highest pumping for this period. The area between the red peak and the blue peak on this day equates to a volume of roughly 36,000 gallons. While not a perfect match with the 26,000 gallons calculated for observed sewer surcharging, it is close enough to provide some confidence in the assumptions stated above and the conceptual red line sketch above. The purpose of the red line sketched onto the graph above is to illustrate conceptually what influent flows look like upstream of the lift station. If lift station pumps are replaced with higher capacity pumps (still on VFDs) then the influent flows into the WWTP should look similar to the red line shown. For this reason, a Peak Hour of 2.0 MGD for 2017 was selected for the study, rather than the 1.9 MGD flat-line or other higher outliers suggested by the SCADA. City staff should take note of actual measured Peak Hour readings once the lift station is upgraded.

Rigby WWFPS #218049-000

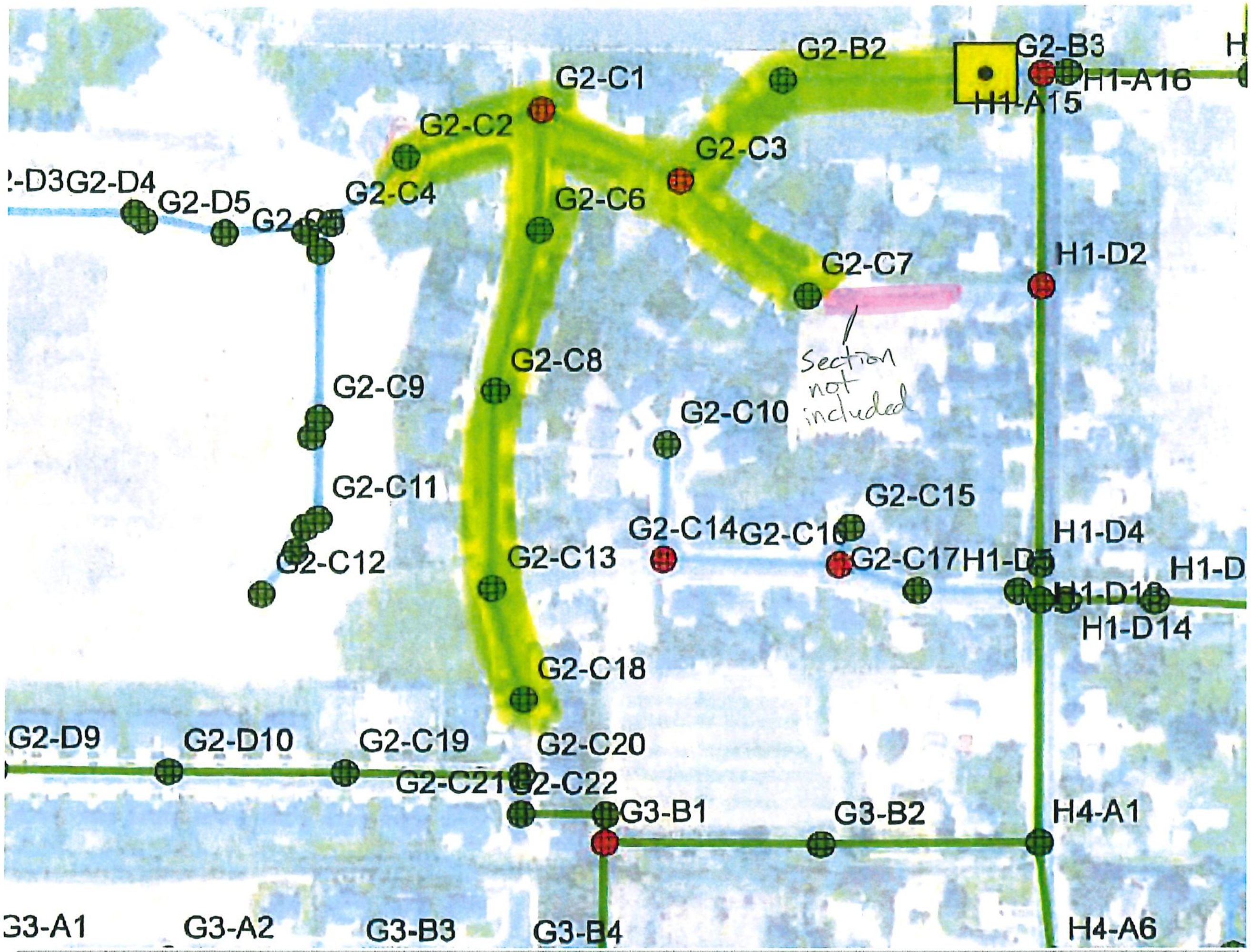
Collections Surcharge Upstream of Lift Station to WWTP

12/19/2018

Line/Manhole	MH Elevation	Water Depth	Length (ft)	Diamater (in)	# of Services	Volume (ft3)	Volume (gal)
Lift Station	-0.761	5.46		92.16	<-LS Floor SF	503.3	3764.9
B2-LS			380	18	0	671.5	5,023.6
MH: G2-B2	-0.305	5.00		48		62.9	470.5
C3-B2			254	18	3	454.1	3,397.1
MH: G2-C3	0	4.70		48		59.1	441.8
C7-C3			304	8	7	118.3	885.3
MH: G2-C7	1.216	3.48		48		43.8	327.5
C1-C3			278	18	2	494.8	3,701.3
MH: G2-C1	0.334	4.37		48		54.9	410.5
C2-C1			250	18	5	450.5	3,370.3
MH:G2-C2	0.634	4.07		48		51.1	382.3
C6-C1			217	8	2	79.2	592.8
MH: G2-C6	1.202	3.50		48		44.0	328.9
C8-C6			300	8	8	118.7	887.9
MH: G2-C8	2.402	2.30		48		28.9	216.1
C13-C8			356	8	6	134.7	1,008.0
MH: G2-C13	3.826	0.87		48		11.0	82.2
C18-C13			206	8	8	85.9	642.4
MH: G2-C18	4.650	0.05		48		0.6	4.7
Total Back Up Volume =						**3,467**	**25,938**

Scott Humpherys, Rigby WWTP Operator, reports that on years with high levels of sub-water he has seen the main lift station to the plant fall behind with all three pumps running. This is when influent flows exceed about 1.8 MGD. When he has pulled manhole lids to see the extent of the backup, he reports that manhole G2-C3 in the figure here has 3 ft of water in it and that the lines in Boulder are full (to the point where Cedar Meadows discharges into G2-C4) and that the line in 4th West backs up down to Carribou St., where the water level is just over the top of the pipe. Confirmed line sizes used here with Mitch Bradley, Rigby PW Director. He is unsure as to whether the line in Carribou connects to G2-C18 or goes south.
Actual manhole inverts were not known, so the elevations above are relative to manhole G2-C3 and based on the assumption that the lines between manholes were installed at the minimum slopes shown in the table. Assumptions for services are also shown.

Image from Figure A-2 in Rigby's August 2015 City-Wide Capital Improvements Plan



Lines shaded in yellow show the extents of surcharged sewer when the existing pumps start falling behind (beyond about 1.8 MGD) as reported by City Staff.

Assumed Grades	
Dia. (in)	Slope
4	2.00%
6	1.00%
8	0.40%
10	0.28%
12	0.22%
15	0.15%
18	0.12%

Services	
Dia (in)	4
Length (ft)	20

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City of Rigby
WWTP Facility Planning Study
Planning Meeting Minutes

April 11, 2019 @ 4:30 p.m.

ATTENDEES:

City of Rigby: **Mayor Jason Richardson, Scott Humpherys, Dave Swager**

Keller Associates: **Marvin Fielding, Eric Roundy, Jaden Jackson**

A. Planning Criteria

1. Population Projections:

Year	Population
2018	4,075
2020	4,344
2025	5,098
2030	5,981
2035	7,019
2040	8,236

Projections were discussed. With the new housing developments planned for the City and the possibility of future annexations, the projections are in line with the possible growth for the city.

2. Influent Flow

Historical Flows (MGD)

Parameter	2013	2014	2015	2016	2017	2018	Historical Average
AADF	0.36	0.40	0.49	0.45	0.67	0.64	0.50
ALF	0.32	0.30	0.36	0.38	0.40	0.39	0.36
AHF	0.44	0.58	0.79	0.58	1.29	1.17	0.81
MMF	0.47	0.71	0.93	0.68	1.45	1.48	0.95
PDF	0.60	0.90	1.10	0.80	1.80	1.80	1.17
PHF[1]					2.00		2.00

1 - Peak Hour Flow was calculated using SCADA data only for 2017 (see Section 1.4.6).

Historical Flows (gpcd)

Parameter	2013	2014	2015	2016	2017	2018	Historical Average
Population	*4,003*	*3,995*	*3,988*	*4,039*	*4,062*	*4,075*	
AADF	90	100	123	111	165	158	124
ALF	80	75	90	94	98	97	89
AHF	110	145	198	144	318	288	200
MMF	117	178	233	168	357	363	236
PDF	150	225	276	198	443	442	289
PHF[1]					492		492

1 - Peak Hour Flow was calculated using SCADA data only for 2017 (see Section 1.4.6).

Future Flows

Parameter	Planning Baseline[1] Flow (MGD)	Planning Baseline Peaking Factors[2]	Planning Criteria Projected Flow (MGD)[3]					2040 Unit Flow (gpcd)
Year	***2017-2018[4]***	**-**	***2020***	***2025***	***2030***	***2035***	***2040***	***2040***
Population	*4069 avg.*	-	*4,344*	*5,098*	*5,981*	*7,019*	*8,236*	*8,236*
AADF	0.66	1.00	0.68	0.76	0.85	0.95	1.07	130
ALF	0.40	0.60	0.41	0.46	0.51	0.58	0.65	79
AHF	1.23	1.88	1.28	1.42	1.59	1.79	2.01	245
MMF	1.48	2.26	1.54	1.71	1.91	2.15	2.42	294
PDF	1.80	2.74	1.88	2.08	2.32	2.61	2.94	357
PHF	2.00	3.05	2.08	2.31	2.58	2.90	3.27	397

1 - The average value for these two years was used for AADF, ALF, and AHF. The highest value was used for MMF, PDF, PHF.
2 - The peaking factor is equal to the parameter of interest divided by the AADF.
3 - Projected Flow = Baseline Flow + 100 gpcd/1,000,000 gal x Population Increase x Peaking Factor
4 - 2017 and 2018 were used as the baseline years due to a marked increase in flows these two years.

Parameter	Current/Baseline Planning Criteria (ppcd*)	Planning Criteria for New Growth (ppcd*)	Loading Projections (ppd)				
			2020	2025	2030	2035	2040
Projected Population			*4,344*	*5,098*	*5,981*	*7,019*	*8,236*
BOD5							
AADF	**0.455**	**0.260**	1,924	2,120	2,349	2,619	2,936
ALF	**0.475**	**0.260**	2,004	2,200	2,429	2,699	3,015
AHF	**0.428**	**0.260**	1,812	2,008	2,238	2,508	2,824
MMF	**0.824**	**0.260**	3,428	3,624	3,853	4,123	4,440
TSS							
AADF	**0.377**	**0.330**	1,623	1,872	2,164	2,506	2,908
ALF	**0.390**	**0.330**	1,679	1,928	2,219	2,562	2,963
AHF	**0.358**	**0.330**	1,546	1,795	2,086	2,429	2,830
MMF	**0.732**	**0.330**	3,073	3,322	3,614	3,956	4,358

(Red indicates numbers that need to be updated)

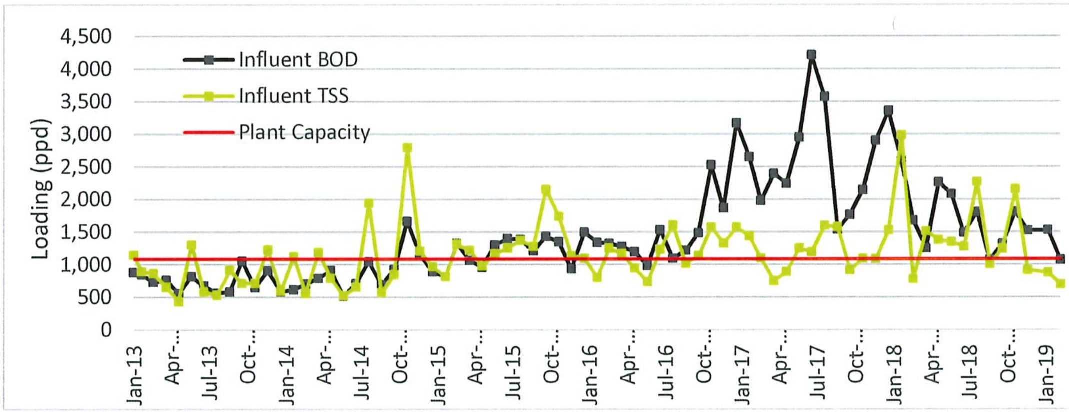
The City is concerned that the schools are contributing infiltration to the collection system that may be skewing the flow data. It would be beneficial to the City to check on the flows of the schools when they are not in session to verify if the schools are contributing to the I/I. This may account for some of the increase in flows, but would not account for the high amount of BOD_5 that is being processed at the plant.

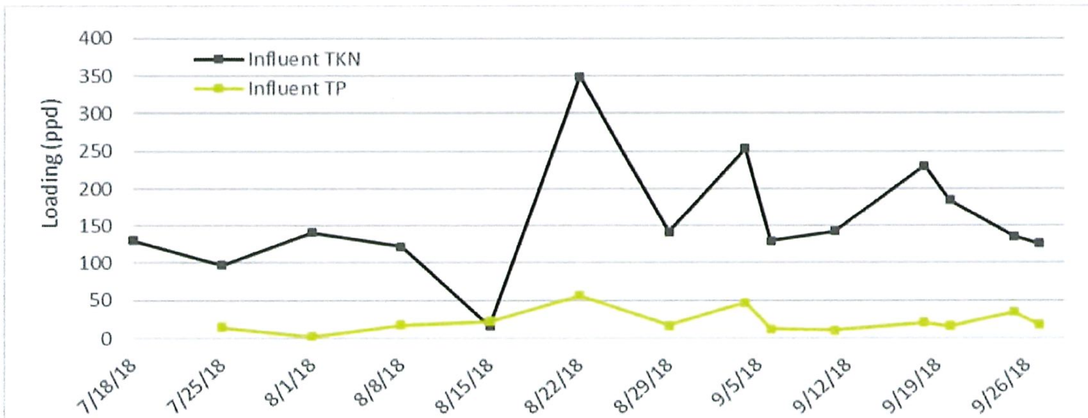
The City would like Keller to check with DEQ and inquire if there is a possibility of extending the compliance schedule in the City's IPDES permit for funding and construction.

Keller also noted that the above table is still accounting for BOD_5 from PPI before their plant was up and working properly. Keller will revise the MMF baselines for the Planning Criteria using data not influenced from PPI.

Existing flows and loadings are higher than expected for residential wastewater. The City is continuing their efforts to identify sources of I/I and excess BOD_5 loading. For purpose of the study, it was agreed that we would use the existing flows and loading to establish a baseline, but that new flows and loadings would be projected based on industry standard flows of 100 gpcd and loading of 0.26 ppcd for BOD_5.

3. Influent BOD, TSS, TKN, and TP





KELLER ASSOCIATES

4. Industrial Dischargers (now and future)

The flow and loading projections do not account for new industrial discharges. In the future, if industrial processors move into the area, the City would want all discharges to be pre-treated to domestic BOD_5 and TSS standards before the city accepts the discharge. Discharges would need to be monitored to determine allocation of plant capacity.

5. 20-Year Planning Criteria

Parameter	Unit	Influent	2040 Planning Effluent Requirements					
			Monthly Average Limit	Monthly Geometric Mean Limit	Weekly Average Limit	Weekly Maximum Limit	Daily Maximum Limit	Instantaneous Maximum Limit
Annual Average Daily Flow	MGD	1.07	–	–	–	–	–	–
Maximum Month Flow	MGD	2.42	–	–	–	–	–	–
Peak Day Flow	MGD	2.94	–	–	–	–	–	–
Peak Hour Flow	MGD	3.27	–	–	–	–	–	–
BOD_5	mg/L ppd % removal	220 4,440 –	30 648 85 (minimum)	– – –	45 972 –	– – –	– – –	– – –
TSS	mg/L ppd % removal	216 4,358 –	30 648 85 (minimum)	– – –	45 972 –	– – –	– – –	– – –
E. coli	#/100 mL	–	–	126	–	–	–	460
pH	SU	–	Instantaneous min. and max. between 6.5 and 9.0					
Ammonia as N May 1 - Sept. 30	mg/L ppd	– –	4.3 93	– –	– –	– –	12.6 272	– –
Ammonia as N Oct. 1 - Apr. 30	mg/L ppd	– –	0.65 14	– –	– –	– –	1.7 37	– –
Temperature	°C	8 - 19	–	–	–	–	–	–
TKN as N	mg/L ppd	25.6 517	– –	– –	– –	– –	– –	– –
TP as P	mg/L ppd	4.9 99	– –	– –	– –	– –	– –	– –

(Red indicates numbers that need to be updated)

Keller will adjust the table above with maximum month data from after PPI's WWTP was working properly.

B. Capacity and Deficiencies

1. Deficiencies and Recommendations in Chapter 2
    a) Flow-paced sampling

The city is concerned that the 4-20 milliamp signal is disrupted.

2. Capacity Summary

    a) Hydraulic Analysis
        1) Influent flume

Solids are settling in front of the flume. Increasing the elevation of the flume would scour the flume better.

    b) Treatment Analysis
        1) UV

The City is concerned how much longer the current UV system will be supported by the manufacturer. New units lift out of the channel for easier cleaning and maintenance.

C. ALTERNATIVES

1. Discharge:

    a) Regional treatment

Mayor Richardson will speak with Lewisville about creating a regional plant. Lewisville is not currently sewered. This option is likely not feasible.

    b) Land application

Due to the quantity of land that would be required for lagoons and application site this is likely not a feasible option for the city. We will estimate lagoon and application site sizing for the study.

    c) Continue surface water discharge

This is the option that the City would like to move forward with.

2. Ammonia:

    a) Oxidation ditches and clarifiers

Same as existing.

    b) Change operation (series, plug flow, etc.)

Diffusers could be added to the floor of the oxidation ditches or aerators could be added to increase oxygen. The City would like diffusers that are retrievable for ease of maintenance. Scott does not like the brush type aerators because they collect trash.

    c) Enhanced biological and clarification processes (IFAS, Nuvoda MOB, Evoqua BioMag, etc.)

The City is interested in more information about the Nuvoda MOB system. The IFAS and BioMag

may not be a good fit for the City. Nuvoda is willing to do a pilot test.

d) Primary filtration (best with anaerobic digesters to use the biogas)

e) Alternative treatment train

This would be like operating two separate treatment plants.

With the amount of construction and equipment the City decided not to further pursue Options d or e.

3. Solids Handling:

a) Similar belt filter press

The current system was designed so that it could be upgraded to a 1-meter belt press in the future.

b) Dedicated belt filter presses

c) Rotary drum thickener and screw press

We discussed dedicating the existing belt press for thickening solids and installing a screw press for dewatering solids.

4. Solids Treatment:

a) Maintain current system

b) Expand aerobic digestion

c) Anaerobic digestion

d) Composting

The city is not interested in pursuing Class A or Class B as long as the landfill is willing to accept the solids and the cost remains low. Current cost for biosolids disposal is less than $15,000/year.

Scott's priorities for the treatment plant:

1) **Address ammonia**
2) **Install cloth filters**
3) **Improve plant water system**

D. NEXT MEETING

1. Discuss alternative evaluation

A conference call will be scheduled in 2 weeks to discuss alternatives in more detail. An in-person meeting will follow 1-2 weeks after that, which will include costs for the alternatives. On May 16th Keller will present the cost and alternatives to the City Council.

2. Rough draft Capital Improvement Plan phasing

On June 6th Keller will present a rough draft of the CIP to the City at council meeting.

Our goal is to have information in June in order to prepare for a bond election in November. The City's ammonia schedule of compliance given in their IPDES permit requires the City to obtain funding for WWTP improvements by June 1, 2020, and complete construction of the WWTP improvements by August 1, 2023. We anticipate 18 months for construction.

E. ACTION ITEMS

Keller will correct the MMF baselines.
Keller will ask Trojan how much longer will they support the UV3000?
Keller will check with DEQ if they would allow a compliance schedule extension.
City will check with Lewisville about the possibility of a regional plant.

KELLER ASSOCIATES

Revised Tables

Parameter	Current/Baseline Planning Criteria (ppcd*)	Planning Criteria for New Growth (ppcd*)	Loading Projections (ppd)				
			2020	2025	2030	2035	2040
Projected Population			*4,344*	*5,098*	*5,981*	*7,019*	*8,236*
BOD_5							
AADF	**0.455**	**0.260**	1,924	2,120	2,349	2,619	2,936
ALF	**0.475**	**0.260**	2,004	2,200	2,429	2,699	3,015
AHF	**0.428**	**0.260**	1,812	2,008	2,238	2,508	2,824
MMF	**0.511**	**0.260**	2,153	2,349	2,579	2,848	3,165
TSS							
AADF	**0.377**	**0.330**	1,623	1,872	2,164	2,506	2,908
ALF	**0.390**	**0.330**	1,679	1,928	2,219	2,562	2,963
AHF	**0.358**	**0.330**	1,546	1,795	2,086	2,429	2,830
MMF	**0.557**	**0.330**	2,360	2,609	2,900	3,243	3,645

Parameter	Unit	Influent	2040 Planning Effluent Requirements					
			Monthly Average Limit	Monthly Geometric Mean Limit	Weekly Average Limit	Weekly Maximum Limit	Daily Maximum Limit	Instantaneous Maximum Limit
Annual Average Daily Flow	MGD	1.07	–	–	–	–	–	–
Maximum Month Flow	MGD	2.42	–	–	–	–	–	–
Peak Day Flow	MGD	2.94	–	–	–	–	–	–
Peak Hour Flow	MGD	3.27	–	–	–	–	–	–
BOD_5	mg/L	103	30	–	45	–	–	–
	ppd	2,083	648	–	972	–	–	–
	% removal	–	85 (minimum)	–	–	–	–	–
TSS	mg/L	113	30	–	45	–	–	–
	ppd	2,271	648	–	972	–	–	–
	% removal	–	85 (minimum)	–	–	–	–	–
E. coli	#/100 mL	–	–	126	–	–	–	460
pH	SU	–	Instantaneous min. and max. between 6.5 and 9.0					
Ammonia as N May 1 - Sept. 30	mg/L	–	4.3	–	–	–	12.6	–
	ppd	–	93	–	–	–	272	–
Ammonia as N Oct. 1 - Apr. 30	mg/L	–	0.65	–	–	–	1.7	–
	ppd	–	14	–	–	–	37	–
Temperature	°C	8 - 19	–	–	–	–	–	–
TKN as N	mg/L	25.6	–	–	–	–	–	–
	ppd	517	–	–	–	–	–	–
TP as P	mg/L	4.9	–	–	–	–	–	–
	ppd	99	–	–	–	–	–	–

Meeting Minutes – WWTP Alternatives **April 30, 2019 4:30 P.M.**

Project:	WWTP Facility Planning Study	**KA Proj #:**	218049-000
Attendees:	Mayor Richardson – City	**Notes By:**	Jaden Jackson
	Dave Swager – City		
	Scott Humpherys – City		
	Jaden Jackson – Keller	**Location:**	Rigby City Building
	Jim Mullen – Keller		
Phone-in	Eric Roundy – Keller	**Next Meeting Date:**	***May 3, 2019***
Phone-in	Marvin Fielding – Keller		with Menan and Lewisville

Discharge Alternatives

1) Regional Plant

This option will be discussed more at length in the meeting with the mayors of Menan and Lewisville scheduled for May 3, 2019 at 4:15 P.M.

2) Land Application

Option does not seem feasible for the City, but it will be looked at for cost comparison in the study.
Criteria to be used:

A) $60,000 per acre for land acquisition due to the area being in prime location.
B) $25.00/hour for cost of an additional employee
C) $0.06/kW-hr for energy consumption
D) Cost for disposal of solid waste would be $10,000 to $15,000per year.
E) Land would need to be within a 2-mile radius of the plant.

3) Continued Discharge

This will need to factor in the new ammonia limit and the cost for upgrades to meet the limit. Future limits could change and become more restrictive. The Dry Bed is not currently an impaired waterway and DEQ does not anticipate a future Total Maximum Daily Load (TMDL) for the Dry Bed which, if implemented, could result in additional permit limits.

Ammonia Removal Alternatives

1) Similar Oxidation Ditch Configuration

Similar oxidation ditches would require more aeration and additional secondary clarifiers in order to meet ammonia limits.

2) Different Oxidation Ditch Configuration

A different ditch configuration or aeration could be used. Based on the discussion, this alternative will look at the same ditch configuration with separate mixers and retrievable diffusers for ease of maintenance.

3) Enhanced Oxidation Ditches

This alternative would enhance the treatment in the existing ditches through increasing the number of microorganisms. Options for this alternative included IFAS, BioMag, MBR, etc. For this alternative, Nuvoda MOB was selected for the detailed alternative evaluation. Nuvoda uses Kenaf, a fibrous plant, to create more surface area for the bacteria to attach to. This would allow the use of the existing oxidation ditches and clarifiers. Screens would need to be added to recover the Kenaf from the waste sludge and send it back to the headworks with the RAS. It is assumed that 2% of the Kenaf will need replaced yearly.

Eric has contact information for 2 operators that are currently using this product. The City could call them to discuss how the product is working.

Jim also said that Keller could evaluate IFAS as well.

Disinfection Alternatives

Chemical disinfection was briefly discussed (e.g. chlorine). The City would like to stay with UV due to ease of use and familiarity. The City does not want to start using chlorine.

1) Horizontal UV System

Trojan has confirmed that the UV3000 is being phased out and that spare parts will only be available for 5-7 more years. However, a similar horizontal system could be installed.

2) Inclined Vertical UV System

The UVSIGNA by Trojan, or similar product, is another alternative. This type of system is on an incline and hinges out of the ditch to allow for easy cleaning and repair.

Thickening and Dewatering Alternatives

1) Combination Units

One alternative that will be evaluated is a second gravity belt thickener/belt filter press to provide the needed capacity and redundancy.

2) Separate Units

The City said they would prefer to keep the existing gravity belt thickener. Various options were discussed for dewatering including:

- Screw Press
- Belt Filter Press
- Centrifuge

The City preferred a screw press for dewatering. The screw press would allow them to dewater automatically as needed. This alternative would allow them to use the existing gravity belt thickener and the screw press independently for optimum results.

Other

It was discussed that the existing Parkson cloth filters need to be replaced, as originally designed, to allow for better screening for the utility water system pumps. Aqua-Aerobic filters were originally designed to be installed at the WWTP and have a good history of performance.

The utility water system itself needs an upgrade so the plant has enough flow to keep the plant cleaned and running properly. City staff believes that with filters in operation, the utility water pumps should stay clean and not have an issue.

Phasing and modular expansion is very important. The capital improvement plan will be structured accordingly.

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Meeting Agenda **May 3, 2019 4:15 p.m.**

Project:	Rigby WWFPS	**KA Proj #:**	218049
Invitees:	Mayor Jason Richardson, Rigby	**Notes By:**	Marvin Fielding
	Mayor Tad Haight, Menan		
	Mayor George Judd, Lewisville		
	Scott Humpherys, Rigby	**Location:**	Rigby City Building
	Dave Swager, Rigby		
	Matt Walker, Menan		
	Jim Mullen, Keller		
	Marvin Fielding, Keller		

The purpose of this meeting is to get a Wastewater Facilities status update from each community and learn whether there is interest in exploring a regional wastewater project.

1. **Introductions**

2. **Background**
   a. 2006 Jefferson Regional Wastewater Study
   This study evaluated a joint wastewater project between the cities of Rigby, Menan, Lewisville, Roberts, and Idaho Fresh-Pak. When Idaho Fresh-Pak decided not to participate, the project was deemed not feasible for the other entities. Roberts constructed a small mechanical wastewater treatment plant, Menan expanded their wastewater reuse system, and Rigby constructed a mechanical wastewater treatment plant. Lewisville remained unsewered.

   b. Wastewater Facilities Status
      i. Rigby: Is seeing significant growth. Rigby received a new NPDES permit with strict ammonia limits that they cannot meet without improvements at their wastewater treatment plant. Rigby is currently completing a wastewater facilities planning study to evaluate alternatives and costs for meeting their permit limits.
      ii. Menan: Recently purchased additional land for application of treated wastewater. Menan is currently operating at about 50 percent capacity according to their public works director.
      iii. Lewisville: No central sewer is impacting the value of property in Lewisville. Mayor feels properties are deteriorating. Septic systems that fail on parcels less than one acre can't be replaced. This affects the value of the property. A central sewer system would allow parcels to subdivide to 1/3 acre lots. Lewisville hasn't seen growth in 18 years.

3. **Wastewater Facilities Needs:**
   a. Rigby: Needs to address ammonia and needs capacity to accommodate new connections.
   b. Menan: Could free up more capacity by addressing infiltration and inflow (I/I). Wastewater flows vary from 50,000 gallons per day to 150,000 gallons per day with I/I. The water table is only 6 feet down, but the sewer is 18-19 feet deep in places. Menan needs a headworks to remove non-biodegradeable material prior to the wastewater lagoons.
   c. Lewisville: Needs central sewer.

4. **Wastewater Facilities Opportunities:**
   a. Rigby: Current sewer rates are $78 per month. Current population is about 4,060. Rigby is open to partnering with neighboring communities in a regional wastewater project.
   b. Menan: Current sewer rates are $40 per month. The City has no debt, is currently seeing some growth. Menan is considering retrofitting their pivots with drag tubes to reduce buffer requirements and increase usable land for wastewater application. Current population is about 800. Menan is open to partnering with Lewisville for wastewater treatment and disposal.
   c. Lewisville: Current population is about 470. Will consider next steps for central sewer at their next council meeting.

5. **Action Items:**

   Menan – discuss concept of a joint sewer project in next city council meeting
   Lewisville – discuss next steps for central sewer in next city council meeting

City of Rigby
WWTP Facility Planning Study
Planning Meeting Minutes
May 9, 2019 @ 4:30 p.m.

ATTENDEES:

City of Rigby: **Mayor Jason Richardson, Scott Humpherys, Dave Swager**

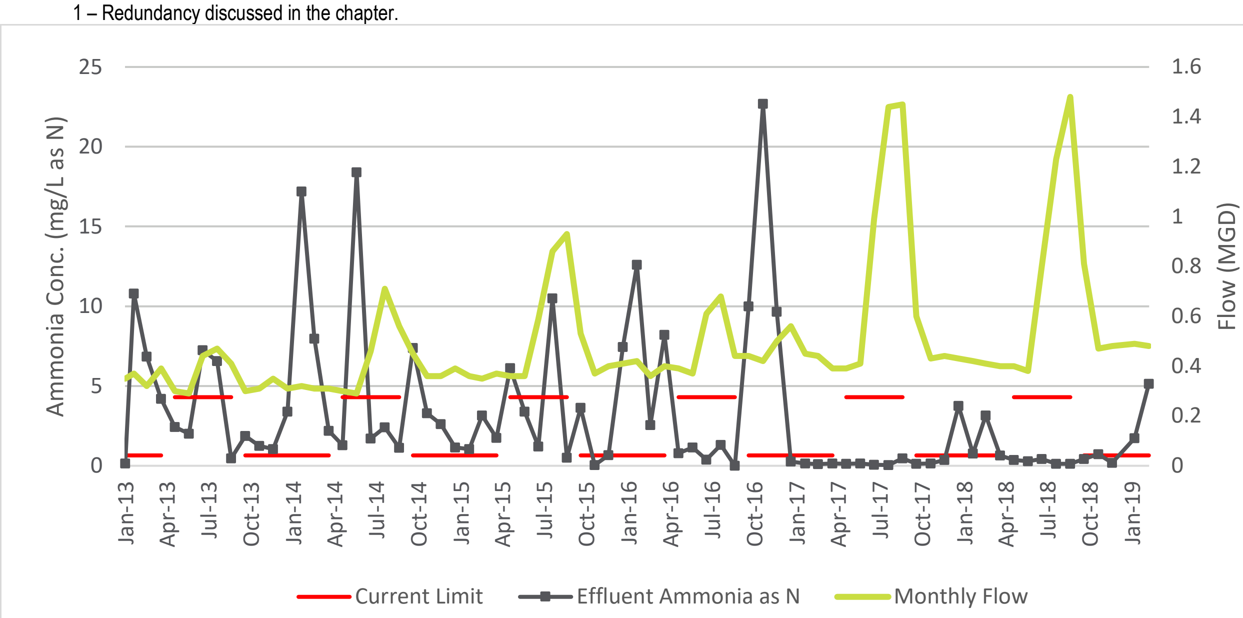
Keller Associates: **Marvin Fielding, Eric Roundy**

A. WWTP Capacity (Chapter 3)

1. Capacity Summary based on ammonia limits and flows

Component	Governing Flow	Capacity Provided[1]	Current Capacity Needed	2040 Capacity Needed	Limiting Factor
Influent Screens	PHF	3.0	2.00	3.27	Capacity
Grit Removal	PHF	2.5	2.00	3.27	Capacity
Oxidation Ditches	MMF	0.65	1.48	2.42	Basin Volume
Secondary Clarifiers	MMF	1.4	1.48	2.42	Solids Loading and Redundancy
UV Disinfection	PHF	1.3	2.00	3.27	Capacity and Redundancy

1 – Redundancy discussed in the chapter.



B. Wastewater Alternatives (Chapter 4)

1. Discharge (Regional, Ag Land App/Winter Storage, Continued Dry Bed Creek Discharge)

   Due to high capital cost for land application, the City is likely to continue discharge to the Dry Bed Creek.

2. Ammonia Treatment (Similar Oxidation Ditches, New Diffused Aeration, Nuvoda MOB)

   Keller to revise Table 4-6 to provide a cost for IFAS (another enhance oxidation technology alternative) and another alternative where the existing oxidation ditches keep the surface aerators, but the new oxidation ditches have fine bubble diffusers and independent mixers. Keller to also provide City with Kruger IFAS reference list. Keller to confirm number of clarifiers needed with IFAS alternative.

3. Disinfection (Horizontal UV, Inclined Vertical UV)

   Keller to provide City with weight of horizontal UV module.

4. Solids Thickening and Dewatering (Use Existing for Thickening and Add Screw Press for Dewatering, Use Existing and Add Second Combination Unit for Capacity and Redundancy, Replace Existing with New Rotary Drum Thickener and Screw Press)

   The City is likely to select adding a screw press for dewatering and use the existing unit for thickening.

C. ROUGH DRAFT CAPITAL IMPROVEMENT PLAN

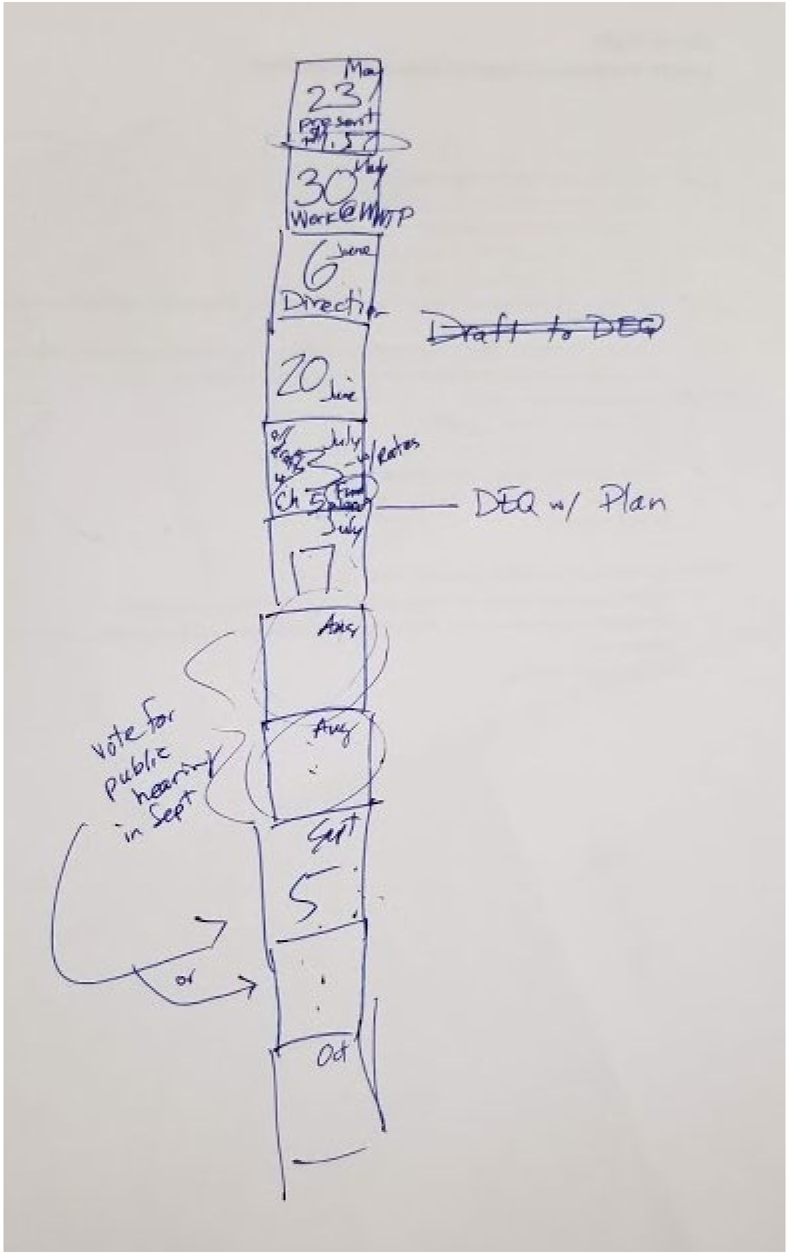
1. Draft Capital Improvement Plan phasing – **See City comments attached**

D. NEXT MEETINGS

1. Discuss alternative evaluation with City Council – **Plan to discuss in May 23 City Council meeting and May 30 Work Session at WWTP**

2. Capital Improvement Plan (Chapter 5) – **Keller to present this draft chapter at July 3 City Council meeting**

3. **Following approval by City Council, the plan will be finalized and sent to DEQ for approval. Once plan is approved, an open meeting will be scheduled for public comment (tentatively early September)**



May
23
present
May
30
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June
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Direction
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20
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3
w/ Rates
Ch 5
DEQ w/ Plan
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vote for public hearing in Sept
Sept
5
or
Oct

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City of Rigby
WWTP Facility Planning Study
City Council Progress Report
May 16, 2019

A. Reference

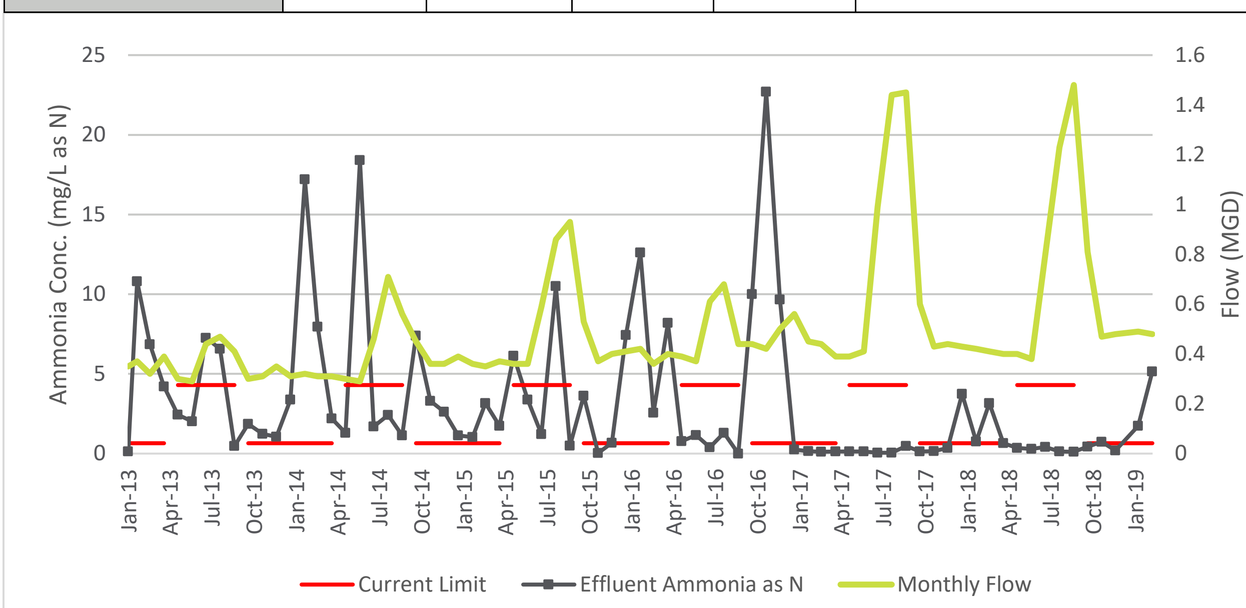
	2018 Baseline	2040 Projected
Population	4,075	8,236
BOD_5 (lbs/day)	1,200	3,165

B. WWTP Capacity (Chapter 3)

1. Capacity Summary based on ammonia limits and flows

Component	Governing Flow	Capacity Provided[1]	Current Capacity Needed	2040 Capacity Needed	Limiting Factor
Influent Screens	PHF	3.0	2.00	3.27	Capacity
Grit Removal	PHF	2.5	2.00	3.27	Capacity
Oxidation Ditches	MMF	0.65	1.48	2.42	Basin Volume
Secondary Clarifiers	MMF	1.4	1.48	2.42	Solids Loading and Redundancy
UV Disinfection	PHF	1.3	2.00	3.27	Capacity and Redundancy

1 – Redundancy discussed in the chapter.



C. Alternatives

1. Reuse
2. Ammonia
3. Disinfection
4. Solids Thickening/Dewatering

Anticipated Cost Range for Priority 1 Improvements for ammonia alternatives w/phasing

Description	Alt. 4.2.1 – Similar Oxidation Ditches	Alt. 4.2.2 – New Oxidation Ditch Configuration	Alt. 4.2.3 – New Oxidation Ditch Configuration; Don't Change Existing	Alt. 4.2.4.1 – Enhanced Oxidation Ditches - Nuvoda MOB	Alt. 4.2.4.2 – Enhanced Oxidation Ditches - IFAS
Priority 1 - Phase I Project Cost Range	$12-14 M	$16-18 M	$14-16 M	$12-14 M	$14-17 M
Priority 1 - Phase 2 Project Cost Range	$4-5 M	$4-5 M	$4-5 M	-	-
Total Estimated Priority 1 Project Cost Range	$16-19 M	$20-23 M	$18-21 M	$12-14 M	$14-17 M

D. Next Steps

1. IFAS and Disc Filter Plant tours
2. WWTP Work Session
3. Preliminary Selection of Alternatives
4. Finalize Capital Improvement Plan
5. Draft Study

CITY OF RIGBY
REVISED COUNCIL AGENDA
July 3, 2019
7:00 PM

1. Pledge and Prayer

2. Roll Call

3. Public Hearing:
   Amending Code – Delete R-2 (Apartments) from Commercial Zone
   - Council Discussion/Decision

4. Public Works:
   a. Reimbursement Agreement – LDS Church/City Water Line 4000 East – *Action Item*
   b. 2nd Reading Joint Agreement County/City Area of Impact – Ordinance #2019-605– *Action item*
   c. Pediatric Center Right of Way Upgrade MOU – Stockham/Farnsworth Interchange – *Action Item* $11,000
   d. Seal Coat South Park Walk Path – *Action Item* fill 35 cracks, 2 patches; 39,780 SF. $7956 ~$.20 ft $6,177 - ~~$~~ .15 ft
   e. Proposed Ordinance – Dumping trash/grass in canals – *Action Item*
   f. Wastewater Treatment Plant Study – Recommendations – *Action Item*

5. Planning & Zoning:
   a. Amending Code – Adding Adult Business Restrictions – *Action Item*
      - Motion to Proceed with Ordinance - Publish Notice in Summary Form – Set hearing date

6. Clerks:
   a. May 2019 Financial / Journal Entries – *Informational Item*
   b. 2019 Audit Engagement Letter – *Action Item*

7. Legal:
   ~~a. Review of MOU – special use permit – Harwood Elem. – *Action Item*~~
   b. 2nd Reading Ordinance #2019-606 - Amending Code – Delete R-2 (Apartments) from Commercial Zone –*Action Item*
   c. Amending Ordinance #2019-598 – Exempting Lot 1 Block 1, Dansie Acres – *Action Item*
   d. Final Amended Plat – Rigby Town Square #5 – 2nd Amendment – Resolution #193-2019 - *Action Item*

8. Other Council Business:
   a. Fiber Optics Options City Coverage –
   b. Doug Farnsworth/Fox Invest. -

9. Public Comment (Time is limited to 3 minutes- per individual)

10. Approval of Minutes
    June 20, 2019 — Voice Roll

11. Review and Approval of Bills – *Action Item* — Roll Call

12. Executive Session:
    Per Idaho Code: 74-206(b) – To consider the evaluation, dismissal or disciplining of, or to hear complaints or charges brought against, a public officer, employee, staff member or individual agent, or public school student. – *Action Item* — Roll Call

    Council Discussion/Decision – *Action Item*.

13. Adjourn- *Action Item* — Voice Roll

Presented to City Council 7/3/19

City of Rigby Wastewater Facilities Planning Study
Capital Improvement Plan

ID#	Item	Primary Purpose(s)	IFAS Alternative Total Estimated Cost (2019)	Similar Oxidation Ditch Total Estimated Cost (2019)
Priority 1 Improvements (2020-2025)				
1.1	Influent Channel Improvements	Operations, Permit Compliance	$ 124,000	$ 124,000
1.2	Critical Spares and Lab Equipment	Operations, Redundancy	$ 39,000	$ 39,000
1.3	Dewatering Improvements	Capacity, Operations	$ 2,370,000	$ 2,370,000
1.4	Biosolids Management Plan	Operations, Permit Compliance	$ 25,000	$ 25,000
1.5	Ammonia Removal Improvements	Capacity, Permit Compliance	$ 9,750,000	$ 12,030,000
1.6	UV Improvements	Cost Savings, Permit Compliance	$ 1,620,000	$ 1,620,000
1.7	Tertiary Filters	Operations	$ 950,000	$ 950,000
1.8	Plant Water Pumps	Capacity, Operations	$ 74,000	$ 74,000
1.9	Electrical Upgrades	Operations, Permit Compliance	$ 434,000	$ 434,000
1.10	SCADA Upgrades	Operations	$ 310,000	$ 310,000
	Total Priority 1 Improvements (rounded)		**$ 15,696,000**	**$ 17,976,000**
Priority 2 Improvements (2030-2040)				
2.1	Headworks Improvements	Capacity, Operations	$ 2,900,000	$ 2,900,000
2.2	Maintenance Building	Operations	$ 840,000	$ 840,000
	Total Priority 2 Improvements (rounded)		**$ 3,740,000**	**$ 3,740,000**
TOTAL WASTEWATER PLANT IMPROVEMENTS COSTS (rounded)			**$ 19,436,000**	**$ 21,716,000**

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2019 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

Can IFAS work with Rigby's cold?

City of Rigby
Wastewater Facilities Planning Study
Priority 1 CIP (IFAS)

ID#	Item	Cost	Opinion of Probable Costs (2019 Dollars)				
			2020	2021	2022	2023	2024
Priority 1 Improvements (2020-2025)							
1.1	Influent Channel Improvements	$ 124,000	Not part of project				
1.2	Critical Spares and Lab Equipment	$ 39,000	Not part of project				
1.3	Dewatering Improvements	$ 2,370,000	$ 80,000	$ 290,000	$ 2,000,000		
1.4	Biosolids Management Plan	$ 25,000			$ 25,000		
1.5	Ammonia Removal Improvements	$ 9,750,000	$ 300,000	$ 1,170,000	$ 4,140,000	$ 4,140,000	
1.6	UV Improvements	$ 1,620,000	$ 50,000	$ 200,000	$ 685,000	$ 685,000	
1.7	Tertiary Filters	$ 950,000		$ 150,000	$ 800,000		
1.8	Plant Water Pumps	$ 74,000		$ 12,000	$ 62,000		
1.9	Electrical Upgrades	$ 434,000	$ 20,000	$ 60,000	$ 177,000	$ 177,000	
1.10	SCADA Upgrades	$ 310,000	$ 10,000	$ 40,000	$ 130,000	$ 130,000	
Total (rounded)		**$ 15,696,000**	**$ 460,000**	**$ 1,922,000**	**$ 8,019,000**	**$ 5,132,000**	**$ -**

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2019 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

City of Rigby
Wastewater Facilities Planning Study
Priority 1 CIP (Similar Oxidation Ditch)

ID#	Item	Cost	Opinion of Probable Costs (2019 Dollars)				
			2020	2021	2022	2023	2024
Priority 1 Improvements (2020-2025)							
1.1	Influent Channel Improvements	$ 124,000	Not part of project				
1.2	Critical Spares and Lab Equipment	$ 39,000	Not part of project				
1.3	Dewatering Improvements	$ 2,370,000	$ 80,000	$ 290,000	$ 2,000,000		
1.4	Biosolids Management Plan	$ 25,000			$ 25,000		
1.5	Ammonia Removal Improvements	$ 12,030,000	$ 370,000	$ 1,450,000	$ 5,105,000	$ 5,105,000	
1.6	UV Improvements	$ 1,620,000	$ 50,000	$ 200,000	$ 685,000	$ 685,000	
1.7	Tertiary Filters	$ 950,000		$ 150,000	$ 800,000		
1.8	Plant Water Pumps	$ 74,000		$ 12,000	$ 62,000		
1.9	Electrical Upgrades	$ 434,000	$ 20,000	$ 60,000	$ 177,000	$ 177,000	
1.10	SCADA Upgrades	$ 310,000	$ 10,000	$ 40,000	$ 130,000	$ 130,000	
	Total (rounded)	**$ 17,976,000**	**$ 530,000**	**$ 2,202,000**	**$ 8,984,000**	**$ 6,097,000**	**$ -**

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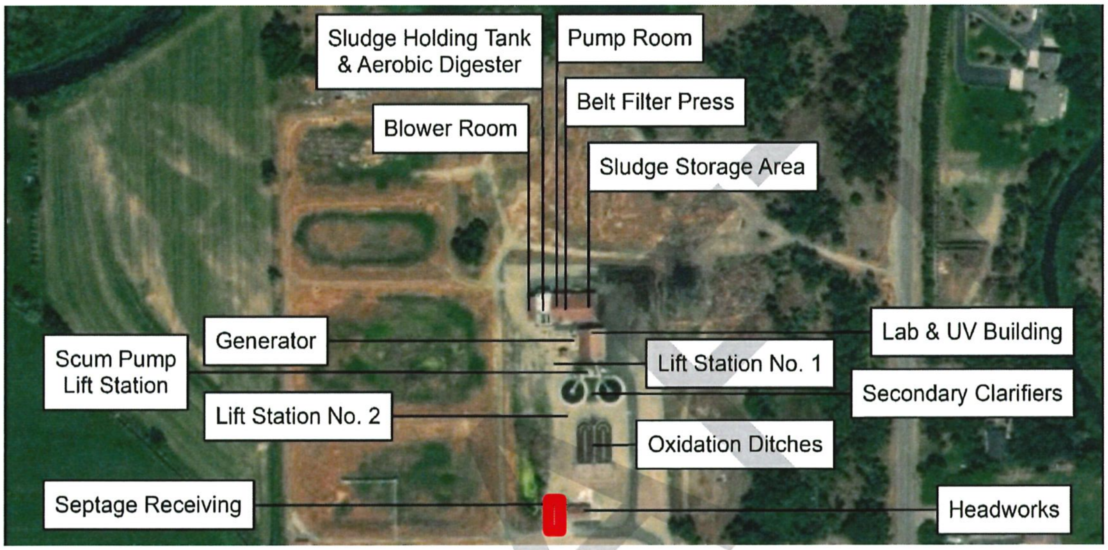
Wastewater Facilities Project: **Influent Channel Improvements**
Project Identifier: **1.1**

Objective: Reconstruct the influent channel to reduce solids deposition near the flume to improve flow measurement. Also replace the flume so that it is capable of measuring the influent flow through the entire planning period.

Project Location: Headworks



Item		Cost (2019)
Demolition	$	10,000
Concrete and Parshall Flume	$	50,000
General Conditions (10%)	$	6,000
Contingency (30%)	$	20,000
Contractor OH&P (15%)	$	13,000
Total Construction Cost	**$**	**99,000**
Soft Costs (Engineering & CMS; 25%)	$	25,000
Total Project Cost	**$**	**124,000**

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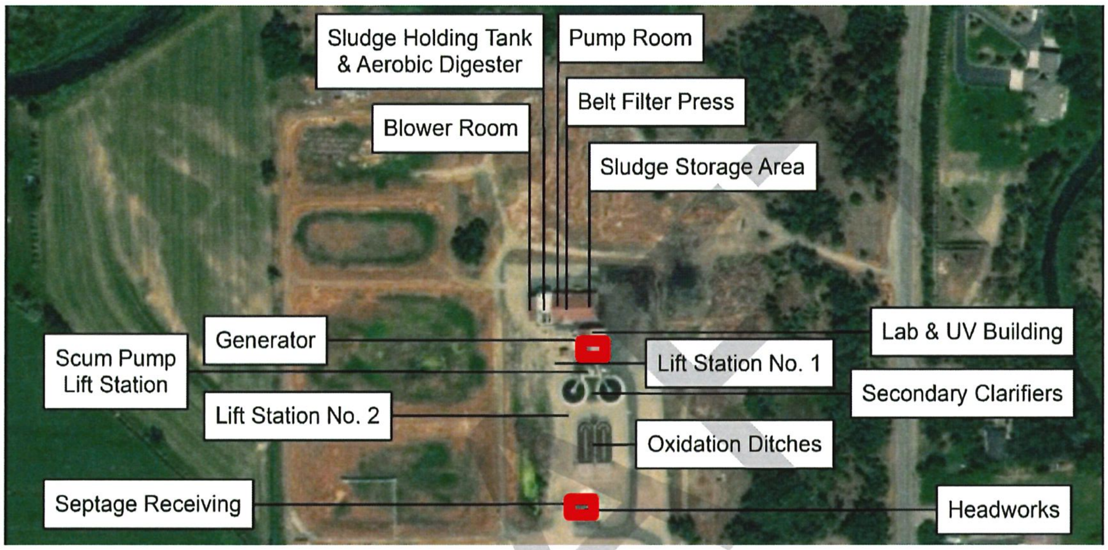
Wastewater Facilities Project: **Critical Spares and Lab Equipment**
Project Identifier: **1.2**

Objective: The WWTP is missing spare motors and pumps in the Headworks. Also the WWTP could benefit from having an oven and microscope for better process control. It is anticipated that these purchases will be made in house.

Project Location: Headworks and Lab



Item	Cost (2019)	
Headworks Critical Spare Parts	$	25,000
Lab Equipment	$	5,000
Contingency (30%)	$	9,000
Total Construction Cost	**$**	**39,000**
Assumed No Engineering	$	-
Total Project Cost	**$**	**39,000**

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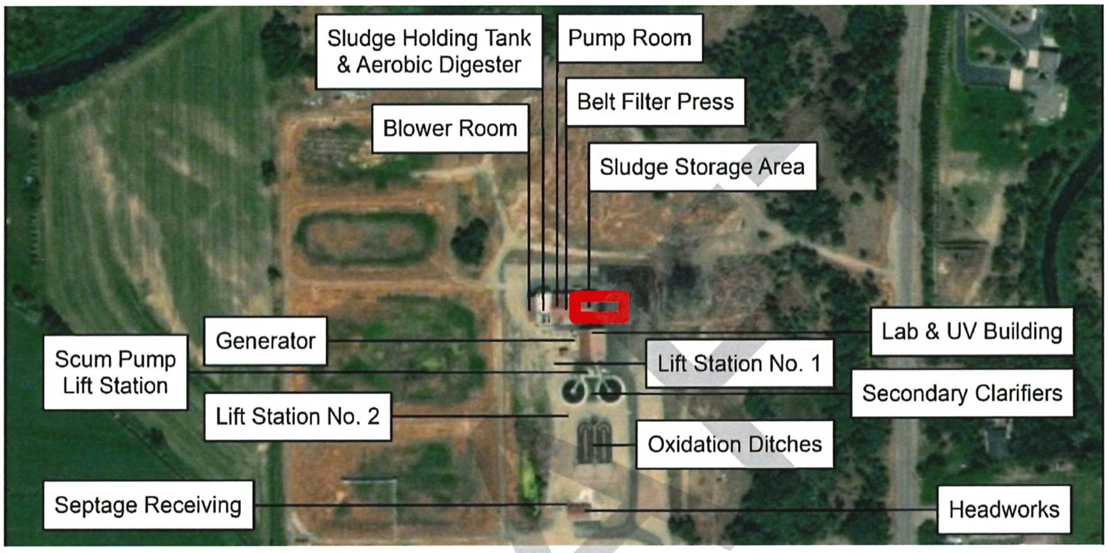
Wastewater Facilities Project: **Dewatering Improvements**
Project Identifier: **1.3**

Objective: Provide needed dewatering capacity through purchasing a screw press. The improvements also include expanding the dewatering room to accomodate the screw press and adding berms and a sump pump station to collect runoff in the sludge storage area.

Project Location: Dewatering Room and Sludge Storage



Item		Cost (2019)
Site Work for Sludge Storage	$	80,000
Asphalt Berms and Sump Pumps for Sludge Storage	$	100,000
Site Work for Dewatering Room Expansion	$	50,000
Demolition	$	50,000
Building Expansion	$	150,000
Dewatering Equipment	$	500,000
Polymer System	$	50,000
Thickening Critical Spare Parts	$	60,000
Electrical/Controls	$	100,000
General Conditions (10%)	$	120,000
Contingency (30%)	$	380,000
Contractor OH&P (15%)	$	250,000
Total Construction Cost	**$**	**1,890,000**
Soft Costs (Engineering & CMS; 25%)	$	480,000
Total Project Cost	**$**	**2,370,000**

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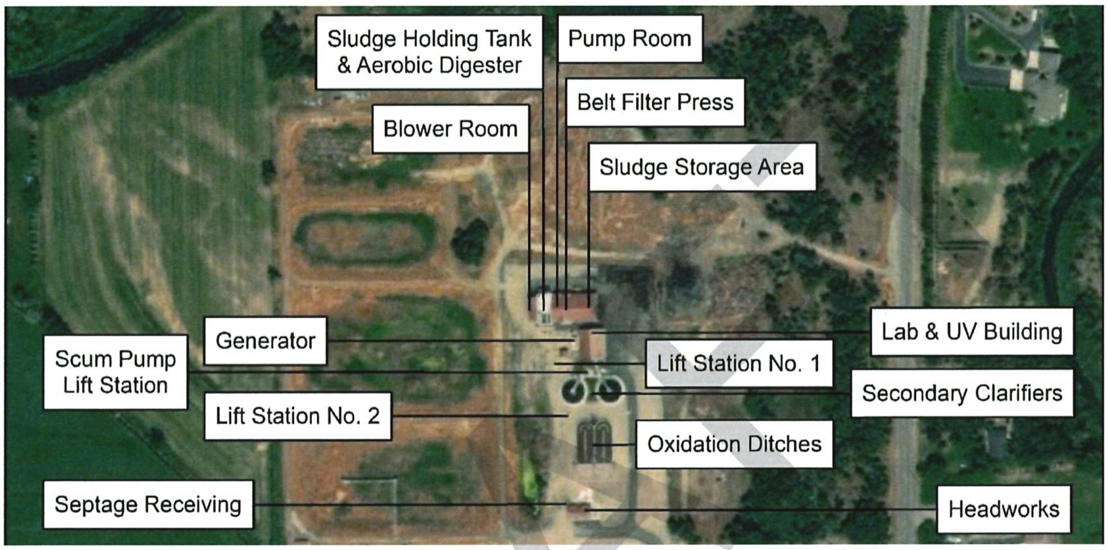
Wastewater Facilities Project: **Biosolids Management Plan**
Project Identifier: **1.4**

Objective: Prepare a biosolids management plan to document solids handling, treatment, and monitoring procedures.

Project Location: Entire Plant



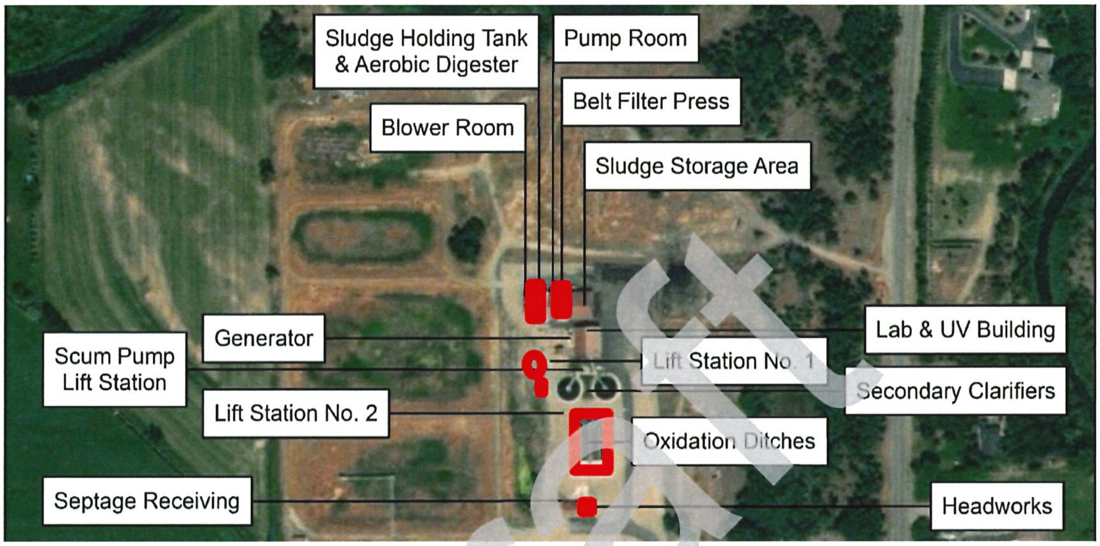
Item	Cost (2019)
Biosolids Management Plan	$ 25,000
Total Project Cost	**$ 25,000**

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Ammonia Removal Improvements**
Project Identifier: **1.5 IFAS**

Objective: Provide ammonia removal to meet the compliance period in the City's discharge permit. The improvements would include a new IFAS system for the existing basins, new fine screens, a new secondary clarifier, splitter box, pumps, blowers, as well as pump and blower room modifications.

Project Location: Entire Plant



Item	Cost (2019)
Site Work	$ 300,000
Demolition	$ 30,000
Piping/Valves and Instrumentation	$ 300,000
New Fine Screens	$ 520,000
Existing Basin Modifications and Equipment	$ 450,000
Blowers and Blower Room Expansion	$ 600,000
Mixed Liquor Splitter Box	$ 150,000
New Secondary Clarifier	$ 550,000
RAS Pump and Pump Room Upgrades	$ 210,000
Media and Basin Screens	$ 900,000
Electrical/Controls	$ 720,000
General Conditions (10%)	$ 480,000
Contingency (30%)	$ 1,570,000
Contractor OH&P (15%)	$ 1,020,000
Total Construction Cost	**$ 7,800,000**
Soft Costs (Engineering & CMS; 25%)	$ 1,950,000
Total Project Cost	**$ 9,750,000**

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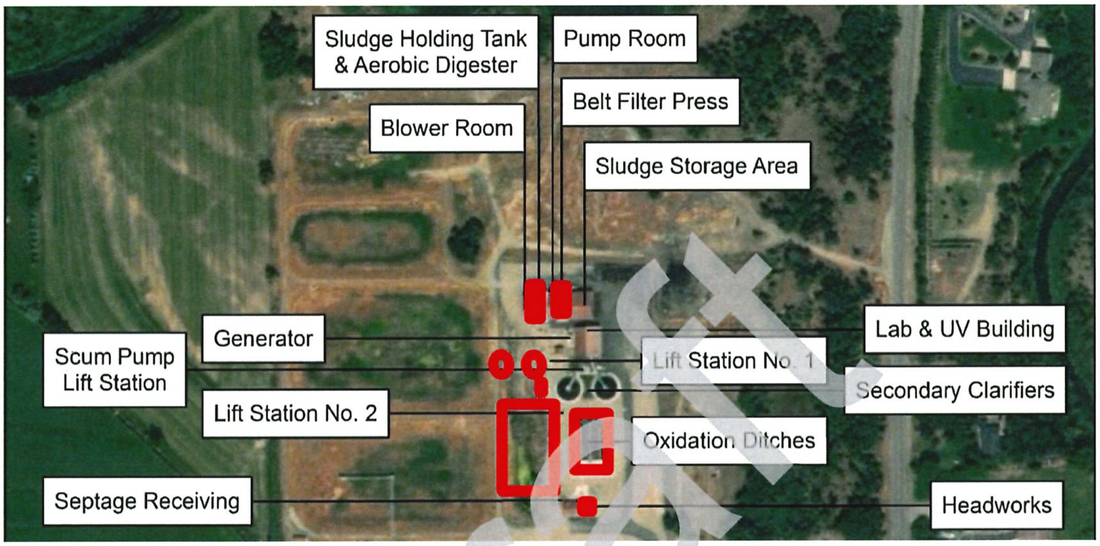
Wastewater Facilities Project: **Ammonia Removal Improvements**
Project Identifier: **1.5 Similar Oxidation Ditch**

Objective: Provide ammonia removal to meet the compliance period in the City's discharge permit. The improvements would include twp new, larger oxidation ditches with aeration similar to the existing, two new secondary clarifiers, splitter box, pumps, and pump room modifications.

Project Location: Entire Plant



Item		Cost (2019)
Site Work	$	1,300,000
Piping/Valves and Instrumentation	$	300,000
Influent Splitter Box	$	150,000
New Oxidation Ditch Basins and Equipment	$	1,700,000
Mixed Liquor Splitter Box	$	150,000
New Secondary Clarifiers	$	1,100,000
RAS Pumps and Pump Room Upgrades	$	250,000
Electrical/Controls	$	890,000
General Conditions (10%)	$	590,000
Contingency (30%)	$	1,930,000
Contractor OH&P (15%)	$	1,260,000
Total Construction Cost	**$**	**9,620,000**
Soft Costs (Engineering & CMS; 25%)	$	2,410,000
Total Project Cost	**$**	**12,030,000**

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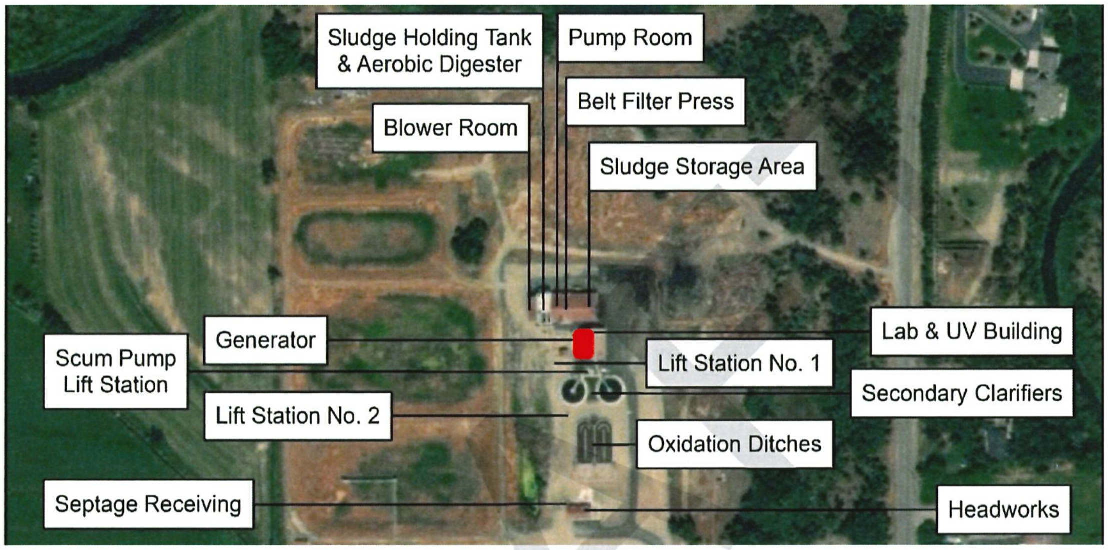
Wastewater Facilities Project: **UV Improvements**
Project Identifier: **1.6**

Objective: Replace the obsolete UV system with a new inclined vertical UV system and add a second UV channel for redundancy.

Project Location: UV Building



Item	Cost (2019)	
Demolition	$	10,000
New Channel and Building Modifications	$	250,000
UV Equipment	$	440,000
Electrical/Controls	$	80,000
General Conditions (10%)	$	80,000
Contingency (30%)	$	260,000
Contractor OH&P (15%)	$	170,000
Total Construction Cost	**$**	**1,290,000**
Soft Costs (Engineering & CMS; 25%)	$	330,000
Total Project Cost	**$**	**1,620,000**

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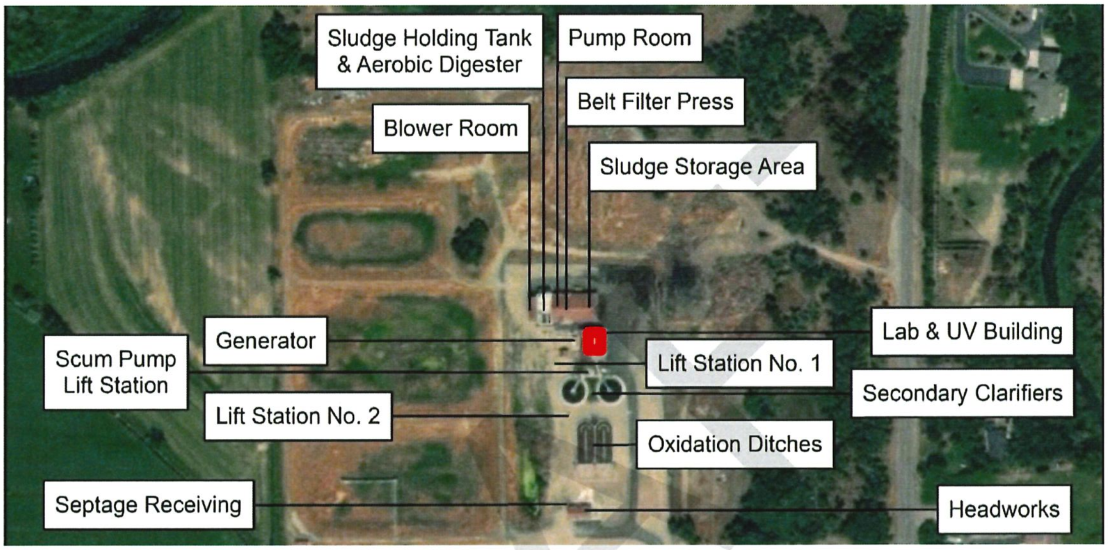
Wastewater Facilities Project: **Tertiary Filters**
Project Identifier: **1.7**

Objective: Place filters in the empty filter basins to protect the plant water system and to maintain consistent effluent quality from periodic difficulties with achieving TSS and BOD_5 removal.

Project Location: UV Building



Item		Cost (2019)
Demolition	$	10,000
New Filters	$	400,000
Electrical/Controls	$	50,000
General Conditions (10%)	$	50,000
Contingency (30%)	$	150,000
Contractor OH&P (15%)	$	100,000
Total Construction Cost	**$**	**760,000**
Soft Costs (Engineering & CMS; 25%)	$	190,000
Total Project Cost	**$**	**950,000**

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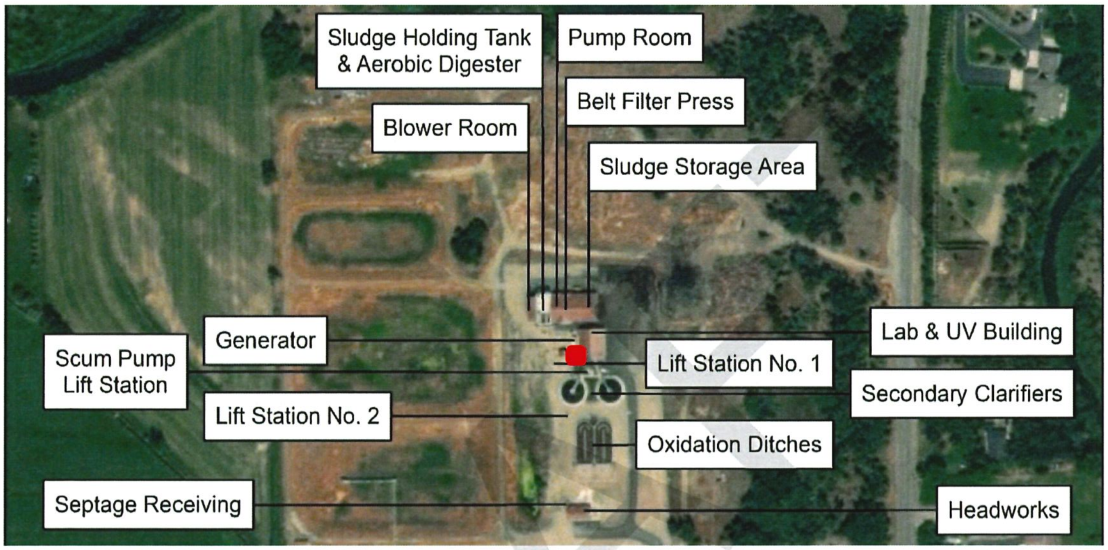
Wastewater Facilities Project: **Plant Water Pumps**
Project Identifier: **1.8**

Objective: Replace the existing plant water pumps to provide sufficient flow and pressure throughout the WWTP.

Project Location: UV Building



Item		Cost (2019)
Demolition	$	5,000
New Plant Water Pumps	$	30,000
General Conditions (10%)	$	4,000
Contingency (30%)	$	12,000
Contractor OH&P (15%)	$	8,000
Total Construction Cost	**$**	**59,000**
Soft Costs (Engineering & CMS; 25%)	$	15,000
Total Project Cost	**$**	**74,000**

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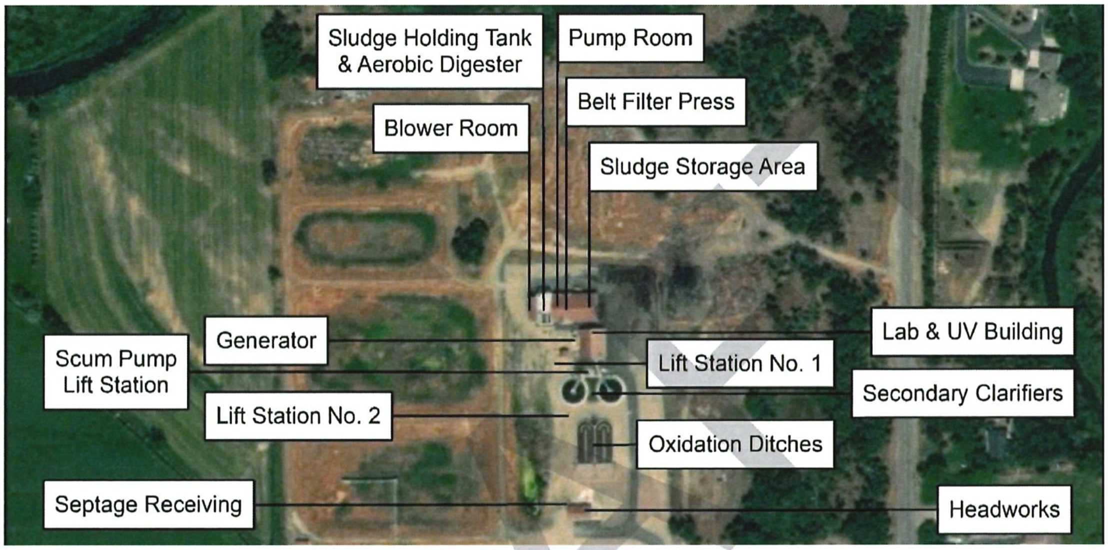
Wastewater Facilities Project: **Electrical Upgrades**
Project Identifier: **1.9**

Objective: Add sufficient backup power for existing and new equipment including lift stations. Also replace the outdoor lighting with LED lights for power savings.

Project Location: Entire Plant



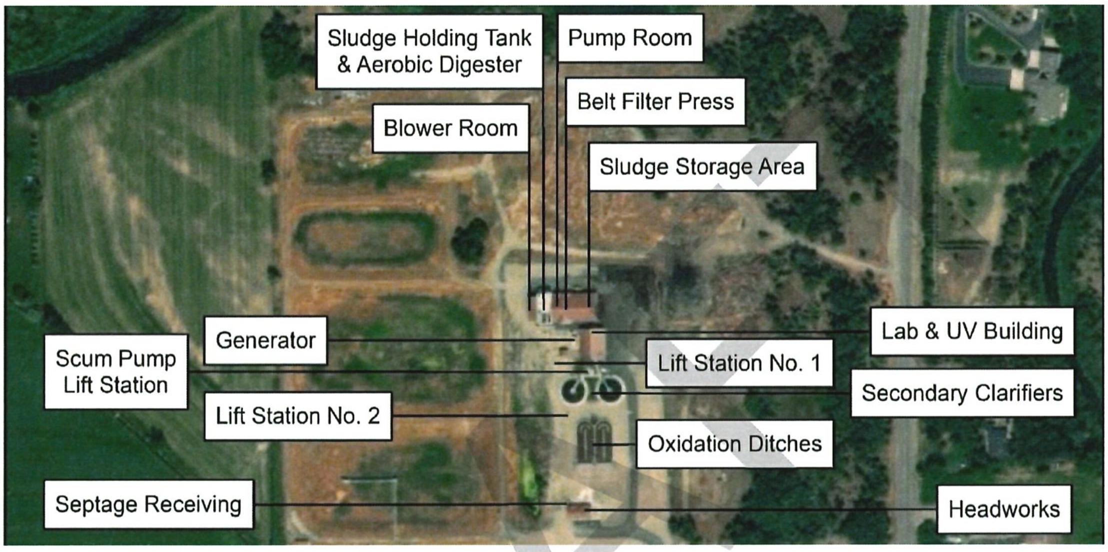
Item	Cost (2019)	
Plant Generator, Portable Generator, and Backup Power	$	160,000
LED Outdoor Lighting	$	50,000
General Conditions (10%)	$	21,000
Contingency (30%)	$	70,000
Contractor OH&P (15%)	$	46,000
Total Construction Cost	**$**	**347,000**
Soft Costs (Engineering & CMS; 25%)	$	87,000
Total Project Cost	**$**	**434,000**

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **SCADA Upgrades**
Project Identifier: **1.10**

Objective: Upgrade the SCADA system to provide control and data trending of existing and new equipment.

Project Location: Entire Plant



Item	Cost (2019)	
SCADA	$	150,000
General Conditions (10%)	$	15,000
Contingency (30%)	$	50,000
Contractor OH&P (15%)	$	33,000
Total Construction Cost	**$**	**248,000**
Soft Costs (Engineering & CMS; 25%)	$	62,000
Total Project Cost	**$**	**310,000**

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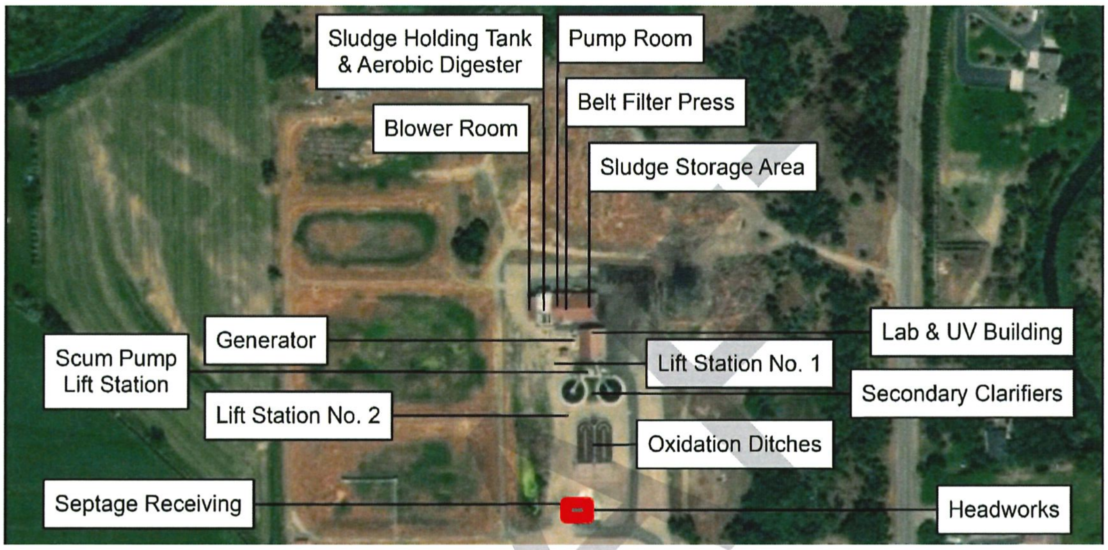
Wastewater Facilities Project: **Headworks Improvements**
Project Identifier: **2.1**

Objective: Replace the existing grit removal with the needed capacity and add redundancy. Expand the building.

Project Location: Headworks



Item		Cost (2019)
Site Work	$	50,000
New Vortex Grit Removal	$	900,000
Headworks Building Expansion	$	200,000
Electrical/Controls	$	250,000
General Conditions (10%)	$	140,000
Contingency (30%)	$	470,000
Contractor OH&P (15%)	$	310,000
Total Construction Cost	**$**	**2,320,000**
Soft Costs (Engineering & CMS; 25%)	$	580,000
Total Project Cost	**$**	**2,900,000**

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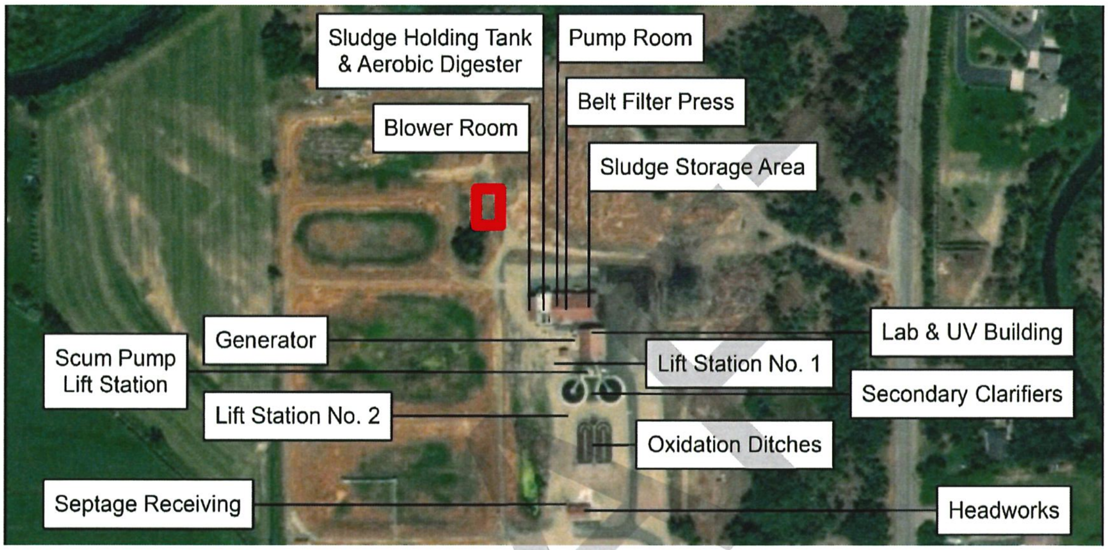
Wastewater Facilities Project: **Maintenance Building**
Project Identifier: **2.2**

Objective: Add a maintenance building that can be used for equipment and parts storage as well as maintenance activities.

Project Location: Near Old Lagoons



Item	Cost (2019)
Site Work	$ 50,000
Maintenance Building	$ 350,000
General Conditions (10%)	$ 40,000
Contingency (30%)	$ 140,000
Contractor OH&P (15%)	$ 90,000
Total Construction Cost	**$ 670,000**
Soft Costs (Engineering & CMS; 25%)	$ 170,000
Total Project Cost	**$ 840,000**

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City of Rigby User Rate Analysis-Sewer Project w/BG/LF-Alt1

	Loan Amount	Interest Rate	Term (Years)	Users	Estimated O&M
DEQ	$14,132,280	1.50%	30	1600	$65,000
			40		
	Flow Charge per 1,000 ga	# Flat Fee Customers	Metered Flow used Each Month(thousands)	Total Fee Collected Monthly	
	$0.00	1600	0	$0.00	
	Semi-Annual	Annual	Total Life-Semi	Total Life-Annual	
DEQ Loan	$293,362.89	$588,456.67	$17,601,773.30	$17,653,700.02	
USDA Loan	$0.00	$0.00	$0.00	$0.00	
		DEQ Annual		**USDA-Annual**	**Total**
Annual Debt Service		$588,456.67 ✓		$0.00	$588,456.67
Monthly Debt Service		$49,038.06		$0.00	$49,038.06
Current # Users		1600		1600	
Monthly Debt Service per User		$30.65		$0.00	$30.65
Monthly Debt Service Reserve (10%)		$3.06		$0.00	$3.06
Monthly Capital Reserve (10%)					$0.00
thly Fixed Costs (Debt+Reserves) per User		$33.71		$0.00	$33.71
Monthly Operations and Maintainance		$2,708			$2,708.33
Monthly O&M per User		$1.69		$0.00	$1.69
Total Monthly Variable Costs per User		$1.69		$0.00	$1.69
Total Monthly Fixed Costs per User		$33.71		$0.00	$33.71
Total Monthly Variable Costs per User		$1.69		$0.00	$1.69
Total Monthly Cost per User		**$35.41**		**$0.00**	**$35.41**

		DEQ Loan Forgiveness	Block Grant	
Alternative 1	$15,696,000.00	-$1,063,720.00	-$500,000.00	$14,132,280.00
Alternative 2	$17,976,000.00	-$1,223,320.00	-$500,000.00	$16,252,680.00

Additional grant – reduce user rates $2.20 - $2.40 / $1,000,000

RD refinance current debt @ 3.25%?

City of Rigby User Rate Analysis-Sewer Project w/BG/LF-Alt2

	Loan Amount	Interest Rate	Term (Years)	Users	Estimated O&M
DEQ	$16,252,680	1.50%	30	1600	$58,000
			40		
	Flow Charge per 1,000 ga	# Flat Fee Customers	Metered Flow used Each Month(thousands)	Total Fee Collected Monthly	
	$0.00	1600	0	$0.00	
	Semi-Annual	Annual	Total Life-Semi	Total Life-Annual	
DEQ Loan	$337,378.90	$676,748.40	$20,242,734.29	$20,302,452.07	
USDA Loan	$0.00	$0.00	$0.00	$0.00	
		DEQ Annual		**USDA-Annual**	**Total**
Annual Debt Service		$676,748.40		$0.00	$676,748.40
Monthly Debt Service		$56,395.70		$0.00	$56,395.70
Current # Users		1600		1600	
Monthly Debt Service per User		$35.25		$0.00	$35.25
Monthly Debt Service Reserve (10%)		$3.52		$0.00	$3.52
Monthly Capital Reserve (10%)					$0.00
thly Fixed Costs (Debt+Reserves) per User		$38.77		$0.00	$38.77
Monthly Operations and Maintainance		$2,417			$2,416.67
Monthly O&M per User		$1.51		$0.00	$1.51
Total Monthly Variable Costs per User		$1.51		$0.00	$1.51
Total Monthly Fixed Costs per User		$38.77		$0.00	$38.77
Total Monthly Variable Costs per User		$1.51		$0.00	$1.51
Total Monthly Cost per User		**$40.28**		**$0.00**	**$40.28**

		DEQ Loan Forgiveness	Block Grant	
Alternative 1	$15,696,000.00	-$1,063,720.00	-$500,000.00	$14,132,280.00
Alternative 2	$17,976,000.00	-$1,223,320.00	-$500,000.00	$16,252,680.00

City of Rigby User Rate Analysis-Sewer Project w/BG/RDG

	Loan Amount	Interest Rate	Term (Years)	Users	Estimated O&M
		0.00%	30	1600	$65,000
USDA Loan	$12,056,800	2.75%	40		
	Flow Charge per 1,000 ga	# Flat Fee Customers	Metered Flow used Each Month(thousands)	Total Fee Collected Monthly	
	$0.00	1600	0	$0.00	
	Semi-Annual	Annual	Total Life-Semi	Total Life-Annual	
DEQ Loan	$0.00	$0.00	$0.00	$0.00	
USDA Loan	$249,435.38	$500,737.16	$19,954,830.21	$20,029,486.49	
		DEQ Annual		**USDA-Annual**	**Total**
Annual Debt Service		$0.00		$500,737.16	$500,737.16
Monthly Debt Service		$0.00		$41,728.10	$41,728.10
Current # Users		1600		1600	
Monthly Debt Service per User		$0.00		$26.08	$26.08
Monthly Debt Service Reserve (10%)		$0.00		$2.61	$2.61
Monthly Capital Reserve (10%)					$0.00
thly Fixed Costs (Debt+Reserves) per User		$0.00		$28.69	$28.69
Monthly Operations and Maintainance		$2,708			$2,708.33
Monthly O&M per User		$1.69		$0.00	$1.69
Total Monthly Variable Costs per User		$1.69		$0.00	$1.69
Total Monthly Fixed Costs per User		$0.00		$28.69	$28.69
Total Monthly Variable Costs per User		$1.69		$0.00	$1.69
Total Monthly Cost per User		**$1.69**		**$28.69**	**$30.38**

		USDA Grant	Block Grant	
Alternative 1	$15,696,000.00	-$3,139,200.00	-$500,000.00	$12,056,800.00
Alternative 2	$17,976,000.00	-$3,595,200.00	-$500,000.00	$13,880,800.00

City of Rigby User Rate Analysis-Sewer Project w/BG/RDG-2

	Loan Amount	Interest Rate	Term (Years)	Users	Estimated O&M
		0.00%	30	1600	$58,000
USDA Loan	$13,880,800	2.75%	40		
	Flow Charge per 1,000 ga	# Flat Fee Customers	Metered Flow used Each Month(thousands)	Total Fee Collected Monthly	
	$0.00	1600	0	$0.00	
	Semi-Annual	Annual	Total Life-Semi	Total Life-Annual	
DEQ Loan	$0.00	$0.00	$0.00	$0.00	
USDA Loan	$287,170.94	$576,490.64	$22,973,675.20	$23,059,625.78	
		DEQ Annual		USDA-Annual	Total
Annual Debt Service		$0.00		$576,490.64	$576,490.64
Monthly Debt Service		$0.00		$48,040.89	$48,040.89
Current # Users		1600		1600	
Monthly Debt Service per User		$0.00		$30.03	$30.03
Monthly Debt Service Reserve (10%)		$0.00		$3.00	$3.00
Monthly Capital Reserve (10%)					$0.00
thly Fixed Costs (Debt+Reserves) per User		$0.00		$33.03	$33.03
Monthly Operations and Maintainance		$2,417			$2,416.67
Monthly O&M per User		$1.51		$0.00	$1.51
Total Monthly Variable Costs per User		$1.51		$0.00	$1.51
Total Monthly Fixed Costs per User		$0.00		$33.03	$33.03
Total Monthly Variable Costs per User		$1.51		$0.00	$1.51
Total Monthly Cost per User		**$1.51**		**$33.03**	**$34.54**

		USDA Grant	Block Grant		
Alternative 1	$15,696,000.00	-$3,139,200.00	-$500,000.00	$12,056,800.00	$30.38
Alternative 2	$17,976,000.00	-$3,595,200.00	-$500,000.00	$13,880,800.00	$34.54
Alternative 1 at 30% grant	$15,696,000.00	$4,708,800.00	-$500,000.00	$10,487,200.00	26.65/month
Alternative 2 at 30% grant	$17,976,000.00	$5,392,800.00	-$500,000.00	$12,083,200.00	30.44/month

City of Rigby User Rate Analysis-Sewer Project w/BG/RDG

	Loan Amount	Interest Rate	Term (Years)	Users	Estimated O&M
		0.00%	30	1600	$65,000
USDA Loan	$12,083,200	2.75%	30		
	Flow Charge per 1,000 ga	# Flat Fee Customers	Metered Flow used Each Month(thousands)	Total Fee Collected Monthly	
	$0.00	1600	0	$0.00	
	Semi-Annual	Annual	Total Life-Semi	Total Life-Annual	
DEQ Loan	$0.00	$0.00	$0.00	$0.00	
USDA Loan	$297,059.69	$596,721.82	$17,823,581.12	$17,901,654.71	
		DEQ Annual		USDA-Annual	Total
Annual Debt Service		$0.00		$596,721.82	$596,721.82
Monthly Debt Service		$0.00		$49,726.82	$49,726.82
Current # Users		1600		1600	
Monthly Debt Service per User		$0.00		$31.08	$31.08
Monthly Debt Service Reserve (10%)		$0.00		$3.11	$3.11
Monthly Capital Reserve (10%)					$0.00
thly Fixed Costs (Debt+Reserves) per User		$0.00		$34.19	$34.19
Monthly Operations and Maintainance		$2,708			$2,708.33
Monthly O&M per User		$1.69		$0.00	$1.69
Total Monthly Variable Costs per User		$1.69		$0.00	$1.69
Total Monthly Fixed Costs per User		$0.00		$34.19	$34.19
Total Monthly Variable Costs per User		$1.69		$0.00	$1.69
Total Monthly Cost per User		**$1.69**		**$34.19**	**$35.88**

		USDA Grant	Block Grant		
Alternative 1	$15,696,000.00	-$3,139,200.00	-$500,000.00	$12,056,800.00	$35.81
Alternative 2	$17,976,000.00	-$3,595,200.00	-$500,000.00	$13,880,800.00	$40.78
Alternative 1 at 30% grant	$15,696,000.00	$4,708,800.00	-$500,000.00	$10,487,200.00	$31.36
Alternative 2 at 30% grant	$17,976,000.00	$5,392,800.00	-$500,000.00	$12,083,200.00	$35.88

Appendix C

Financial Information

City of Rigby Financial Information 2014 to 2018
City of Rigby Operating Costs

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CITY OF RIGBY
Statement of Net Position
Proprietary Funds
September 30, 2014

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Total	Internal Service Funds
ASSETS						
Cash	$ 441,603	$ 422,388	$ 1,545,612	$ (477,945)	$ 1,931,658	$ 38,348
Cash - restricted for bond	-	-	189,259	-	189,259	-
Investments	611,619	132,228	2,719,466	1,057,818	4,521,131	-
Receivables	81,589	26,218	243,381	708,121	1,059,309	-
Capital assets, net of depreciation	1,974,194	80,375	15,588,663	-	17,643,232	228,321
Capital assets, non-depreciable	21,154	-	-	-	21,154	-
Prepaid expenses	1,308	-	1,495	-	2,803	-
Total assets	3,131,467	661,209	20,287,876	1,287,994	25,368,546	$ 266,669
LIABILITIES						
Current Liabilities:						
Accounts payable	116,769	1,012	15,403	-	133,184	$ 7,347
Other payable	-	-	80,211	-	80,211	-
Water deposits	20,387	-	-	-	20,387	-
Salaries payable & payroll liabilities	3,824	3,077	5,113	-	12,014	138
Current portion of long term debt	-	-	99,570	-	99,570	-
Total current liabilities	140,980	4,089	200,297	-	345,366	7,485
Noncurrent liabilities:						
Bond payable - long term	-	-	11,542,869	-	11,542,869	-
Interim DEQ financing	-	-	-	-	-	-
Compensated absences payable	3,944	4,461	7,207	-	15,612	-
Total liabilities	144,924	8,550	11,750,373	-	11,903,847	7,485
NET POSITION						
Invested in capital assets, net of related debt	1,995,348	80,375	4,045,794	-	6,121,517	228,321
Restricted for debt service	-	-	1,568,830	-	1,568,830	-
Net assets - unrestricted	991,195	572,284	2,922,879	1,287,994	5,774,352	30,863
Total net position	$ 2,986,543	$ 652,659	$ 8,537,503	$ 1,287,994	13,464,699	$ 259,184

Some amounts reported for business-type activities in the statement of net position are different because certain internal service fund assets and liabilities are included with business-type activities.	246,667
Net position of business-type activities	$ 13,711,366

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Revenues, Expenses, and Changes in Fund Net Position
Proprietary Funds
September 30, 2014

	Water Fund	Sanitation	Sewer Fund	Sewer Collection Project	Total	Internal Service Funds
OPERATING REVENUE						
Consumer charges	$ 556,353	$ 246,377	$ 1,550,697	$ -	$ 2,353,427	$ -
Other revenue	3,609	-	-	-	3,609	-
Other Services	-	-	-	-	-	108,573
Total operating revenue	559,962	246,377	1,550,697	-	2,357,036	108,573
OPERATING EXPENSES						
Salaries	49,192	54,693	113,316	-	217,201	7,835
Payroll taxes	6,013	10,156	11,053	-	27,222	990
Insurance - employee	13,187	7,652	34,396	-	55,235	1,455
Retirement - employee	8,811	6,558	13,020	-	28,389	885
Legal fees	-	-	-	-	-	-
Municipal shop building	6,666	6,471	6,472	-	19,609	9,238
Utilities	337	-	63,764	-	64,101	-
Office supplies and postage	4,087	3,731	4,636	-	12,454	-
Maintenance and repairs	178,446	38,159	34,067	-	250,672	32,622
Training and travel	1,259	-	858	-	2,117	-
Supplies	3,617	583	11,648	-	15,848	6,449
Fuel	844	-	1,760	-	2,604	40,537
Depreciation	65,433	15,299	426,246	-	506,978	37,866
Miscellaneous expense	19,515	15,870	29,265	-	64,650	-
Irrigation assessments	2,938	-	-	-	2,938	-
Total operating expense	360,345	159,172	750,501	-	1,270,018	137,877
Operating income (loss)	199,617	87,205	800,196	-	1,087,018	(29,304)
NONOPERATING REVENUE (EXPENSE)						
Wastewater project grant income	-	-	-	68,194	68,194	-
Wastewater project expenditures	-	-	-	-	-	-
Interest income	14,219	2,511	41,708	17,729	76,167	-
Interest expense	-	-	(89,975)	-	(89,975)	-
Gain (loss) on investments	(23,285)	-	(5,247)	-	(28,532)	-
Reserve for debt service	-	-	-	-	-	-
Capital contributions	-	-	-	-	-	-
Operating transfers	41,877	(25,000)	(3,625,531)	2,933,654	(675,000)	-
Changes in net position	232,428	64,716	(2,878,849)	3,019,577	437,872	(29,304)
NET POSITION						
Total net position - beginning	2,754,115	587,943	10,781,052	(1,731,583)		288,488
Prior years adjustment	-	-	635,300	-		-
Total net position - ending	$ 2,986,543	$ 652,659	$ 8,537,503	$ 1,287,994		$ 259,184

Some amounts reported for business-type activities in the statement of activities are different because the net revenue of certain internal service funds is reported with business-type activities.	(32,900)
Change in net position of business-type activities	$ 404,972

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Cash Flows
Proprietary Funds
September 30, 2014

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Totals	Internal Service Funds
CASH FLOWS FROM OPERATING ACTIVITIES						
Cash received from customers	$ 536,483	$ 244,828	$ 1,466,783	$ -	$ 2,248,094	$ 108,573
Payments to suppliers and employees	(218,043)	(145,023)	(700,817)	-	(1,063,883)	(98,500)
Cash provided by customer deposits	(3,342)	-	-	-	(3,342)	-
Net cash provided (used) by operating activities	315,098	99,805	765,966	-	1,180,869	10,073
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES						
Transfers from (to) other funds	41,877	(25,000)	(25,000)	(708,121)	(716,244)	-
Net cash provided (used) by noncapital financing activities	41,877	(25,000)	(25,000)	(708,121)	(716,244)	-
CASH FLOWS FROM CAPITAL FINANCING ACTIVITIES						
Cash proceeds from grants	-	-	-	68,194	68,194	-
Cash paid for construction and equipment	(369,005)	(7,137)	(133,827)	-	(509,969)	-
Bond principle payments	-	-	(394,544)	-	(394,544)	-
Interest paid on bonds and leases	-	-	-	-	-	-
Net cash provided (used) by capital and related financing activities	(369,005)	(7,137)	(528,371)	68,194	(836,319)	-
CASH FLOWS FROM INVESTING ACTIVITIES						
Interest income	14,219	2,511	41,708	17,729	76,167	-
Change in market value of investments	(14,022)	(2,187)	(26,201)	(41,062)	(83,472)	-
Purchase of investments	-	-	-	-	-	-
Net cash provided (used) from investing activities	197	324	15,507	(23,333)	(7,305)	-
Net increase (decrease) in cash	(11,833)	67,992	228,102	(663,260)	(378,999)	10,086
Cash and cash equivalents-beginning of year	453,436	354,396	1,506,769	185,315	2,499,916	28,262
Cash and cash equivalents-end of year	$ 441,603	$ 422,388	$ 1,734,871	$ (477,945)	$ 2,120,917	$ 38,348
Reconciliation of operating income to net cash provided by operating activities						
Operating income	$ 199,617	$ 87,205	$ 800,196	$ -	$ 1,087,018	$ (29,304)
Adjustments to reconcile operating income to net cash provided by operating activities:						
Depreciation	65,433	15,299	426,246	-	506,978	37,866
(Increase) decrease in accounts receivable	(23,479)	(1,549)	(83,914)	-	(108,942)	-
Increase (decrease) in customer deposits	(3,342)	-	-	-	(3,342)	-
(Increase) decrease in customer prepaids	(1,308)	1,611	(406)	-	(103)	-
Increase (decrease) in accounts payable	78,177	(2,761)	(376,156)	-	(300,740)	1,511
Net cash provided by operating activities	$ 315,098	$ 99,805	$ 765,966	$ -	$ 1,180,869	$ 10,073

The notes to the financial statements are an integral part of this statement.

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CITY OF RIGBY
Statement of Net Position
Proprietary Funds
September 30, 2015

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Total	Internal Service Funds
ASSETS						
Cash	$ 498,782	$ 240,843	$ 1,261,052	$ 230,453	$ 2,231,130	$ 47,383
Cash - restricted for bond	-	-	251,165	-	251,165	-
Investments	622,289	133,490	2,742,420	1,067,920	4,566,119	-
Receivables	51,424	24,738	164,676	-	240,838	-
Capital assets, net of depreciation	2,156,417	396,949	15,051,276	-	17,604,642	231,432
Capital assets, non-depreciable	21,154	-	-	-	21,154	-
Prepaid expenses	4,396	-	21,202	-	25,598	-
Total assets	3,354,462	796,020	19,491,791	1,298,373	24,940,646	$ 278,815
LIABILITIES						
Current Liabilities:						
Accounts payable	11,712	749	114,889	-	127,350	$ 3,161
Other payable	-	-	25,316	-	25,316	-
Water deposits	32,333	-	-	-	32,333	-
Salaries payable & payroll liabilities	-	-	-	-	-	-
Current portion of long term debt	-	-	460,968	-	460,968	-
Total current liabilities	44,045	749	601,173	-	645,967	3,161
Noncurrent liabilities:						
Bond payable - long term	-	-	10,031,908	-	10,031,908	-
Interim DEQ financing	-	-	-	-	-	-
Compensated absences payable	7,024	2,529	8,908	-	18,461	-
Total liabilities	51,069	3,278	10,641,989	-	10,696,336	3,161
NET POSITION						
Invested in capital assets, net of related debt	2,177,571	396,949	5,019,368	-	7,593,888	231,432
Restricted for debt service	-	-	1,680,923	-	1,680,923	-
Net assets - unrestricted	1,125,822	395,793	2,149,511	1,298,373	4,969,499	44,222
Total net position	$ 3,303,393	$ 792,742	$ 8,849,802	$ 1,298,373	14,244,310	$ 275,654
Some amounts reported for business-type activities in the statement of net position are different because certain internal service fund assets and liabilities are included with business-type activities.					257,527	
Net position of business-type activities					$ 14,501,837	

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Revenues, Expenses, and Changes in Fund Net Position
Proprietary Funds
September 30, 2015

	Water Fund	Sanitation	Sewer Fund	Sewer Collection Project	Total	Internal Service Funds
OPERATING REVENUE						
Consumer charges	$ 535,063	$ 255,294	$ 1,575,864	$ -	$ 2,366,221	$ -
Other revenue	131	-	500	-	631	-
Other Services	-	-	-	-	-	106,307
Total operating revenue	535,194	255,294	1,576,364	-	2,366,852	106,307
OPERATING EXPENSES						
Salaries	43,553	67,172	112,355	-	223,080	8,322
Payroll taxes	4,768	11,603	14,739	-	31,110	975
Insurance - employee	16,316	11,842	46,510	-	74,668	1,794
Retirement - employee	7,017	8,045	12,513	-	27,575	992
Legal fees	-	-	-	-	-	-
Municipal shop building	7,053	7,053	7,250	-	21,356	8,213
Utilities	259	-	90,338	-	90,597	-
Office supplies and postage	4,752	4,278	5,996	-	15,026	-
Maintenance and repairs	208,418	30,044	108,534	-	346,996	29,368
Training and travel	596	11	1,143	-	1,750	-
Supplies	4,544	25	27,544	-	32,113	7,727
Fuel	265	-	4,638	-	4,903	35,558
Depreciation	82,894	23,519	458,142	-	564,555	34,712
Miscellaneous expense	23,332	26,698	51,908	-	101,938	-
Irrigation assessments	5,920	-	-	-	5,920	-
Total operating expense	409,687	190,290	941,610	-	1,541,587	127,661
Operating income (loss)	125,507	65,004	634,754	-	825,265	(21,354)
NONOPERATING REVENUE (EXPENSE)						
Wastewater project grant income	-	-	-	-	-	-
Wastewater project expenditures	-	-	-	-	-	-
Interest income	12,173	4,574	29,714	10,378	56,839	-
Interest expense	-	-	(120,310)	-	(120,310)	-
Gain (loss) on investments	1,655	-	(4,364)	-	(2,709)	-
Reserve for debt service	-	-	-	-	-	-
Capital contributions	-	-	-	-	-	133,329
Operating transfers	177,517	70,506	(227,517)	-	20,506	(95,506)
Changes in net position	316,852	140,084	312,277	10,378	779,591	16,469
NET POSITION						
Total net position - beginning	2,986,541	652,658	8,537,525	1,287,995		259,185
Prior years adjustment	-	-	-	-		-
Total net position - ending	$ 3,303,393	$ 792,742	$ 8,849,802	$ 1,298,373		$ 275,654

Some amounts reported for business-type activities in the statement of activities are different because the net revenue of certain internal service funds is reported with business-type activities.	10,859
Change in net position of business-type activities	$ 790,450

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Cash Flows
Proprietary Funds
September 30, 2015

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Totals	Internal Service Funds
CASH FLOWS FROM OPERATING ACTIVITIES						
Cash received from customers	$ 565,359	$ 256,774	$ 1,655,069	$ 708,121	$ 3,185,323	$ 106,307
Payments to suppliers and employees	(435,682)	(172,043)	(441,648)	-	(1,049,373)	(97,273)
Cash provided by customer deposits	11,946	-	-	-	11,946	-
Net cash provided (used) by operating activities	141,623	84,731	1,213,421	708,121	2,147,896	9,034
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES						
Transfers from (to) other funds	(25,000)	(25,000)	(25,000)	-	(75,000)	-
Net cash provided (used) by noncapital financing activities	(25,000)	(25,000)	(25,000)	-	(75,000)	-
CASH FLOWS FROM CAPITAL FINANCING ACTIVITIES						
Cash proceeds from grants	-	-	-	-	-	-
Cash paid for construction and equipment	(62,600)	(244,587)	(143,620)	-	(450,807)	-
Bond principle payments	-	-	(1,149,563)	-	(1,149,563)	-
Interest paid on bonds and leases	-	-	-	-	-	-
Net cash provided (used) by capital and related financing activities	(62,600)	(244,587)	(1,293,183)	-	(1,600,370)	-
CASH FLOWS FROM INVESTING ACTIVITIES						
Interest income	12,173	4,574	(90,596)	10,378	(63,471)	-
Change in market value of investments	(9,017)	(1,263)	(27,319)	(10,102)	(47,701)	-
Purchase of investments	-	-	-	-	-	-
Net cash provided (used) from investing activities	3,156	3,311	(117,915)	276	(111,172)	-
Net increase (decrease) in cash	57,179	(181,545)	(222,677)	708,397	361,354	9,034
Cash and cash equivalents-beginning of year	441,603	422,388	1,734,894	(477,944)	2,120,941	38,349
Cash and cash equivalents-end of year	$ 498,782	$ 240,843	$ 1,512,217	$ 230,453	$ 2,482,295	$ 47,383

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Totals	Internal Service Funds
Reconciliation of operating income to net cash provided by operating activities						
Operating income	$ 125,507	$ 65,004	$ 634,754	$ -	$ 825,265	$ (21,354)
Adjustments to reconcile operating income to net cash provided by operating activities:						
Depreciation	82,894	23,519	458,142	-	564,555	34,712
(Increase) decrease in accounts receivable	30,165	1,480	78,705	708,121	818,471	-
Increase (decrease) in customer deposits	11,946	-	-	-	11,946	-
(Increase) decrease in customer prepaids	(3,088)	-	(19,707)	-	(22,795)	-
Increase (decrease) in accounts payable	(105,801)	(5,272)	41,179	-	(69,894)	(4,324)
Noncash loss on capital assets no longer in service	-	-	20,348	-	20,348	-
Net cash provided by operating activities	$ 141,623	$ 84,731	$ 1,213,421	$ 708,121	$ 2,127,548	$ 9,034

The notes to the financial statements are an integral part of this statement.

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CITY OF RIGBY
Statement of Net Position
Proprietary Funds
September 30, 2016

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Total	Internal Service Funds
ASSETS						
Cash	$ 389,468	$ 16,371	$ 1,594,609	$ 224,749	$ 2,225,197	$ 75,068
Cash - restricted for bond	-	-	235,592	-	235,592	-
Investments	1,052,246	390,606	2,790,968	1,074,817	5,308,637	-
Receivables	66,939	27,370	179,406	-	273,715	-
Capital assets, net of depreciation	2,072,273	356,946	14,645,900	-	17,075,119	375,587
Capital assets, non-depreciable	21,154	-	-	-	21,154	-
Prepaid expenses	1,164	1,781	980	-	3,925	89
Total assets	3,603,244	793,074	19,447,455	1,299,566	25,143,339	$ 450,744
LIABILITIES						
Current Liabilities:						
Accounts payable	46,365	671	275,264	-	322,300	$ 8,972
Other payable	-	-	-	-	-	102
Water deposits	29,201	-	-	-	29,201	-
Salaries payable & payroll liabilities	805	898	1,209	-	2,912	-
Current portion of long term debt	-	-	482,222	-	482,222	-
Total current liabilities	76,371	1,569	758,695	-	836,635	9,074
Noncurrent liabilities:						
Bond payable - long term	-	-	9,047,539	-	9,047,539	-
Interim DEQ financing	-	-	-	-	-	-
Compensated absences payable	5,079	4,203	7,055	-	16,337	-
Total liabilities	81,450	5,772	9,813,289	-	9,900,511	9,074
NET POSITION						
Invested in capital assets, net of related debt	2,093,427	356,946	5,116,139	-	7,566,512	375,587
Restricted for debt service	-	-	2,181,543	-	2,181,543	-
Net assets - unrestricted	1,428,367	430,356	2,336,484	1,299,566	5,494,773	66,083
Total net position	$ 3,521,794	$ 787,302	$ 9,634,166	$ 1,299,566	15,242,828	$ 441,670
Some amounts reported for business-type activities in the statement of net position are different because certain internal service fund assets and liabilities are included with business-type activities.					414,361	
Net position of business-type activities					$ 15,657,189	

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Revenues, Expenses, and Changes in Fund Net Position
Proprietary Funds
September 30, 2016

	Water Fund	Sanitation	Sewer Fund	Sewer Collection Project	Total	Internal Service Funds
OPERATING REVENUE						
Consumer charges	$ 600,009	$ 263,938	$ 1,641,267	$ -	$ 2,505,214	$ -
Other revenue	3,420	-	-	-	3,420	-
Other Services	-	-	-	-	-	99,008
Total operating revenue	603,429	263,938	1,641,267	-	2,508,634	99,008
OPERATING EXPENSES						
Salaries	43,420	66,322	111,654	-	221,396	7,274
Payroll taxes	4,902	5,195	4,594	-	14,691	1,214
Insurance - employee	17,477	16,136	33,955	-	67,568	1,570
Retirement - employee	7,298	7,642	12,721	-	27,661	881
Legal fees	-	-	-	-	-	-
Municipal shop building	6,344	6,052	5,879	-	18,275	8,649
Utilities	142	-	75,907	-	76,049	-
Office supplies and postage	3,985	3,986	5,005	-	12,976	-
Maintenance and repairs	179,175	20,420	37,167	-	236,762	22,452
Training and travel	500	163	1,854	-	2,517	-
Supplies	1,373	76	26,463	-	27,912	10,348
Fuel	82	-	1,899	-	1,981	24,759
Depreciation	84,143	40,003	462,705	-	586,851	47,468
Miscellaneous expense	32,189	24,718	23,082	-	79,989	-
Irrigation assessments	5,557	-	-	-	5,557	-
Total operating expense	386,587	190,713	802,885	-	1,380,185	124,615
Operating income (loss)	216,842	73,225	838,382	-	1,128,449	(25,607)
NONOPERATING REVENUE (EXPENSE)						
Wastewater project grant income	-	-	-	(6,055)	(6,055)	-
Wastewater project expenditures	-	-	-	-	-	-
Interest income	13,185	3,993	43,701	8,715	69,594	-
Interest expense	-	-	(84,956)	-	(84,956)	-
Gain (loss) on investments	13,538	(183)	12,192	(1,467)	24,080	-
Reserve for debt service	-	-	-	-	-	-
Capital contributions	-	(57,475)	-	-	(57,475)	191,623
Operating transfers	(25,000)	(25,000)	(25,000)	-	(75,000)	-
Changes in net position	218,565	(5,440)	784,319	1,193	998,637	166,016
NET POSITION						
Total net position - beginning	3,303,229	792,742	8,849,847	1,298,373		275,654
Prior years adjustment	-	-	-	-		-
Total net position - ending	$ 3,521,794	$ 787,302	$ 9,634,166	$ 1,299,566		$ 441,670

Some amounts reported for business-type activities in the statement of activities are different because the net revenue of certain internal service funds is reported with business-type activities.	156,834
Change in net position of business-type activities	$ 1,155,471

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Cash Flows
Proprietary Funds
September 30, 2016

	Water Fund	Sanitation	Sewer Fund	Sewer Collection	Totals	Internal Service Funds
CASH FLOWS FROM OPERATING ACTIVITIES						
Cash received from customers	587,914	261,306	1,626,537	-	2,475,757	99,008
Payments to suppliers and employees	(265,699)	(149,997)	(185,543)	-	(601,239)	(71,234)
Cash provided by customer deposits	(3,132)	-	-	-	(3,132)	-
Net cash provided (used) by operating activities	319,083	111,309	1,440,994	-	1,871,386	27,774
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES						
Transfers from (to) other funds	(25,000)	(82,475)	(25,000)	-	(132,475)	-
Net cash provided (used) by noncapital financing activities	(25,000)	(82,475)	(25,000)	-	(132,475)	-
CASH FLOWS FROM CAPITAL FINANCING ACTIVITIES						
Cash proceeds from grants	-	-	-	(6,055)	(6,055)	-
Cash paid for construction and equipment	-	-	(57,329)	-	(57,329)	-
Bond principle payments	-	-	(963,115)	-	(963,115)	-
Interest paid on bonds and leases	-	-	(84,956)	-	(84,956)	-
Net cash provided (used) by capital and related financing activities	-	-	(1,105,400)	(6,055)	(1,111,455)	-
CASH FLOWS FROM INVESTING ACTIVITIES						
Interest income	26,723	3,993	43,701	8,715	83,132	-
Change in market value of investments	(176,626)	(3,993)	(36,311)	(8,364)	(225,294)	-
Purchase of investments	-	-		-	-	-
Net cash provided (used) from investing activities	(149,903)	-	7,390	351	(142,162)	-
Net increase (decrease) in cash	144,180	28,834	317,984	(5,704)	485,294	27,774
Cash and cash equivalents-beginning of year	245,288	(12,463)	1,512,217	230,453	1,975,495	47,383
Cash and cash equivalents-end of year	389,468	16,371	1,830,201	224,749	2,460,789	75,157
Reconciliation of operating income to net cash provided by operating activities						
Operating income	216,842	73,225	838,382	-	1,128,449	(25,607)
Adjustments to reconcile operating income to net cash provided by operating activities:						
Depreciation	84,143	40,003	462,705	-	586,851	47,468
(Increase) decrease in accounts receivable	(15,515)	(2,632)	(14,730)	-	(32,877)	-
Increase (decrease) in customer deposits	(3,132)	-	-	-	(3,132)	-
(Increase) decrease in customer prepaids	3,232	(1,781)	20,222	-	21,673	-
Increase (decrease) in accounts payable	33,513	2,494	134,415	-	170,422	5,913
Noncash loss on capital assets no longer in service	-	-	-	-	-	-
Net cash provided by operating activities	319,083	111,309	1,440,994	-	1,871,386	27,774

The notes to the financial statements are an integral part of this statement.

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CITY OF RIGBY
Statement of Net Position
Proprietary Funds
September 30, 2017

	Water Fund	Sanitation	Sewer Fund	Total	Internal Service Funds
ASSETS					
Cash	$ 678,209	$ 102,167	$ 2,119,243	$ 2,899,619	$ 99,359
Cash - restricted for bond	-	-	297,422	297,422	-
Investments	1,053,072	394,396	2,806,138	4,253,606	
Receivables	55,686	27,831	156,838	240,355	-
Capital assets, net of depreciation	2,001,415	316,941	14,220,325	16,538,681	318,729
Capital assets, non-depreciable	21,154	-	-	21,154	-
Prepaid expenses	-	-	-	-	-
Total assets	3,809,536	841,335	19,599,966	24,250,837	$ 418,088
LIABILITIES					
Current Liabilities:					
Accounts payable	22,273	399	220,046	242,718	$ 5,315
Other payable	-	-	61,174	61,174	
Water deposits	31,158	-	-	31,158	-
Salaries payable & payroll liabilities	1,009	718	1,360	3,087	57
Current portion of long term debt	-	-	485,442	485,442	-
Total current liabilities	54,440	1,117	768,022	823,579	5,372
Noncurrent liabilities:					
Bond payable - long term	-	-	8,562,098	8,562,098	-
Interim DEQ financing	-	-	-	-	-
Compensated absences payable	7,225	3,886	8,481	19,592	-
Total liabilities	61,665	5,003	9,338,601	9,405,269	5,372
NET POSITION					
Invested in capital assets, net of related debt	2,022,569	316,941	5,172,785	7,512,295	318,729
Restricted for debt service	-	-	2,717,867	2,717,867	-
Net assets - unrestricted	1,725,302	519,391	2,370,713	4,615,406	93,987
Total net position	$ 3,747,871	$ 836,332	$ 10,261,365	14,845,568	$ 412,716

Some amounts reported for business-type activities in the statement of net position are different because certain internal service fund assets and liabilities are included with business-type activities.	373,687
Net position of business-type activities	$ 15,219,255

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Revenues, Expenses, and Changes in Fund Net Position
Proprietary Funds
September 30, 2017

	Water Fund	Sanitation	Sewer Fund	Total	Internal Service Funds
OPERATING REVENUE					
Consumer charges	$ 594,150	$ 265,567	$ 1,553,274	$ 2,412,991	$ -
Other revenue	1,199	1,378	-	2,577	-
Other Services	-	-	-	-	120,425
Total operating revenue	595,349	266,945	1,553,274	2,415,568	120,425
OPERATING EXPENSES					
Salaries	46,685	66,991	116,634	230,310	7,121
Payroll taxes	4,367	5,408	12,270	22,045	676
Insurance - employee	9,363	16,221	27,965	53,549	1,840
Retirement - employee	6,551	7,962	13,254	27,767	926
Legal fees	-	-	-	-	-
Municipal shop building	6,185	6,098	6,098	18,381	9,009
Utilities	263	-	87,418	87,681	-
Office supplies and postage	4,451	4,289	7,566	16,306	-
Maintenance and repairs	156,991	24,567	47,127	228,685	33,869
Training and travel	255	-	1,439	1,694	-
Supplies	1,169	261	31,663	33,093	4,776
Fuel	241	-	2,245	2,486	33,549
Depreciation	83,689	40,005	462,792	586,486	56,858
Miscellaneous expense	20,412	25,648	26,058	72,118	755
Irrigation assessments	4,476	-	-	4,476	-
Total operating expense	345,098	197,450	842,529	1,385,077	149,379
Operating income (loss)	250,251	69,495	710,745	1,030,491	(28,954)
NONOPERATING REVENUE (EXPENSE)					
Wastewater project grant income	-	-	-	-	-
Wastewater project expenditures	-	-	-	-	-
Interest income	13,856	4,535	21,364	39,755	-
Interest expense	-	-	(79,910)	(79,910)	-
Gain (loss) on investments	(13,030)	-	-	(13,030)	-
Reserve for debt service	-	-	-	-	-
Capital contributions	-	-	-	-	-
Operating transfers	(25,000)	(25,000)	(25,000)	(75,000)	-
Changes in net position	226,077	49,030	627,199	902,306	(28,954)
NET POSITION					
Total net position - beginning	3,521,794	787,302	9,634,166		441,670
Prior years adjustment	-	-	-		-
Total net position - ending	$ 3,747,871	$ 836,332	$ 10,261,365		$ 412,716

Some amounts reported for business-type activities in the statement of activities are different because the net revenue of certain internal service funds is reported with business-type activities.	(40,674)
Change in net position of business-type activities	$ 861,632

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Cash Flows
Proprietary Funds
September 30, 2017

	Water Fund	Sanitation	Sewer Fund	Totals	Internal Service Funds
CASH FLOWS FROM OPERATING ACTIVITIES					
Cash received from customers	606,602	266,484	1,575,842	2,448,928	120,425
Payments to suppliers and employees	(281,987)	(156,433)	(371,224)	(809,644)	(96,134)
Cash provided by customer deposits	1,957	-	-	1,957	-
Net cash provided (used) by operating activities	326,572	110,051	1,204,618	1,641,241	24,291
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES					
Transfers from (to) other funds	(25,000)	(25,000)	(25,000)	(75,000)	-
Net cash provided (used) by noncapital financing activities	(25,000)	(25,000)	(25,000)	(75,000)	-
CASH FLOWS FROM CAPITAL FINANCING ACTIVITIES					
Cash paid for capital assets	(12,831)	-	(37,216)	(50,047)	-
Principle payments	-	-	(482,221)	(482,221)	-
Interest paid on long-term obligations	-	-	(79,910)	(79,910)	-
Net cash provided (used) by capital and related financing activities	(12,831)	-	(599,347)	(612,178)	-
CASH FLOWS FROM INVESTING ACTIVITIES					
Interest income	-	745	6,193	6,938	-
Purchase of investments	-	-	-	-	-
Net cash provided (used) from investing activities	-	745	6,193	6,938	-
Net increase (decrease) in cash	288,741	85,796	586,464	961,001	24,291
Cash and cash equivalents-beginning of year	389,468	16,371	1,830,201	2,236,040	75,068
Cash and cash equivalents-end of year	678,209	102,167	2,416,665	3,197,041	99,359
Reconciliation of operating income to net cash provided by operating activities					
Operating income	250,251	69,495	710,745	1,030,491	(28,954)
Adjustments to reconcile operating income to net cash provided by operating activities:					
Depreciation	83,689	40,005	462,792	586,486	56,858
(Increase) decrease in accounts receivable	11,253	(461)	22,568	33,360	-
Increase (decrease) in customer deposits	1,957	-	-	1,957	-
(Increase) decrease in customer prepaids	1,164	1,781	980	3,925	-
Increase (decrease) in accounts payable	(21,742)	(769)	7,533	(14,978)	(3,702)
Net cash provided by operating activities	326,572	110,051	1,204,618	1,641,241	24,202

The notes to the financial statements are an integral part of this statement.

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CITY OF RIGBY
Statement of Net Position
Proprietary Funds
September 30, 2018

	Water Fund	Sanitation	Sewer Fund	Total	Internal Service Funds	Governmental	Proprietary
ASSETS							
Cash	$ 930,963	$ 180,250	$ 1,482,929	$ 2,594,142	$ 108,714	$ 45,695	$ 63,019
Cash - restricted for bond	-	-	359,252	359,252	-		
Investments	1,054,810	399,432	2,783,362	4,237,604		-	-
Receivables	66,115	25,453	161,437	253,005	-		
Capital assets, net of depreciation	1,967,960	424,478	14,805,623	17,198,061	114,331		114,331
Capital assets, non-depreciable	21,154	-	-	21,154	-		
Prepaid expenses	5,600	-	-	5,600	-		
Total assets	4,046,602	1,029,613	19,592,603	24,668,818	$ 223,045	$ 45,695	$ 177,350
LIABILITIES							
Current Liabilities:							
Accounts payable	39,053	9,475	230,587	279,115	$ 5,871	$ 2,936	$ 2,936
Other payable	-	-	31,677	31,677		-	-
Water deposits	33,917	-	-	33,917	-	-	-
Salaries payable & payroll liabilities	766	932	1,323	3,021	135	68	68
Current portion of long term debt	-	-	517,200	517,200	-	-	-
Total current liabilities	73,736	10,407	780,787	864,930	6,006	3,003	3,003
Noncurrent liabilities:							
Bond payable - long term	-	-	7,868,792	7,868,792	-	-	-
Interim DEQ financing	-	-	-	-	-	-	-
Compensated absences payable	3,068	5,306	7,998	16,372	-	-	-
Total liabilities	76,804	15,713	8,657,577	8,750,094	6,006	3,003	3,003
NET POSITION							
Invested in capital assets, net of related debt	1,989,114	424,478	6,419,631	8,833,223	114,331	-	114,331
Restricted for debt service	-	-	665,074	665,074	-	-	-
Net assets - unrestricted	1,980,684	589,422	3,850,321	6,420,427	102,708	42,692	60,016
Total net position	$ 3,969,798	$ 1,013,900	$ 10,935,026	15,918,724	$ 217,039	$ 42,692	$ 174,347

Some amounts reported for business-type activities in the statement of net position are different because certain internal service fund assets and liabilities are included with business-type activities.	174,347
Net position of business-type activities	$ 16,093,071

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Revenues, Expenses, and Changes in Fund Net Position
Proprietary Funds
September 30, 2018

	Water Fund	Sanitation	Sewer Fund	Total	Internal Service Funds
OPERATING REVENUE					
Consumer charges	$ 611,213	$ 265,003	$ 1,596,687	$ 2,472,903	$ -
Other revenue	324	571	10,859	11,754	-
Other Services	-	-	-	-	96,479
Total operating revenue	611,537	265,574	1,607,546	2,484,657	96,479
OPERATING EXPENSES					
Salaries	43,408	64,209	113,889	221,506	7,895
Payroll taxes	5,241	5,044	11,237	21,522	919
Insurance - employee	13,476	10,668	35,165	59,309	1,193
Retirement - employee	7,710	6,970	12,448	27,128	976
Legal fees	-	-	-	-	-
Municipal shop building	7,498	6,124	6,305	19,927	9,134
Utilities	209	-	91,927	92,136	-
Office supplies and postage	5,860	7,988	5,855	19,703	-
Maintenance and repairs	180,694	26,908	55,160	262,762	30,091
Training and travel	448	-	690	1,138	-
Supplies	39	42	31,606	31,687	6,744
Fuel	-	-	2,874	2,874	30,747
Depreciation	84,714	59,165	463,744	607,623	37,696
Miscellaneous expense	22,978	48,456	30,900	102,334	59
Irrigation assessments	3,583	-	-	3,583	-
Total operating expense	375,858	235,574	861,800	1,473,232	125,454
Operating income (loss)	235,679	30,000	745,746	1,011,425	(28,975)
NONOPERATING REVENUE (EXPENSE)					
Wastewater project grant income	-	-	-	-	-
Wastewater project expenditures	-	-	-	-	-
Interest income	11,248	5,866	26,488	43,602	-
Interest expense	-	-	(73,576)	(73,576)	-
Gain (loss) on investments	-	-	-	-	-
Reserve for debt service	-	-	-	-	-
Capital contributions/transfers	-	166,702	-	166,702	(166,702)
Operating transfers	(25,000)	(25,000)	(25,000)	(75,000)	-
Changes in net position	221,927	177,568	673,658	1,073,153	(195,677)
NET POSITION					
Total net position - beginning	3,747,871	836,332	10,261,368		412,716
Total net position - ending	$ 3,969,798	$ 1,013,900	$ 10,935,026		$ 217,039

Some amounts reported for business-type activities in the statement of activities are different because the net revenue of certain internal service funds is reported with business-type activities.	(199,340)
Change in net position of business-type activities	$ 873,813

The notes to the financial statements are an integral part of this statement.

CITY OF RIGBY
Statement of Cash Flows
Proprietary Funds
September 30, 2018

	Water Fund	Sanitation	Sewer Fund	Totals	Internal Service Funds
CASH FLOWS FROM OPERATING ACTIVITIES					
Cash received from customers	$ 601,108	$ 267,952	$ 1,602,947	$ 2,472,007	$ 96,479
Payments to suppliers and employees	(284,364)	(165,699)	(417,532)	(867,595)	(87,124)
Cash provided by customer deposits	2,759	-	-	2,759	-
Net cash provided (used) by operating activities	319,503	102,253	1,185,415	1,607,171	9,355
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES					
Transfers from (to) other funds	(25,000)	(25,000)	(25,000)	(75,000)	-
Net cash provided (used) by noncapital financing activities	(25,000)	(25,000)	(25,000)	(75,000)	-
CASH FLOWS FROM CAPITAL FINANCING ACTIVITIES					
Cash paid for capital assets	(51,259)	-	(1,049,042)	(1,100,301)	-
Principle payments	-	-	(661,548)	(661,548)	-
Interest paid on long-term obligations	-	-	(73,576)	(73,576)	-
Net cash provided (used) by capital and related financing activities	(51,259)	-	(1,784,166)	(1,835,425)	-
CASH FLOWS FROM INVESTING ACTIVITIES					
Interest income	9,510	830	26,488	36,828	-
Purchase of investments	-	-	22,778	22,778	-
Net cash provided (used) from investing activities	9,510	830	49,266	59,606	-
Net increase (decrease) in cash	252,754	78,083	(574,485)	(243,648)	9,355
Cash and cash equivalents-beginning of year	678,209	102,167	2,416,666	3,197,042	99,359
Cash and cash equivalents-end of year	$ 930,963	$ 180,250	$ 1,842,181	$ 2,953,394	$ 108,714
Reconciliation of operating income to net cash provided by operating activities					
Operating income	$ 235,679	$ 30,000	$ 745,746	$ 1,011,425	$ (28,975)
Adjustments to reconcile operating income to net cash provided by operating activities:					
Depreciation	84,714	59,165	463,744	607,623	37,696
(Increase) decrease in accounts receivable	(10,429)	2,378	(4,599)	(12,650)	-
Increase (decrease) in customer deposits	2,759	-	-	2,759	-
(Increase) decrease in customer prepaids	(5,600)	-	-	(5,600)	-
Increase (decrease) in accounts payable	12,380	10,710	(19,476)	3,614	634
Net cash provided by operating activities	$ 319,503	$ 102,253	$ 1,185,415	$ 1,607,171	$ 9,355

The notes to the financial statements are an integral part of this statement.

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CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2013

SEWER REVENUE FUND

SEWER COLLECTIONS

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-435-101	LID - SPECIAL PROJECTS	.00	.00	.00	.00	.0
64-435-110	SALARIES	.00	.00	.00	.00	.0
64-435-111	SALARY - DEPT HEAD	840.00	9,955.90	.00	(9,955.90)	.0
64-435-112	SEWER OPERATOR LABOR	3,741.72	14,384.39	57,000.00	42,615.61	25.2
64-435-113	SEWER LABOR OVERTIME	476.00	476.00	.00	(476.00)	.0
64-435-114	EQUIP MTCE LABOR	.00	.00	.00	.00	.0
64-435-115	STANDBY TIME	413.70	3,609.28	3,500.00	(109.28)	103.1
64-435-116	LABOR ROAD PATCH/EXCAVATION	44.86	4,411.18	.00	(4,411.18)	.0
64-435-118	GIS/ CLERICAL LABOR	.00	263.82	.00	(263.82)	.0
64-435-120	UTILITY SHUT OFF	19.04	286.14	.00	(286.14)	.0
64-435-210	PAYROLL TAXES	288.92	2,657.48	4,850.00	2,192.52	54.8
64-435-220	INSURANCE - EMPLOYEES	528.97	4,362.82	10,000.00	5,637.18	43.6
64-435-221	WORK COMP/SUTA INSURANCE	85.25	2,636.34	5,575.00	2,938.66	47.3
64-435-230	RETIREMENT	430.69	2,732.64	6,700.00	3,967.36	40.8
64-435-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-435-400	MUNICIPAL SHOP BLDG EXPENSES	670.94	5,826.19	6,000.00	173.81	97.1
64-435-410	ELECTRICITY	2,165.29	11,138.83	12,000.00	861.17	92.8
64-435-412	TELEPHONE	9.93	216.79	875.00	658.21	24.8
64-435-413	POSTAGE	591.44	3,537.19	2,500.00	(1,037.19)	141.5
64-435-420	GAS HEAT LIFT STATION BLDG	311.54	311.54	.00	(311.54)	.0
64-435-429	TRUCK REP/MTCE	.00	.00	.00	.00	.0
64-435-430	PUMPS/VALUES/MANHOLES/ MTCE SY	585.00	10,456.56	25,000.00	14,543.44	41.8
64-435-431	SEWER LINE INSPECTIONS	.00	.00	5,000.00	5,000.00	.0
64-435-432	CONTRACT HIRE - ROAD ASPHALT	.00	2,320.00	7,500.00	5,180.00	30.9
64-435-433	MACHINE HIRE	.00	.00	.00	.00	.0
64-435-500	INTERNAL SERVICE WORK - EQUIP	435.00	760.00	3,000.00	2,240.00	25.3
64-435-521	UNFUNDED INSURANCE	.00	2,185.26	.00	(2,185.26)	.0
64-435-550	PRINT & PUBLISH	.00	.00	.00	.00	.0
64-435-555	DUES AND SUPPORT	.00	.00	1,000.00	1,000.00	.0
64-435-570	TRAINING & TRAVEL	.00	460.77	1,000.00	539.23	46.1
64-435-609	DUES	.00	.00	.00	.00	.0
64-435-610	DEPARTMENT SUPPLIES	95.30	1,610.95	1,500.00	(110.95)	107.4
64-435-611	DIG LINE	63.82	191.46	.00	(191.46)	.0
64-435-612	PLANT CHEMICALS	.00	.00	1,000.00	1,000.00	.0
64-435-613	UNIFORM/CLOTHING	.00	.00	125.00	125.00	.0
64-435-626	FUEL - VACUMM TRUCKS	.00	.00	.00	.00	.0
64-435-627	TESTING	.00	63.82	.00	(63.82)	.0
64-435-628	FUEL - PICKUPS	39.29	800.13	2,500.00	1,699.87	32.0
64-435-629	FUEL - GENERATOR	.00	.00	1,500.00	1,500.00	.0
64-435-630	ENGINEERING SERVICES	.00	3,150.00	2,000.00	(1,150.00)	157.5
64-435-631	BONDING EXPENSE	.00	.00	.00	.00	.0
64-435-639	IN LINE VIDEO INSPECTIONS	.00	.00	3,000.00	3,000.00	.0
64-435-640	GIS EXPENSE	.00	2,772.00	2,400.00	(372.00)	115.5
64-435-653	BANK FEES	.00	.00	.00	.00	.0
64-435-654	DRUG TESTING	.00	.00	100.00	100.00	.0
64-435-670	COMPUTER EXPENSES	.00	.00	.00	.00	.0
64-435-680	PIPE & VALVES/ENGINEER STUDY	.00	45.05	.00	(45.05)	.0
64-435-690	MISCELLANEOUS/ DAMAGE CLAIMS	.00	10,997.00	.00	(10,997.00)	.0
64-435-695	SUB WATER PUMP	.00	.00	.00	.00	.0
64-435-700	CAPITAL OUTLAY -	.00	.00	.00	.00	.0
64-435-701	CAPITAL OUTLAY - CAMERA LINES	.00	.00	.00	.00	.0
64-435-702	CAPITAL OUTLAY - SEWER CLEANER	.00	.00	.00	.00	.0

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2013

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-435-703	CAPITAL OUTLAY- STREETS	.00	72.00	.00	(72.00)	.0
64-435-705	CAPITAL OUTLAY- MOWER	.00	.00	.00	.00	.0
64-435-799	DEBT SERVICE - BONDS RETIRED	.00	.00	.00	.00	.0
64-435-800	GRANTS- WWTP	.00	.00	.00	.00	.0
64-435-801	CAPITAL OUTLAY - ALARM SYSTEM	.00	.00	.00	.00	.0
64-435-802	CAPITAL OUTLAY - LINE REPLACE	.00	.00	50,000.00	50,000.00	.0
64-435-803	CAPITAL OUTLAY - EQUIP & VEH	.00	.00	.00	.00	.0
64-435-804	CAPITAL OUTLAY - MAPPING SYS	.00	.00	.00	.00	.0
64-435-900	TRANSFER FROM	.00	.00	.00	.00	.0
64-435-901	TRANSFER - INTERNAL SERVICE	.00	.00	.00	.00	.0
64-435-910	TRANSFER TO FUND BALANCE	.00	.00	.00	.00	.0
64-435-999	DEPRECIATION	8,125.00	32,500.00	32,500.00	.00	100.0
	TOTAL SEWER COLLECTIONS	19,961.70	135,191.53	248,125.00	112,933.47	54.5

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2013

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	WASTEWATER TREATMENT					
64-445-101	OFFICE TIME	.00	153.00	3,000.00	2,847.00	5.1
64-445-110	SALARIES- SUPT	.00	.00	.00	.00	.0
64-445-111	SALARY-DEPT HEAD	900.00	9,170.56	.00	(9,170.56)	.0
64-445-112	SALARY- OPERATOR	9,277.59	62,473.19	25,000.00	(37,473.19)	249.9
64-445-113	OVERTIME PAY	.00	.00	.00	.00	.0
64-445-115	STANDBY TIME	809.55	7,048.23	.00	(7,048.23)	.0
64-445-116	CLEANING OXIDATION DITCH	191.36	275.80	.00	(275.80)	.0
64-445-125	PARKSON TESTING EXPENSE REIMBU	.00	.00	.00	.00	.0
64-445-126	PECK OSMBY REIMBUSED	.00	.00	.00	.00	.0
64-445-210	PAYROLL TAXES	(1,291.56)	4,512.12	2,250.00	(2,262.12)	200.5
64-445-220	INSURANCE - EMPLOYEES	422.51	9,154.53	2,825.00	(6,329.53)	324.1
64-445-221	WORK COMP/SUTA INSURANCE	(708.07)	1,924.37	2,750.00	825.63	70.0
64-445-230	RETIREMENT	1,038.79	7,454.91	2,975.00	(4,479.91)	250.6
64-445-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-445-410	ELECTRICITY	9,600.12	55,317.78	55,000.00	(317.78)	100.6
64-445-413	POSTAGE	.00	.00	.00	.00	.0
64-445-420	BUILDING EXPENSE & HEAT	1,118.15	8,264.89	9,500.00	1,235.11	87.0
64-445-430	MAINTENANCE/REPAIRS- SYSTEM	1,296.07	18,648.08	2,000.00	(16,648.08)	932.4
64-445-431	EQUIPMENT MTCE	6,185.32	9,450.54	3,000.00	(6,450.54)	315.0
64-445-432	MAINTENANCE - TRUCKS	.00	216.50	500.00	283.50	43.3
64-445-433	WASTE WATER BUILDING MTCE	186.21	1,451.21	500.00	(951.21)	290.2
64-445-436	INTERNAL EQUIP CHARGES	.00	3,633.90	2,500.00	(1,133.90)	145.4
64-445-521	UNFUNDED INSURANCE	.00	4,622.24	.00	(4,622.24)	.0
64-445-555	DUES AND SUPPORT	.00	202.00	500.00	298.00	40.4
64-445-570	TRAINING & TRAVEL	172.00	172.00	1,000.00	828.00	17.2
64-445-580	CELL PHONE / TELEPHONE	336.25	2,823.41	2,500.00	(323.41)	112.9
64-445-585	COMPUTER EXPENSE/SUPPLIES	.00	383.95	500.00	116.05	76.8
64-445-586	ENGINEER/ STUDY	.00	.00	.00	.00	.0
64-445-610	DEPARTMENT SUPPLIES	154.97	1,331.55	2,000.00	668.45	66.6
64-445-611	OFFICE SUPPLIES	8.19	392.23	1,500.00	1,107.77	26.2
64-445-612	PLANT CHEMICALS	443.36	5,646.63	4,000.00	(1,646.63)	141.2
64-445-613	SAFETY EQUIPMENT	.00	.00	150.00	150.00	.0
64-445-614	LAB SUPPLIES	.00	1,891.19	1,200.00	(691.19)	157.6
64-445-615	DISCHARGE PERMIT	.00	.00	.00	.00	.0
64-445-616	SLUDGE TRANSPORT/REMOVAL	.00	6,948.40	7,000.00	51.60	99.3
64-445-617	UNIFORM/CLOTHING	.00	152.76	125.00	(27.76)	122.2
64-445-626	FUEL- EQUIPMENT	1,145.56	1,145.56	1,500.00	354.44	76.4
64-445-627	FUEL- TRUCKS	228.70	1,166.36	1,200.00	33.64	97.2
64-445-628	FUEL GENERATOR	.00	1,837.24	2,000.00	162.76	91.9
64-445-630	ENGINEERING FEES	.00	.00	.00	.00	.0
64-445-640	TESTING EXPENSE	336.09	5,432.43	4,500.00	(932.43)	120.7
64-445-654	DRUG TESTING	.00	739.21	200.00	(539.21)	369.6
64-445-700	SEPTIC DUMP EXPENSES	.00	.00	.00	.00	.0
64-445-710	SEWER COLLECTION PROJECT	.00	153.00	.00	(153.00)	.0
64-445-800	CAPITAL OUTLAY- EQUIPMENT	579.39	1,782.55	5,000.00	3,217.45	35.7
64-445-801	CAPITAL OUTLAY - PLANT	.00	.00	.00	.00	.0
64-445-999	DEPRECIATION- WASTE WATER	71,250.00	285,000.00	285,000.00	.00	100.0
	TOTAL WASTEWATER TREATMENT	103,680.55	520,972.32	431,675.00	(89,297.32)	120.7

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2013

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	ADMINISTRATIVE EXPENSE					
64-455-210	PAYROLL TAXES	.00	.00	.00	.00	.0
64-455-220	INSURANCE - EMPLOYEES	.00	.00	.00	.00	.0
64-455-221	WORK COMP/SUTA INSUR	.00	.00	.00	.00	.0
64-455-230	RETIREMENT	.00	.00	.00	.00	.0
64-455-400	MUNICIPAL SHOP BLDG EXPENSES	.00	.00	.00	.00	.0
64-455-413	SEWER FUND - ADM POSTAGE	.00	.00	2,500.00	2,500.00	.0
64-455-550	PRINT & PUBLISH	.00	.00	1,000.00	1,000.00	.0
64-455-560	PUBLICATIONS	.00	.00	.00	.00	.0
64-455-570	DUES	.00	.00	.00	.00	.0
64-455-653	ICRMP INSUR	.00	13,525.00	10,000.00	(3,525.00)	135.3
64-455-654	DRUG TESTING	.00	.00	.00	.00	.0
64-455-655	AUDIT	.00	7,000.00	7,000.00	.00	100.0
64-455-656	LEGAL	4,937.50	39,208.60	200,000.00	160,791.40	19.6
64-455-657	WWTP - ENG FEES - EXTRA	.00	750.00	.00	(750.00)	.0
64-455-690	MISCELLANEOUS	.00	.00	.00	.00	.0
64-455-900	ADMIN TRANSFER - TO GENERAL	6,250.00	25,000.00	25,000.00	.00	100.0
64-455-901	TRANSFER - OTHER	.00	.00	337,000.00	337,000.00	.0
	TOTAL ADMINISTRATIVE EXPENSE	11,187.50	85,483.60	582,500.00	497,016.40	14.7
	DEBT SERVICE					
64-465-797	BOND INTEREST	.00	.00	.00	.00	.0
64-465-798	FISCAL AGENT FEE	.00	.00	.00	.00	.0
64-465-799	RESERVE FOR DEBT SERVICE	.00	.00	.00	.00	.0
	TOTAL DEBT SERVICE	.00	.00	.00	.00	.0
	DEPARTMENT 645					
64-645-670	COMPUTER EXPENSES/SOFTWARE	.00	.00	.00	.00	.0
	TOTAL DEPARTMENT 645	.00	.00	.00	.00	.0
	TOTAL FUND EXPENDITURES	134,829.75	741,647.45	1,262,300.00	520,652.55	58.8

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2014

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	SEWER COLLECTIONS					
64-435-101	LID - SPECIAL PROJECTS	.00	.00	.00	.00	.0
64-435-110	SALARIES	.00	.00	.00	.00	.0
64-435-111	SALARY - DEPT HEAD	640.08	8,893.36	15,000.00	6,106.64	59.3
64-435-112	SEWER OPERATOR LABOR	1,623.66	11,902.90	11,000.00	(902.90)	108.2
64-435-113	SEWER LABOR OVERTIME	.00	(476.00)	.00	476.00	.0
64-435-114	EQUIP MTCE LABOR	.00	.00	.00	.00	.0
64-435-115	STANDBY TIME	389.76	4,546.52	3,500.00	(1,046.52)	129.9
64-435-116	LABOR ROAD PATCH/EXCAVATION	14.00	424.34	.00	(424.34)	.0
64-435-118	GIS/ CLERICAL LABOR	.00	42.50	.00	(42.50)	.0
64-435-120	UTILITY SHUT OFF	.00	213.82	.00	(213.82)	.0
64-435-210	PAYROLL TAXES	94.76	1,915.51	2,050.00	134.49	93.4
64-435-220	INSURANCE - EMPLOYEES	83.81	2,806.61	4,000.00	1,193.39	70.2
64-435-221	WORK COMP/SUTA INSURANCE	76.22	973.18	1,400.00	426.82	69.5
64-435-230	RETIREMENT	140.61	2,852.65	3,200.00	347.35	89.2
64-435-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-435-400	MUNICIPAL SHOP BLDG EXPENSES	663.93	6,472.30	6,500.00	27.70	99.6
64-435-410	ELECTRICITY	2,658.97	13,198.85	25,000.00	11,801.15	52.8
64-435-412	TELEPHONE	106.57	979.63	1,200.00	220.37	81.6
64-435-413	POSTAGE	368.79	3,657.08	2,500.00	(1,157.08)	146.3
64-435-420	GAS HEAT LIFT STATION BLDG	.00	146.72	500.00	353.28	29.3
64-435-429	TRUCK REP/MTCE	.00	.00	1,000.00	1,000.00	.0
64-435-430	PUMPS/VALUES/MANHOLES/ MTCE SY	.00	420.80	25,000.00	24,579.20	1.7
64-435-431	SEWER LINE INSPECTIONS	.00	.00	5,000.00	5,000.00	.0
64-435-432	CONTRACT HIRE - ROAD ASPHALT	1,237.50	3,343.35	7,500.00	4,156.65	44.6
64-435-433	MACHINE HIRE	.00	.00	.00	.00	.0
64-435-500	INTERNAL SERVICE WORK - EQUIP	255.90	2,043.40	3,500.00	1,456.60	58.4
64-435-521	UNFUNDED INSURANCE	.00	.00	.00	.00	.0
64-435-550	PRINT & PUBLISH	.00	104.36	.00	(104.36)	.0
64-435-555	DUES AND SUPPORT	.00	.00	.00	.00	.0
64-435-570	TRAINING & TRAVEL	.00	397.69	1,000.00	602.31	39.8
64-435-609	DUES	.00	.00	500.00	500.00	.0
64-435-610	DEPARTMENT SUPPLIES	2.78	868.93	1,500.00	631.07	57.9
64-435-611	DIG LINE	.00	63.82	250.00	186.18	25.5
64-435-612	PLANT CHEMICALS	.00	.00	2,000.00	2,000.00	.0
64-435-613	UNIFORM/CLOTHING	.00	178.92	250.00	71.08	71.6
64-435-626	FUEL - VACUMM TRUCKS	.00	.00	.00	.00	.0
64-435-627	TESTING	.00	.00	.00	.00	.0
64-435-628	FUEL - PICKUPS	.00	188.07	3,600.00	3,411.93	5.2
64-435-629	FUEL - GENERATOR	.00	.00	2,000.00	2,000.00	.0
64-435-630	ENGINEERING SERVICES	.00	89.00	2,000.00	1,911.00	4.5
64-435-631	BONDING EXPENSE	.00	.00	.00	.00	.0
64-435-639	IN LINE VIDEO INSPECTIONS	.00	.00	.00	.00	.0
64-435-640	GIS EXPENSE	.00	.00	.00	.00	.0
64-435-653	BANK FEES	.00	.00	.00	.00	.0
64-435-654	DRUG TESTING	.00	633.00	125.00	(508.00)	506.4
64-435-670	COMPUTER EXPENSES	.00	.00	.00	.00	.0
64-435-680	PIPE & VALVES/ENGINEER STUDY	.00	.00	.00	.00	.0
64-435-690	MISCELLANEOUS/ DAMAGE CLAIMS	.00	.00	.00	.00	.0
64-435-695	SUB WATER PUMP	.00	.00	.00	.00	.0
64-435-700	CAPITAL OUTLAY -	.00	.00	.00	.00	.0
64-435-701	CAPITAL OUTLAY - CAMERA LINES	.00	.00	.00	.00	.0
64-435-702	CAPITAL OUTLAY - SEWER CLEANER	.00	.00	.00	.00	.0

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2014

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-435-703	CAPITAL OUTLAY- STREETS	.00	50,000.00	50,000.00	.00	100.0
64-435-705	CAPITAL OUTLAY- MOWER	.00	.00	.00	.00	.0
64-435-799	DEBT SERVICE - BONDS RETIRED	.00	.00	.00	.00	.0
64-435-800	GRANTS- WWTP	.00	.00	.00	.00	.0
64-435-801	CAPITAL OUTLAY - ALARM SYSTEM	.00	.00	.00	.00	.0
64-435-802	CAPITAL OUTLAY - LINE REPLACE	.00	.00	25,000.00	25,000.00	.0
64-435-803	CAPITAL OUTLAY - EQUIP & VEH	.00	129.69	.00	(129.69)	.0
64-435-804	CAPITAL OUTLAY - MAPPING SYS	.00	.00	.00	.00	.0
64-435-900	TRANSFER FROM	.00	.00	.00	.00	.0
64-435-901	TRANSFER - INTERNAL SERVICE	.00	.00	.00	.00	.0
64-435-910	TRANSFER TO FUND BALANCE	.00	.00	.00	.00	.0
64-435-999	DEPRECIATION	(385,621.00)	(361,246.00)	32,500.00	393,746.00	(1111.
	TOTAL SEWER COLLECTIONS	(377,263.66)	(244,235.00)	238,575.00	482,810.00	(102.4)

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2014

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	WASTEWATER TREATMENT					
64-445-101	OFFICE TIME	.00	.00	.00	.00	.0
64-445-110	SALARIES- SUPT	.00	.00	.00	.00	.0
64-445-111	SALARY-DEPT HEAD	1,430.80	8,835.44	7,000.00	(1,835.44)	126.2
64-445-112	SALARY- OPERATOR	7,896.75	72,080.38	80,000.00	7,919.62	90.1
64-445-113	OVERTIME PAY	.00	.00	.00	.00	.0
64-445-115	STANDBY TIME	752.22	6,850.62	7,000.00	149.38	97.9
64-445-116	CLEANING OXIDATION DITCH	179.42	179.42	.00	(179.42)	.0
64-445-125	PARKSON TESTING EXPENSE REIMBU	.00	.00	.00	.00	.0
64-445-126	PECK OSMBY REIMBUSED	.00	.00	.00	.00	.0
64-445-210	PAYROLL TAXES	2,424.05	8,370.26	7,550.00	(820.26)	110.9
64-445-220	INSURANCE - EMPLOYEES	2,909.56	13,701.06	19,000.00	5,298.94	72.1
64-445-221	WORK COMP/SUTA INSURANCE	758.13	3,957.08	4,600.00	642.92	86.0
64-445-230	RETIREMENT	713.43	9,871.54	11,000.00	1,128.46	89.7
64-445-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-445-410	ELECTRICITY	4,665.88	50,417.61	65,000.00	14,582.39	77.6
64-445-413	POSTAGE	75.00	75.00	.00	(75.00)	.0
64-445-420	BUILDING EXPENSE & HEAT	16.62	7,602.44	9,500.00	1,897.56	80.0
64-445-430	MAINTENANCE/REPAIRS- SYSTEM	951.66	8,929.15	8,000.00	(929.15)	111.6
64-445-431	EQUIPMENT MTCE	.00	12,959.60	3,500.00	(9,459.60)	370.3
64-445-432	MAINTENANCE - TRUCKS	219.61	427.12	1,000.00	572.88	42.7
64-445-433	WASTE WATER BUILDING MTCE	397.47	3,036.04	500.00	(2,536.04)	607.2
64-445-436	INTERNAL EQUIP CHARGES	178.40	2,778.10	2,500.00	(278.10)	111.1
64-445-521	UNFUNDED INSURANCE	.00	.00	.00	.00	.0
64-445-555	DUES AND SUPPORT	.00	78.00	500.00	422.00	15.6
64-445-570	TRAINING & TRAVEL	.00	460.00	1,000.00	540.00	46.0
64-445-580	CELL PHONE / TELEPHONE	255.45	2,972.62	2,750.00	(222.62)	108.1
64-445-585	COMPUTER EXPENSE/SUPPLIES	.00	694.66	500.00	(194.66)	138.9
64-445-586	ENGINEER/ STUDY	.00	.00	.00	.00	.0
64-445-610	DEPARTMENT SUPPLIES	43.44	1,904.01	1,500.00	(404.01)	126.9
64-445-611	OFFICE SUPPLIES	.00	105.44	1,500.00	1,394.56	7.0
64-445-612	PLANT CHEMICALS	.00	3,737.68	4,000.00	262.32	93.4
64-445-613	SAFETY EQUIPMENT	.00	35.71	250.00	214.29	14.3
64-445-614	LAB SUPPLIES	(24.54)	230.79	1,200.00	969.21	19.2
64-445-615	DISCHARGE PERMIT	.00	.00	.00	.00	.0
64-445-616	SLUDGE TRANSPORT/REMOVAL	744.80	4,806.20	18,000.00	13,193.80	26.7
64-445-617	UNIFORM/CLOTHING	.00	119.00	125.00	6.00	95.2
64-445-626	FUEL- EQUIPMENT	.00	370.19	1,500.00	1,129.81	24.7
64-445-627	FUEL- TRUCKS	.00	572.98	1,200.00	627.02	47.8
64-445-628	FUEL GENERATOR	.00	629.23	3,000.00	2,370.77	21.0
64-445-630	ENGINEERING FEES	.00	.00	.00	.00	.0
64-445-640	TESTING EXPENSE	423.42	5,581.48	4,500.00	(1,081.48)	124.0
64-445-654	DRUG TESTING	.00	340.00	125.00	(215.00)	272.0
64-445-700	SEPTIC DUMP EXPENSES	.00	.00	.00	.00	.0
64-445-710	SEWER COLLECTION PROJECT	.00	243.88	.00	(243.88)	.0
64-445-800	CAPITAL OUTLAY- EQUIPMENT	2,107.40	33,081.13	5,000.00	(28,081.13)	661.6
64-445-801	CAPITAL OUTLAY - PLANT	.00	.00	.00	.00	.0
64-445-999	DEPRECIATION- WASTE WATER	464,996.00	678,746.00	285,000.00	(393,746.00)	238.2
	TOTAL WASTEWATER TREATMENT	492,114.97	944,779.86	557,800.00	(386,979.86)	169.4
				272,800		

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2014

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	ADMINISTRATIVE EXPENSE					
64-455-210	PAYROLL TAXES	.00	199.67	.00	(199.67)	.0
64-455-220	INSURANCE - EMPLOYEES	.00	.00	.00	.00	.0
64-455-221	WORK COMP/SUTA INSUR	.00	.00	.00	.00	.0
64-455-230	RETIREMENT	.00	295.45	.00	(295.45)	.0
64-455-400	MUNICIPAL SHOP BLDG EXPENSES	.00	.00	.00	.00	.0
64-455-413	SEWER FUND - ADM POSTAGE	.00	.00	2,500.00	2,500.00	.0
64-455-550	PRINT & PUBLISH	.00	.00	.00	.00	.0
64-455-560	PUBLICATIONS	.00	.00	.00	.00	.0
64-455-570	DUES	.00	.00	.00	.00	.0
64-455-653	ICRMP INSUR	.00	13,931.25	10,000.00	(3,931.25)	139.3
64-455-654	DRUG TESTING	.00	.00	.00	.00	.0
64-455-655	AUDIT	.00	10,000.00	8,000.00	(2,000.00)	125.0
64-455-656	LEGAL	.00	40,270.24	200,000.00	159,729.76	20.1
64-455-657	WWTP - ENG FEES - EXTRA	.00	10,475.78	.00	(10,475.78)	.0
64-455-690	MISCELLANEOUS	.00	18.87	.00	(18.87)	.0
64-455-900	ADMIN TRANSFER - TO GENERAL	6,250.00	25,000.00	25,000.00	.00	100.0
64-455-901	TRANSFER - OTHER	.00	.00	.00	.00	.0
	TOTAL ADMINISTRATIVE EXPENSE	6,250.00	100,191.26	245,500.00	145,308.74	40.8
	DEBT SERVICE					
64-465-797	BOND INTEREST	.00	.00	.00	.00	.0
64-465-798	FISCAL AGENT FEE	.00	.00	.00	.00	.0
64-465-799	RESERVE FOR DEBT SERVICE	.00	.00	.00	.00	.0
	TOTAL DEBT SERVICE	.00	.00	.00	.00	.0
	DEPARTMENT 645					
64-645-670	COMPUTER EXPENSES/SOFTWARE	.00	.00	.00	.00	.0
	TOTAL DEPARTMENT 645	.00	.00	.00	.00	.0
	TOTAL FUND EXPENDITURES	121,101.31	800,736.12	1,041,875.00	241,138.88	76.9

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2015

SEWER REVENUE FUND

SEWER COLLECTIONS

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-435-101	LID - SPECIAL PROJECTS	.00	.00	.00	.00	.0
64-435-110	SALARIES	.00	57.68	.00	(57.68)	.0
64-435-111	SALARY - DEPT HEAD	952.00	8,066.79	10,000.00	1,933.21	80.7
64-435-112	SEWER OPERATOR LABOR	7,200.42	18,248.02	15,000.00	(3,248.02)	121.7
64-435-113	SEWER LABOR OVERTIME	.00	154.01	.00	(154.01)	.0
64-435-114	EQUIP MTCE LABOR	.00	.00	.00	.00	.0
64-435-115	STANDBY TIME	294.84	3,587.12	4,000.00	412.88	89.7
64-435-116	LABOR ROAD PATCH/EXCAVATION	.00	1,382.10	.00	(1,382.10)	.0
64-435-118	GIS/ CLERICAL LABOR	.00	.00	.00	.00	.0
64-435-120	UTILITY SHUT OFF	.00	38.54	.00	(38.54)	.0
64-435-210	PAYROLL TAXES	258.21	2,011.44	3,000.00	988.56	67.1
64-435-220	INSURANCE - EMPLOYEES	696.11	4,832.31	4,600.00	(232.31)	105.1
64-435-221	WORK COMP/SUTA INSURANCE	168.90	1,532.39	1,750.00	217.61	87.6
64-435-230	RETIREMENT	385.67	2,992.53	3,000.00	7.47	99.8
64-435-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-435-400	MUNICIPAL SHOP BLDG EXPENSES	.00	7,249.90	6,500.00	(749.90)	111.5
64-435-410	ELECTRICITY	8,096.20	22,193.68	13,000.00	(9,193.68)	170.7
64-435-412	TELEPHONE	173.04	1,098.41	500.00	(598.41)	219.7
64-435-413	POSTAGE	392.33	4,167.07	2,500.00	(1,667.07)	166.7
64-435-420	GAS HEAT LIFT STATION BLDG	.00	2.85	500.00	497.15	.6
64-435-429	TRUCK REP/MTCE	.00	.00	.00	.00	.0
64-435-430	PUMPS/VALUES/MANHOLES/ MTCE SY	5,572.27	8,701.95	25,000.00	16,298.05	34.8
64-435-431	SEWER LINE INSPECTIONS	.00	.00	.00	.00	.0
64-435-432	CONTRACT HIRE - ROAD ASPHALT	.00	.00	7,500.00	7,500.00	.0
64-435-433	MACHINE HIRE	.00	.00	.00	.00	.0
64-435-500	INTERNAL SERVICE WORK - EQUIP	.00	2,540.00	3,000.00	460.00	84.7
64-435-521	UNFUNDED INSURANCE	.00	.00	.00	.00	.0
64-435-550	PRINT & PUBLISH	.00	.00	.00	.00	.0
64-435-555	DUES AND SUPPORT	.00	.00	.00	.00	.0
64-435-570	TRAINING & TRAVEL	.00	342.83	750.00	407.17	45.7
64-435-609	DUES	.00	.00	.00	.00	.0
64-435-610	DEPARTMENT SUPPLIES	.00	444.45	2,000.00	1,555.55	22.2
64-435-611	DIG LINE	.00	.00	250.00	250.00	.0
64-435-612	PLANT CHEMICALS	.00	.00	.00	.00	.0
64-435-613	UNIFORM/CLOTHING	.00	.00	200.00	200.00	.0
64-435-626	FUEL - VACUMM TRUCKS	.00	.00	.00	.00	.0
64-435-627	TESTING	.00	.00	.00	.00	.0
64-435-628	FUEL - PICKUPS	.00	.00	.00	.00	.0
64-435-629	FUEL - GENERATOR	149.41	509.02	1,000.00	490.98	50.9
64-435-630	ENGINEERING SERVICES	.00	.00	2,000.00	2,000.00	.0
64-435-631	BONDING EXPENSE	.00	.00	.00	.00	.0
64-435-639	IN LINE VIDEO INSPECTIONS	.00	.00	.00	.00	.0
64-435-640	GIS EXPENSE	.00	.00	3,000.00	3,000.00	.0
64-435-653	BANK FEES	.00	.00	.00	.00	.0
64-435-654	DRUG TESTING	.00	71.00	125.00	54.00	56.8
64-435-670	COMPUTER EXPENSES	.00	.00	.00	.00	.0
64-435-680	PIPE & VALVES/ENGINEER STUDY	.00	8.54	.00	(8.54)	.0
64-435-690	MISCELLANEOUS/ DAMAGE CLAIMS	.00	.00	.00	.00	.0
64-435-695	SUB WATER PUMP	.00	.00	.00	.00	.0
64-435-700	CAPITAL OUTLAY -	22,600.00	181,260.48	.00	(181,260.48)	.0
64-435-701	CAPITAL OUTLAY - CAMERA LINES	.00	.00	.00	.00	.0
64-435-702	CAPITAL OUTLAY - SEWER CLEANER	.00	.00	.00	.00	.0

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2015

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-435-703	CAPITAL OUTLAY- STREETS	.00	.00	.00	.00	.0
64-435-705	CAPITAL OUTLAY- MOWER	3,065.00	3,065.00	.00	(3,065.00)	.0
64-435-799	DEBT SERVICE - BONDS RETIRED	.00	.00	.00	.00	.0
64-435-800	GRANTS- WWTP	.00	.00	.00	.00	.0
64-435-801	CAPITAL OUTLAY - ALARM SYSTEM	.00	.00	.00	.00	.0
64-435-802	CAPITAL OUTLAY - LINE REPLACE	.00	.00	.00	.00	.0
64-435-803	CAPITAL OUTLAY - EQUIP & VEH	.00	988.02	.00	(988.02)	.0
64-435-804	CAPITAL OUTLAY - MAPPING SYS	.00	.00	.00	.00	.0
64-435-900	TRANSFER FROM	.00	.00	.00	.00	.0
64-435-901	TRANSFER - INTERNAL SERVICE	.00	.00	.00	.00	.0
64-435-910	TRANSFER TO FUND BALANCE	.00	.00	.00	.00	.0
64-435-999	DEPRECIATION	8,125.00	32,500.00	32,500.00	.00	100.0
	TOTAL SEWER COLLECTIONS	58,129.40	308,046.13	141,675.00	(166,371.13)	217.4

SEWER REVENUE FUND

WASTEWATER TREATMENT

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-445-101	OFFICE TIME	.00	.00	.00	.00	.0
64-445-110	SALARIES- SUPT	.00	.00	.00	.00	.0
64-445-111	SALARY-DEPT HEAD	667.53	8,475.30	10,000.00	1,524.70	84.8
64-445-112	SALARY- OPERATOR	14,069.31	77,581.87	80,000.00	2,418.13	97.0
64-445-113	OVERTIME PAY	.00	.00	.00	.00	.0
64-445-115	STANDBY TIME	411.18	6,881.28	7,000.00	118.72	98.3
64-445-116	CLEANING OXIDATION DITCH	(179.42)	19.94	.00	(19.94)	.0
64-445-125	PARKSON TESTING EXPENSE REIMBU	.00	.00	.00	.00	.0
64-445-126	PECK OSMBY REIMBUSED	.00	.00	.00	.00	.0
64-445-210	PAYROLL TAXES	483.29	6,223.47	7,550.00	1,326.53	82.4
64-445-220	INSURANCE - EMPLOYEES	294.65	14,300.34	12,500.00	(1,800.34)	114.4
64-445-221	WORK COMP/SUTA INSURANCE	1,742.13	4,964.87	6,000.00	1,035.13	82.8
64-445-230	RETIREMENT	700.65	9,520.20	10,000.00	479.80	95.2
64-445-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-445-410	ELECTRICITY	12,701.48	68,141.28	60,000.00	(8,141.28)	113.6
64-445-413	POSTAGE	.00	76.60	.00	(76.60)	.0
64-445-420	BUILDING EXPENSE & HEAT	340.19	2,136.22	9,500.00	7,363.78	22.5
64-445-430	MAINTENANCE/REPAIRS- SYSTEM	461.18	16,385.41	10,000.00	(6,385.41)	163.9
64-445-431	EQUIPMENT MTCE	4,630.89	10,838.91	5,000.00	(5,838.91)	216.8
64-445-432	MAINTENANCE - TRUCKS	.00	137.15	1,000.00	862.85	13.7
64-445-433	WASTE WATER BUILDING MTCE	152.16	3,765.65	2,000.00	(1,765.65)	188.3
64-445-436	INTERNAL EQUIP CHARGES	261.10	2,951.75	4,000.00	1,048.25	73.8
64-445-521	UNFUNDED INSURANCE	.00	.00	.00	.00	.0
64-445-555	DUES AND SUPPORT	.00	30.00	500.00	470.00	6.0
64-445-570	TRAINING & TRAVEL	.00	799.84	750.00	(49.84)	106.7
64-445-580	CELL PHONE / TELEPHONE	465.32	3,420.36	3,000.00	(420.36)	114.0
64-445-585	COMPUTER EXPENSE/SUPPLIES	.00	947.42	750.00	(197.42)	126.3
64-445-586	ENGINEER/ STUDY	.00	.00	.00	.00	.0
64-445-610	DEPARTMENT SUPPLIES	.00	3,419.31	1,500.00	(1,919.31)	228.0
64-445-611	OFFICE SUPPLIES	.00	702.20	500.00	(202.20)	140.4
64-445-612	PLANT CHEMICALS	.00	6,813.81	6,000.00	(813.81)	113.6
64-445-613	SAFETY EQUIPMENT	25.10	667.57	200.00	(467.57)	333.8
64-445-614	LAB SUPPLIES	22.86	2,493.05	2,000.00	(493.05)	124.7
64-445-615	DISCHARGE PERMIT	.00	.00	.00	.00	.0
64-445-616	SLUDGE TRANSPORT/REMOVAL	1,425.00	13,706.40	8,000.00	(5,706.40)	171.3
64-445-617	UNIFORM/CLOTHING	.00	64.99	200.00	135.01	32.5
64-445-626	FUEL- EQUIPMENT	28.05	506.97	1,200.00	693.03	42.3
64-445-627	FUEL- TRUCKS	62.31	860.27	1,500.00	639.73	57.4
64-445-628	FUEL GENERATOR	.00	2,761.65	2,000.00	(761.65)	138.1
64-445-630	ENGINEERING FEES	.00	.00	.00	.00	.0
64-445-640	TESTING EXPENSE	460.17	5,792.75	6,000.00	207.25	96.6
64-445-654	DRUG TESTING	.00	123.00	120.00	(3.00)	102.5
64-445-700	SEPTIC DUMP EXPENSES	.00	541.25	.00	(541.25)	.0
64-445-710	SEWER COLLECTION PROJECT	.00	.00	.00	.00	.0
64-445-800	CAPITAL OUTLAY- EQUIPMENT	(1,082.50)	8,010.50	3,680.00	(4,330.50)	217.7
64-445-801	CAPITAL OUTLAY - PLANT	.00	.00	.00	.00	.0
64-445-999	DEPRECIATION- WASTE WATER	100,000.00	400,000.00	400,000.00	.00	100.0
	TOTAL WASTEWATER TREATMENT	138,142.63	684,061.58	662,450.00	(21,611.58)	103.3

262,450

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	ADMINISTRATIVE EXPENSE					
64-455-210	PAYROLL TAXES	.00	.00	.00	.00	.0
64-455-220	INSURANCE - EMPLOYEES	.00	.00	.00	.00	.0
64-455-221	WORK COMP/SUTA INSUR	.00	.00	.00	.00	.0
64-455-230	RETIREMENT	.00	.00	.00	.00	.0
64-455-400	MUNICIPAL SHOP BLDG EXPENSES	.00	.00	.00	.00	.0
64-455-413	SEWER FUND - ADM POSTAGE	.00	.00	.00	.00	.0
64-455-550	PRINT & PUBLISH	.00	101.91	.00	(101.91)	.0
64-455-560	PUBLICATIONS	.00	.00	.00	.00	.0
64-455-570	DUES	.00	.00	.00	.00	.0
64-455-653	ICRMP INSUR	.00	22,412.00	13,375.00	(9,037.00)	167.6
64-455-654	DRUG TESTING	.00	.00	.00	.00	.0
64-455-655	AUDIT	.00	8,000.00	8,000.00	.00	100.0
64-455-656	LEGAL	.00	.00	.00	.00	.0
64-455-657	WWTP - ENG FEES - EXTRA	.00	.00	.00	.00	.0
64-455-690	MISCELLANEOUS	.00	.00	.00	.00	.0
64-455-900	ADMIN TRANSFER - TO GENERAL	6,250.00	25,000.00	25,000.00	.00	100.0
64-455-901	TRANSFER - OTHER	.00	.00	.00	.00	.0
	TOTAL ADMINISTRATIVE EXPENSE	6,250.00	55,513.91	46,375.00	(9,138.91)	119.7
	DEBT SERVICE					
64-465-797	BOND INTEREST	.00	.00	.00	.00	.0
64-465-798	FISCAL AGENT FEE	.00	.00	.00	.00	.0
64-465-799	RESERVE FOR DEBT SERVICE	.00	.00	.00	.00	.0
	TOTAL DEBT SERVICE	.00	.00	.00	.00	.0
	DEPARTMENT 645					
64-645-670	COMPUTER EXPENSES/SOFTWARE	.00	.00	.00	.00	.0
	TOTAL DEPARTMENT 645	.00	.00	.00	.00	.0
	TOTAL FUND EXPENDITURES	202,522.03	1,047,621.62	850,500.00	(197,121.62)	123.2

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	SEWER COLLECTIONS					
64-435-101	LID - SPECIAL PROJECTS	.00	.00	.00	.00	.0
64-435-110	SALARIES	.00	.00	.00	.00	.0
64-435-111	SALARY - DEPT HEAD	969.02	9,541.34	9,000.00	(541.34)	106.0
64-435-112	SEWER OPERATOR LABOR	2,957.23	12,151.22	12,750.00	598.78	95.3
64-435-113	SEWER LABOR OVERTIME	.00	.00	.00	.00	.0
64-435-114	EQUIP MTCE LABOR	.00	.00	.00	.00	.0
64-435-115	STANDBY TIME	305.76	3,493.56	4,000.00	506.44	87.3
64-435-116	LABOR ROAD PATCH/EXCAVATION	96.00	1,071.18	.00	(1,071.18)	.0
64-435-118	GIS/ CLERICAL LABOR	.00	.00	.00	.00	.0
64-435-120	UTILITY SHUT OFF	23.02	86.28	.00	(86.28)	.0
64-435-210	PAYROLL TAXES	168.07	1,895.53	2,250.00	354.47	84.3
64-435-220	INSURANCE - EMPLOYEES	164.22	5,181.92	4,250.00	(931.92)	121.9
64-435-221	WORK COMP/SUTA INSURANCE	218.68	(4,080.84)	1,750.00	5,830.84	(233.2)
64-435-230	RETIREMENT	248.92	2,824.08	3,250.00	425.92	86.9
64-435-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-435-400	MUNICIPAL SHOP BLDG EXPENSES	892.57	5,879.16	8,000.00	2,120.84	73.5
64-435-410	ELECTRICITY	2,130.56	12,786.70	14,500.00	1,713.30	88.2
64-435-412	TELEPHONE	124.30	1,295.52	1,000.00	(295.52)	129.6
64-435-413	POSTAGE	262.17	3,985.39	3,000.00	(985.39)	132.9
64-435-420	GAS HEAT LIFT STATION BLDG	2.81	57.28	500.00	442.72	11.5
64-435-429	TRUCK REP/MTCE	.00	.00	.00	.00	.0
64-435-430	PUMPS/VALUES/MANHOLES/ MTCE SY	265.00	5,805.05	25,000.00	19,194.95	23.2
64-435-431	SEWER LINE INSPECTIONS	.00	.00	.00	.00	.0
64-435-432	CONTRACT HIRE - ROAD ASPHALT	.00	222.30	7,500.00	7,277.70	3.0
64-435-433	MACHINE HIRE	.00	.00	.00	.00	.0
64-435-500	INTERNAL SERVICE WORK - EQUIP	195.00	1,567.50	3,000.00	1,432.50	52.3
64-435-521	UNFUNDED INSURANCE	.00	.00	.00	.00	.0
64-435-550	PRINT & PUBLISH	.00	.00	.00	.00	.0
64-435-555	DUES AND SUPPORT	.00	.00	.00	.00	.0
64-435-570	TRAINING & TRAVEL	.00	.00	750.00	750.00	.0
64-435-609	DUES	.00	.00	.00	.00	.0
64-435-610	DEPARTMENT SUPPLIES	.00	268.48	500.00	231.52	53.7
64-435-611	DIG LINE	.00	.00	250.00	250.00	.0
64-435-612	PLANT CHEMICALS	.00	.00	.00	.00	.0
64-435-613	UNIFORM/CLOTHING	.00	.00	200.00	200.00	.0
64-435-626	FUEL - VACUMM TRUCKS	.00	.00	.00	.00	.0
64-435-627	TESTING	.00	.00	.00	.00	.0
64-435-628	FUEL - PICKUPS	.00	.00	.00	.00	.0
64-435-629	FUEL - GENERATOR	.00	.00	1,000.00	1,000.00	.0
64-435-630	ENGINEERING SERVICES	.00	.00	2,000.00	2,000.00	.0
64-435-631	BONDING EXPENSE	.00	.00	.00	.00	.0
64-435-639	IN LINE VIDEO INSPECTIONS	.00	.00	.00	.00	.0
64-435-640	GIS EXPENSE	.00	.00	.00	.00	.0
64-435-653	BANK FEES	.00	.00	.00	.00	.0
64-435-654	DRUG TESTING	.00	.00	125.00	125.00	.0
64-435-670	COMPUTER EXPENSES	.00	.00	.00	.00	.0
64-435-680	PIPE & VALVES/ENGINEER STUDY	.00	.00	.00	.00	.0
64-435-690	MISCELLANEOUS/ DAMAGE CLAIMS	.00	.00	.00	.00	.0
64-435-695	SUB WATER PUMP	.00	.00	.00	.00	.0
64-435-700	CAPITAL OUTLAY -	.00	756.70	.00	(756.70)	.0
64-435-701	CAPITAL OUTLAY - CAMERA LINES	.00	.00	.00	.00	.0
64-435-702	CAPITAL OUTLAY - SEWER CLEANER	.00	.00	.00	.00	.0

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2016

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
64-435-703	CAPITAL OUTLAY- STREETS	.00	.00	15,000.00	15,000.00	.0
64-435-705	CAPITAL OUTLAY- MOWER	.00	.00	.00	.00	.0
64-435-799	DEBT SERVICE - BONDS RETIRED	.00	.00	.00	.00	.0
64-435-800	GRANTS- WWTP	.00	.00	.00	.00	.0
64-435-801	CAPITAL OUTLAY - ALARM SYSTEM	.00	.00	.00	.00	.0
64-435-802	CAPITAL OUTLAY - LINE REPLACE	.00	59,754.00	65,000.00	5,246.00	91.9
64-435-803	CAPITAL OUTLAY - EQUIP & VEH	.00	.00	.00	.00	.0
64-435-804	CAPITAL OUTLAY - MAPPING SYS	.00	.00	.00	.00	.0
64-435-900	TRANSFER FROM	.00	.00	.00	.00	.0
64-435-901	TRANSFER - INTERNAL SERVICE	.00	.00	.00	.00	.0
64-435-910	TRANSFER TO FUND BALANCE	.00	.00	.00	.00	.0
64-435-999	DEPRECIATION	8,125.00	32,500.00	32,500.00	.00	100.0
	TOTAL SEWER COLLECTIONS	17,148.33	157,042.35	217,075.00	60,032.65	72.3

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2016

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	WASTEWATER TREATMENT					
64-445-101	OFFICE TIME	.00	.00	.00	.00	.0
64-445-110	SALARIES- SUPT	.00	.00	.00	.00	.0
64-445-111	SALARY-DEPT HEAD	716.47	8,733.06	10,000.00	1,266.94	87.3
64-445-112	SALARY- OPERATOR	13,177.63	80,873.41	82,000.00	1,126.59	98.6
64-445-113	OVERTIME PAY	.00	162.36	.00	(162.36)	.0
64-445-115	STANDBY TIME	693.84	6,985.48	7,000.00	14.52	99.8
64-445-116	CLEANING OXIDATION DITCH	.00	240.88	.00	(240.88)	.0
64-445-125	PARKSON TESTING EXPENSE REIMBU	.00	.00	.00	.00	.0
64-445-126	PECK OSMBY REIMBUSED	.00	.00	.00	.00	.0
64-445-210	PAYROLL TAXES	484.13	6,779.08	7,800.00	1,020.92	86.9
64-445-220	INSURANCE - EMPLOYEES	520.20	12,400.04	20,000.00	7,599.96	62.0
64-445-221	WORK COMP/SUTA INSURANCE	1,421.66	4,474.46	6,000.00	1,525.54	74.6
64-445-230	RETIREMENT	698.77	9,896.87	11,250.00	1,353.13	88.0
64-445-231	POST EMPLOYMENT BENEFITS	.00	.00	.00	.00	.0
64-445-410	ELECTRICITY	5,894.87	63,062.76	64,500.00	1,437.24	97.8
64-445-413	POSTAGE	.00	.00	.00	.00	.0
64-445-420	BUILDING EXPENSE & HEAT	77.92	2,686.62	6,000.00	3,313.38	44.8
64-445-430	MAINTENANCE/REPAIRS- SYSTEM	262.14	10,442.63	15,000.00	4,557.37	69.6
64-445-431	EQUIPMENT MTCE	127.50	11,464.23	8,500.00	(2,964.23)	134.9
64-445-432	MAINTENANCE - TRUCKS	.00	633.72	1,000.00	366.28	63.4
64-445-433	WASTE WATER BUILDING MTCE	25.98	2,328.93	3,500.00	1,171.07	66.5
64-445-436	INTERNAL EQUIP CHARGES	.00	1,519.98	2,400.00	880.02	63.3
64-445-521	UNFUNDED INSURANCE	.00	.00	.00	.00	.0
64-445-555	DUES AND SUPPORT	.00	45.00	500.00	455.00	9.0
64-445-570	TRAINING & TRAVEL	800.81	1,854.01	2,500.00	645.99	74.2
64-445-580	CELL PHONE / TELEPHONE	268.59	2,988.30	3,500.00	511.70	85.4
64-445-585	COMPUTER EXPENSE/SUPPLIES	.00	285.31	1,250.00	964.69	22.8
64-445-586	ENGINEER/ STUDY	.00	.00	.00	.00	.0
64-445-610	DEPARTMENT SUPPLIES	42.99	1,238.47	4,700.00	3,461.53	26.4
64-445-611	OFFICE SUPPLIES	171.09	735.18	500.00	(235.18)	147.0
64-445-612	PLANT CHEMICALS	.00	5,776.74	5,000.00	(776.74)	115.5
64-445-613	SAFETY EQUIPMENT	.00	351.25	200.00	(151.25)	175.6
64-445-614	LAB SUPPLIES	24.78	3,507.52	4,100.00	592.48	85.6
64-445-615	DISCHARGE PERMIT	.00	.00	.00	.00	.0
64-445-616	SLUDGE TRANSPORT/REMOVAL	2,084.30	15,321.10	20,000.00	4,678.90	76.6
64-445-617	UNIFORM/CLOTHING	.00	59.90	200.00	140.10	30.0
64-445-626	FUEL- EQUIPMENT	106.18	233.92	1,000.00	766.08	23.4
64-445-627	FUEL- TRUCKS	.00	227.77	1,000.00	772.23	22.8
64-445-628	FUEL GENERATOR	.00	1,434.95	3,500.00	2,065.05	41.0
64-445-630	ENGINEERING FEES	.00	.00	.00	.00	.0
64-445-640	TESTING EXPENSE	519.31	7,709.09	6,000.00	(1,709.09)	128.5
64-445-654	DRUG TESTING	.00	55.00	125.00	70.00	44.0
64-445-700	SEPTIC DUMP EXPENSES	.00	.00	.00	.00	.0
64-445-710	SEWER COLLECTION PROJECT	.00	.00	.00	.00	.0
64-445-800	CAPITAL OUTLAY- EQUIPMENT	.00	.00	10,000.00	10,000.00	.0
64-445-801	CAPITAL OUTLAY - PLANT	.00	.00	50,000.00	50,000.00	.0
64-445-999	DEPRECIATION- WASTE WATER	100,000.00	400,000.00	400,000.00	.00	100.0
	TOTAL WASTEWATER TREATMENT	128,119.16	664,508.02	759,025.00	94,516.98	87.6

$ 359,025

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2016

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	ADMINISTRATIVE EXPENSE					
64-455-210	PAYROLL TAXES	.00	.00	.00	.00	.0
64-455-220	INSURANCE - EMPLOYEES	.00	.00	.00	.00	.0
64-455-221	WORK COMP/SUTA INSUR	.00	.00	.00	.00	.0
64-455-230	RETIREMENT	.00	.00	.00	.00	.0
64-455-400	MUNICIPAL SHOP BLDG EXPENSES	.00	.00	.00	.00	.0
64-455-413	SEWER FUND - ADM POSTAGE	.00	.00	.00	.00	.0
64-455-550	PRINT & PUBLISH	.00	.00	.00	.00	.0
64-455-560	PUBLICATIONS	.00	.00	.00	.00	.0
64-455-570	DUES	.00	.00	.00	.00	.0
64-455-653	ICRMP INSUR	.00	14,000.00	14,000.00	.00	100.0
64-455-654	DRUG TESTING	.00	.00	.00	.00	.0
64-455-655	AUDIT	.00	8,000.00	8,000.00	.00	100.0
64-455-656	LEGAL	.00	.00	.00	.00	.0
64-455-657	WWTP - ENG FEES - EXTRA	.00	.00	.00	.00	.0
64-455-690	MISCELLANEOUS	.00	.00	.00	.00	.0
64-455-900	ADMIN TRANSFER - TO GENERAL	6,250.00	25,000.00	25,000.00	.00	100.0
64-455-901	TRANSFER - OTHER	.00	.00	.00	.00	.0
	TOTAL ADMINISTRATIVE EXPENSE	6,250.00	47,000.00	47,000.00	.00	100.0
	DEBT SERVICE					
64-465-797	BOND INTEREST	.00	.00	.00	.00	.0
64-465-798	FISCAL AGENT FEE	.00	.00	.00	.00	.0
64-465-799	RESERVE FOR DEBT SERVICE	.00	.00	.00	.00	.0
	TOTAL DEBT SERVICE	.00	.00	.00	.00	.0
	DEPARTMENT 645					
64-645-670	COMPUTER EXPENSES/SOFTWARE	.00	.00	.00	.00	.0
	TOTAL DEPARTMENT 645	.00	.00	.00	.00	.0
	TOTAL FUND EXPENDITURES	151,517.49	868,550.37	1,023,100.00	154,549.63	84.9

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2017

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	SEWER COLLECTIONS					
64-435-111	SALARY - DEPT HEAD	1,514.34	12,436.10	10,000.00	(2,436.10)	124.4
64-435-112	SEWER OPERATOR LABOR	4,671.37	16,467.68	9,500.00	(6,967.68)	173.3
64-435-115	STANDBY TIME	282.14	3,605.39	3,500.00	(105.39)	103.0
64-435-116	LABOR ROAD PATCH/EXCAVATION	296.85	1,894.98	.00	(1,894.98)	.0
64-435-120	UTILITY SHUT OFF	(3.46)	131.89	.00	(131.89)	.0
64-435-210	PAYROLL TAXES	272.48	2,381.81	1,500.00	(881.81)	158.8
64-435-220	INSURANCE - EMPLOYEES	(310.66)	4,214.86	2,700.00	(1,514.86)	156.1
64-435-221	WORK COMP/SUTA INSURANCE	(1,411.87)	3,431.86	1,000.00	(2,431.86)	343.2
64-435-230	RETIREMENT	456.80	3,600.85	2,200.00	(1,400.85)	163.7
64-435-400	MUNICIPAL SHOP BLDG EXPENSES	919.94	6,097.54	6,500.00	402.46	93.8
64-435-410	ELECTRICITY	5,719.23	20,164.54	20,000.00	(164.54)	100.8
64-435-412	TELEPHONE	225.16	1,652.21	1,400.00	(252.21)	118.0
64-435-413	POSTAGE	684.43	4,384.38	4,600.00	215.62	95.3
64-435-420	GAS HEAT LIFT STATION BLDG	11.12	99.23	100.00	.77	99.2
64-435-430	PUMPS/VALUES/MANHOLES/ MTCE SY	.00	8,981.05	6,000.00	(2,981.05)	149.7
64-435-431	SEWER LINE INSPECTIONS	.00	1,282.50	.00	(1,282.50)	.0
64-435-432	CONTRACT HIRE - ROAD ASPHALT	768.00	4,806.00	2,500.00	(2,306.00)	192.2
64-435-433	MACHINE HIRE	.00	1,000.00	.00	(1,000.00)	.0
64-435-500	INTERNAL SERVICE WORK - EQUIP	297.50	2,824.30	2,000.00	(824.30)	141.2
64-435-550	PRINT & PUBLISH	.00	29.34	.00	(29.34)	.0
64-435-570	TRAINING & TRAVEL	.00	500.00	400.00	(100.00)	125.0
64-435-610	DEPARTMENT SUPPLIES	731.45	1,466.10	500.00	(966.10)	293.2
64-435-629	FUEL - GENERATOR	.00	.00	1,000.00	1,000.00	.0
64-435-630	ENGINEERING SERVICES	.00	.00	1,000.00	1,000.00	.0
64-435-654	DRUG TESTING	.00	.00	125.00	125.00	.0
64-435-701	CAPITAL OUTLAY - CAMERA LINES	.00	275.00	.00	(275.00)	.0
64-435-802	CAPITAL OUTLAY - LINE REPLACE	.00	31,196.34	672,000.00	640,803.66	4.6
64-435-999	DEPRECIATION	53,000.00	212,000.00	212,000.00	.00	100.0
	TOTAL SEWER COLLECTIONS	68,124.82	344,923.95	960,525.00	615,601.05	35.9

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 12 MONTHS ENDING SEPTEMBER 30, 2017

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	WASTEWATER TREATMENT					
64-445-111	SALARY-DEPT HEAD	339.17	6,839.51	8,600.00	1,760.49	79.5
64-445-112	SALARY- OPERATOR	14,625.98	80,108.67	72,000.00	(8,108.67)	111.3
64-445-115	STANDBY TIME	546.00	7,036.05	7,000.00	(36.05)	100.5
64-445-210	PAYROLL TAXES	461.32	6,455.96	6,500.00	44.04	99.3
64-445-220	INSURANCE - EMPLOYEES	(611.44)	9,090.45	22,500.00	13,409.55	40.4
64-445-221	WORK COMP/SUTA INSURANCE	(3,092.63)	116.07	3,500.00	3,383.93	3.3
64-445-230	RETIREMENT	771.71	9,653.16	9,500.00	(153.16)	101.6
64-445-410	ELECTRICITY	6,058.12	67,153.78	62,000.00	(5,153.78)	108.3
64-445-420	BUILDING EXPENSE & HEAT	79.72	2,706.79	3,000.00	293.21	90.2
64-445-430	MAINTENANCE/REPAIRS- SYSTEM	4,840.63	22,377.78	16,750.00	(5,627.78)	133.6
64-445-431	EQUIPMENT MTCE	1,021.30	8,116.46	14,000.00	5,883.54	58.0
64-445-432	MAINTENANCE - TRUCKS	35.47	1,040.68	1,000.00	(40.68)	104.1
64-445-433	WASTE WATER BUILDING MTCE	59.14	734.07	3,500.00	2,765.93	21.0
64-445-436	INTERNAL EQUIP CHARGES	.00	1,710.10	3,000.00	1,289.90	57.0
64-445-555	DUES AND SUPPORT	.00	105.00	100.00	(5.00)	105.0
64-445-570	TRAINING & TRAVEL	75.00	939.00	1,000.00	61.00	93.9
64-445-580	CELL PHONE / TELEPHONE	467.46	3,687.50	3,000.00	(687.50)	122.9
64-445-585	COMPUTER EXPENSE/SUPPLIES	.00	1,512.21	1,000.00	(512.21)	151.2
64-445-610	DEPARTMENT SUPPLIES	248.45	2,227.58	2,000.00	(227.58)	111.4
64-445-611	OFFICE SUPPLIES	178.50	1,640.58	500.00	(1,140.58)	328.1
64-445-612	PLANT CHEMICALS	.00	5,884.42	5,100.00	(784.42)	115.4
64-445-613	SAFETY EQUIPMENT	.00	481.00	200.00	(281.00)	240.5
64-445-614	LAB SUPPLIES	298.28	4,087.85	4,200.00	112.15	97.3
64-445-616	SLUDGE TRANSPORT/REMOVAL	1,271.10	17,516.00	15,000.00	(2,516.00)	116.8
64-445-617	UNIFORM/CLOTHING	.00	.00	100.00	100.00	.0
64-445-626	FUEL- EQUIPMENT	.00	546.59	500.00	(46.59)	109.3
64-445-627	FUEL- TRUCKS	37.27	258.39	1,000.00	741.61	25.8
64-445-628	FUEL GENERATOR	.00	1,439.92	3,000.00	1,560.08	48.0
64-445-640	TESTING EXPENSE	491.00	8,595.76	6,000.00	(2,595.76)	143.3
64-445-654	DRUG TESTING	.00	302.00	125.00	(177.00)	241.6
64-445-710	SEWER COLLECTION PROJECT	7.45	7.45	.00	(7.45)	.0
64-445-999	DEPRECIATION- WASTE WATER	62,500.00	250,000.00	250,000.00	.00	100.0
	TOTAL WASTEWATER TREATMENT	90,709.00	522,370.78	525,675.00	3,304.22	99.4
				$ 275,675		
	ADMINISTRATIVE EXPENSE					
64-455-653	ICRMP INSUR	.00	14,544.00	14,000.00	(544.00)	103.9
64-455-655	AUDIT	.00	8,000.00	8,000.00	.00	100.0
64-455-900	ADMIN TRANSFER - TO GENERAL	6,250.00	25,000.00	25,000.00	.00	100.0
	TOTAL ADMINISTRATIVE EXPENSE	6,250.00	47,544.00	47,000.00	(544.00)	101.2
	TOTAL FUND EXPENDITURES	165,083.82	914,838.73	1,533,200.00	618,361.27	59.7
	NET REVENUE OVER EXPENDITURES	(92,796.11)	35,226.48	(593,900.00)	(629,126.48)	5.9

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 6 MONTHS ENDING MARCH 31, 2018

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	SEWER COLLECTIONS					
64-435-101	LID - SPECIAL PROJECTS	2,449.26	4,521.69	.00	(4,521.69)	.0
64-435-110	SALARIES	.00	2,018.66	.00	(2,018.66)	.0
64-435-111	SALARY - DEPT HEAD	807.47	5,990.66	11,000.00	5,009.34	54.5
64-435-112	SEWER OPERATOR LABOR	1,101.80	6,104.47	14,000.00	7,895.53	43.6
64-435-115	STANDBY TIME	388.94	1,822.72	3,500.00	1,677.28	52.1
64-435-116	LABOR ROAD PATCH/EXCAVATION	359.98	3,597.49	.00	(3,597.49)	.0
64-435-120	UTILITY SHUT OFF	.00	131.98	.00	(131.98)	.0
64-435-210	PAYROLL TAXES	389.31	1,690.00	2,250.00	560.00	75.1
64-435-220	INSURANCE - EMPLOYEES	8.33	2,670.06	6,800.00	4,129.94	39.3
64-435-221	WORK COMP/SUTA INSURANCE	200.10	1,130.87	1,700.00	569.13	66.5
64-435-230	RETIREMENT	576.22	2,320.50	3,700.00	1,379.50	62.7
64-435-400	MUNICIPAL SHOP BLDG EXPENSES	578.98	2,979.56	6,000.00	3,020.44	49.7
64-435-410	ELECTRICITY	766.79	7,719.00	11,000.00	3,281.00	70.2
64-435-412	TELEPHONE	124.19	735.74	1,500.00	764.26	49.1
64-435-413	POSTAGE	360.55	2,470.37	4,250.00	1,779.63	58.1
64-435-420	GAS HEAT LIFT STATION BLDG	.10	64.36	100.00	35.64	64.4
64-435-430	PUMPS/VALUES/MANHOLES/ MTCE SY	178.00	1,163.04	10,000.00	8,836.96	11.6
64-435-431	SEWER LINE INSPECTIONS	225.00	703.00	.00	(703.00)	.0
64-435-432	CONTRACT HIRE - ROAD ASPHALT	.00	468.60	2,500.00	2,031.40	18.7
64-435-500	INTERNAL SERVICE WORK - EQUIP	375.00	1,539.46	2,500.00	960.54	61.6
64-435-570	TRAINING & TRAVEL	.00	.00	400.00	400.00	.0
64-435-610	DEPARTMENT SUPPLIES	.00	.00	750.00	750.00	.0
64-435-630	ENGINEERING SERVICES	.00	1,330.00	.00	(1,330.00)	.0
64-435-654	DRUG TESTING	.00	.00	125.00	125.00	.0
64-435-700	CAPITAL OUTLAY -	.00	.00	1,000.00	1,000.00	.0
64-435-802	CAPITAL OUTLAY - LINE REPLACE	194,706.49	490,097.03	675,000.00	184,902.97	72.6
64-435-999	DEPRECIATION	53,000.00	106,000.00	212,000.00	106,000.00	50.0
	TOTAL SEWER COLLECTIONS	256,596.51	647,269.26	970,075.00	322,805.74	66.7

64-435-640 Krouer 319 92

790 Over budget

CITY OF RIGBY
EXPENDITURES WITH COMPARISON TO BUDGET
FOR THE 6 MONTHS ENDING MARCH 31, 2018

SEWER REVENUE FUND

		PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
	WASTEWATER TREATMENT				Move	
64-445-111	SALARY-DEPT HEAD	.00	666.21	7,200.00	6,533.79	9.3
64-445-112	SALARY- OPERATOR	5,317.40	35,483.65	73,000.00	37,516.35	48.6
64-445-115	STANDBY TIME	537.60	3,494.40	7,000.00	3,505.60	49.9
64-445-116	CLEANING OXIDATION DITCH	.00	37.23	.00	(37.23)	.0
64-445-210	PAYROLL TAXES	435.18	2,918.30	6,800.00	3,881.70	42.9
64-445-220	INSURANCE - EMPLOYEES	10.00	8,076.28	18,500.00	10,423.72	43.7
64-445-221	WORK COMP/SUTA INSURANCE	225.13	1,566.82	4,000.00	2,433.18	39.2
64-445-230	RETIREMENT	662.81	4,521.79	10,000.00	5,478.21	45.2
64-445-410	ELECTRICITY	5,638.62	34,998.66	66,000.00	31,001.34	53.0
Lights 64-445-420	BUILDING EXPENSE & HEAT	(73.69)	1,597.49	3,250.00	1,652.51	49.2
64-445-430	MAINTENANCE/REPAIRS- SYSTEM	10,741.31	16,535.09	16,750.00	214.91	98.7
64-445-431	EQUIPMENT MTCE	79.90	1,906.42	5,000.00	3,093.58	38.1
64-445-432	MAINTENANCE - TRUCKS	.00	.00	1,000.00	1,000.00	.0
64-445-433	WASTE WATER BUILDING MTCE	.00	1,224.20	2,000.00	775.80	61.2
Whats This 64-445-436	INTERNAL EQUIP CHARGES	50.00	622.80	3,000.00	2,377.20	20.8
64-445-555	DUES AND SUPPORT	.00	.00	100.00	100.00	.0
64-445-570	TRAINING & TRAVEL	400.00	535.19	1,000.00	464.81	53.5
64-445-580	CELL PHONE / TELEPHONE	437.67	1,629.05	3,000.00	1,370.95	54.3
64-445-585	COMPUTER EXPENSE/SUPPLIES	.00	.00	1,500.00	1,500.00	.0
64-445-610	DEPARTMENT SUPPLIES	511.98	1,375.19	2,000.00	624.81	68.8
64-445-611	OFFICE SUPPLIES	.00	451.31	1,000.00	548.69	45.1
64-445-612	PLANT CHEMICALS	.00	5,244.00	6,000.00	756.00	87.4 3000 M.
64-445-613	SAFETY EQUIPMENT	.00	257.25	200.00	(57.25)	128.6
64-445-614	LAB SUPPLIES	.00	2,239.39	4,200.00	1,960.61	53.3
64-445-616	SLUDGE TRANSPORT/REMOVAL	.00	2,737.20	16,000.00	13,262.80	17.1
64-445-617	UNIFORM/CLOTHING	.00	.00	100.00	100.00	.0
64-445-626	FUEL- EQUIPMENT	.00	47.81	750.00	702.19	6.4
64-445-627	FUEL- TRUCKS	99.01	443.48	500.00	56.52	88.7
64-445-628	FUEL GENERATOR	.00	1,978.38	2,500.00	521.62	79.1
64-445-640	TESTING EXPENSE	792.64	3,202.40	7,000.00	3,797.60	45.8 9000
64-445-654	DRUG TESTING	.00	.00	100.00	100.00	.0
64-445-710	SEWER COLLECTION PROJECT	.00	365.21	.00	(365.21)	.0
64-445-999	DEPRECIATION- WASTE WATER	62,500.00	125,000.00	250,000.00	125,000.00	50.0
	TOTAL WASTEWATER TREATMENT	88,365.56	259,155.20	519,450.00	260,294.80	49.9
	ADMINISTRATIVE EXPENSE					
64-455-653	ICRMP INSUR	7,000.00	14,000.00	14,000.00	.00	100.0
64-455-655	AUDIT	.00	8,000.00	8,000.00	.00	100.0
64-455-900	ADMIN TRANSFER - TO GENERAL	6,250.00	12,500.00	25,000.00	12,500.00	50.0
	TOTAL ADMINISTRATIVE EXPENSE	13,250.00	34,500.00	47,000.00	12,500.00	73.4
	TOTAL FUND EXPENDITURES	358,212.07	940,924.46	1,536,525.00	595,600.54	61.2

SEWER REVENUE FUND

	PERIOD ACTUAL	YTD ACTUAL	BUDGET	UNEXPENDED	PCNT
NET REVENUE OVER EXPENDITURES	(282,955.44)	(513,433.56)	(466,525.00)	46,908.56	(110.1)

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Appendix D

Capital Improvement Plan Alternatives

Project Summary Sheets

- Capital Improvement Plan
- Priority 1 CIP- IFAS
- Priority 1 CIP – Similar Oxidation Ditch
- Influent Channel Improvement – 1.1 – Headworks
- Critical Spares and Lab Equipment – 1.2 – Headworks and Lab
- Dewatering Improvements – 1.3 – Dewatering Room and Sludge Storage
- Biosolids Management Plan – 1.4 – Entire Plant
- Ammonia Removal Improvements – 1.5 IFAS – Entire Plant
- Ammonia Removal Improvements – 1.5 Similar Oxidation Ditch – Entire Plant
- UV Improvements – 1.6 – UV Building
- Tertiary Filters – 1.7 – UV Building
- Plant Water Pumps – 1.8 – UV Building
- Electrical Upgrades – 1.9 – Entire Plant
- SCADA Upgrades – 1.10 – Entire Plant
- Headworks Improvements – 2.1 – Headworks
- Maintenance Building – 2.2 – Near Old Lagoons

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City of Rigby Wastewater Facilities Planning Study
Capital Improvement Plan

ID#	Item	Primary Purpose(s)	IFAS Alternative Total Estimated Cost (2019)	Similar Oxidation Ditch Total Estimated Cost (2019)
Priority 1 Improvements (2020-2025)				
1.1	Influent Channel Improvements	Operations, Permit Compliance	$ 124,000	$ 124,000
1.2	Critical Spares and Lab Equipment	Operations, Redundancy	$ 39,000	$ 39,000
1.3	Dewatering Improvements	Capacity, Operations	$ 2,370,000	$ 2,370,000
1.4	Biosolids Management Plan	Operations, Permit Compliance	$ 25,000	$ 25,000
1.5	Ammonia Removal Improvements	Capacity, Permit Compliance	$ 9,750,000	$ 12,030,000
1.6	UV Improvements	Cost Savings, Permit Compliance	$ 1,620,000	$ 1,620,000
1.7	Tertiary Filters	Operations	$ 950,000	$ 950,000
1.8	Plant Water Pumps	Capacity, Operations	$ 74,000	$ 74,000
1.9	Electrical Upgrades	Operations, Permit Compliance	$ 434,000	$ 434,000
1.10	SCADA Upgrades	Operations	$ 310,000	$ 310,000
	Total Priority 1 Improvements (rounded)		**$ 15,696,000**	**$ 17,976,000**
Priority 2 Improvements (2030-2040)				
2.1	Headworks Improvements	Capacity, Operations	$ 2,900,000	$ 2,900,000
2.2	Maintenance Building	Operations	$ 840,000	$ 840,000
	Total Priority 2 Improvements (rounded)		**$ 3,740,000**	**$ 3,740,000**
TOTAL WASTEWATER PLANT IMPROVEMENTS COSTS (rounded)			**$ 19,436,000**	**$ 21,716,000**

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in 2019 dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

City of Rigby
Wastewater Facilities Planning Study
Priority 1 CIP (IFAS)

ID#	Item	Cost	Opinion of Probable Costs (2019 Dollars)				
			2020	2021	2022	2023	2024
Priority 1 Improvements (2020-2025)							
1.1	Influent Channel Improvements	$ 124,000	Not part of project				
1.2	Critical Spares and Lab Equipment	$ 39,000	Not part of project				
1.3	Dewatering Improvements	$ 2,370,000	$ 80,000	$ 290,000	$ 2,000,000		
1.4	Biosolids Management Plan	$ 25,000			$ 25,000		
1.5	Ammonia Removal Improvements	$ 9,750,000	$ 300,000	$ 1,170,000	$ 4,140,000	$ 4,140,000	
1.6	UV Improvements	$ 1,620,000	$ 50,000	$ 200,000	$ 685,000	$ 685,000	
1.7	Tertiary Filters	$ 950,000		$ 150,000	$ 800,000		
1.8	Plant Water Pumps	$ 74,000		$ 12,000	$ 62,000		
1.9	Electrical Upgrades	$ 434,000	$ 20,000	$ 60,000	$ 177,000	$ 177,000	
1.10	SCADA Upgrades	$ 310,000	$ 10,000	$ 40,000	$ 130,000	$ 130,000	
Total (rounded)		**$ 15,696,000**	**$ 460,000**	**$ 1,922,000**	**$ 8,019,000**	**$ 5,132,000**	**$ -**

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City of Rigby
Wastewater Facilities Planning Study
Priority 1 CIP (Similar Oxidation Ditch)

ID#	Item	Cost	Opinion of Probable Costs (2019 Dollars)				
			2020	2021	2022	2023	2024
Priority 1 Improvements (2020-2025)							
1.1	Influent Channel Improvements	$ 124,000	Not part of project				
1.2	Critical Spares and Lab Equipment	$ 39,000	Not part of project				
1.3	Dewatering Improvements	$ 2,370,000	$ 80,000	$ 290,000	$ 2,000,000		
1.4	Biosolids Management Plan	$ 25,000			$ 25,000		
1.5	Ammonia Removal Improvements	$ 12,030,000	$ 370,000	$ 1,450,000	$ 5,105,000	$ 5,105,000	
1.6	UV Improvements	$ 1,620,000	$ 50,000	$ 200,000	$ 685,000	$ 685,000	
1.7	Tertiary Filters	$ 950,000		$ 150,000	$ 800,000		
1.8	Plant Water Pumps	$ 74,000		$ 12,000	$ 62,000		
1.9	Electrical Upgrades	$ 434,000	$ 20,000	$ 60,000	$ 177,000	$ 177,000	
1.10	SCADA Upgrades	$ 310,000	$ 10,000	$ 40,000	$ 130,000	$ 130,000	
Total (rounded)		**$ 17,976,000**	**$ 530,000**	**$ 2,202,000**	**$ 8,984,000**	**$ 6,097,000**	**$ -**

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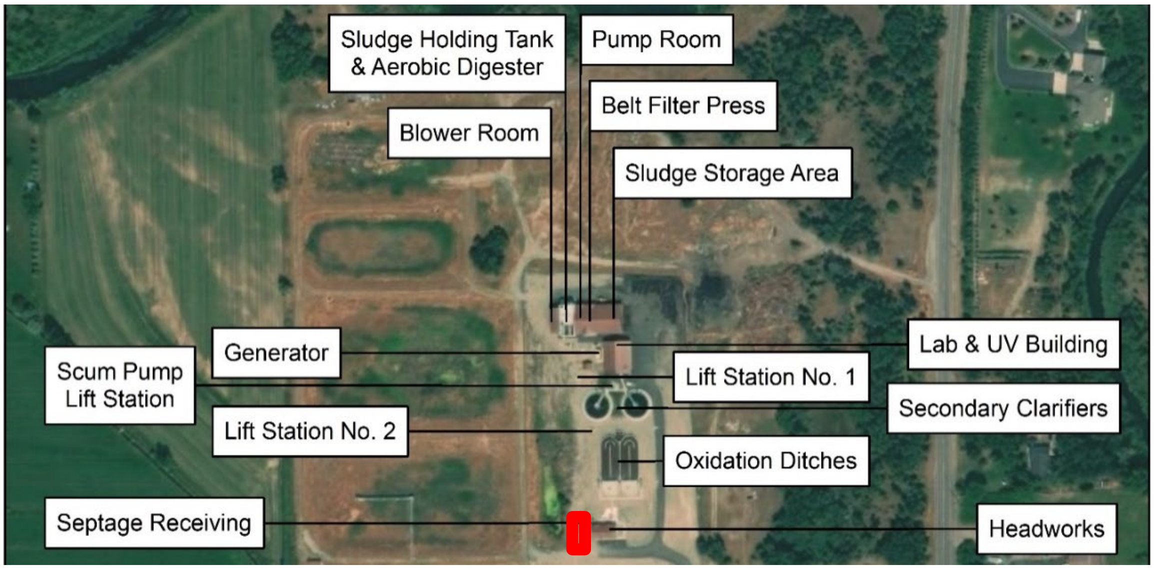
Wastewater Facilities Project: **Influent Channel Improvements**
Project Identifier: **1.1**

Objective: Reconstruct the influent channel to reduce solids deposition near the flume to improve flow measurement. Also replace the flume so that it is capable of measuring the influent flow through the entire planning period.

Project Location: Headworks



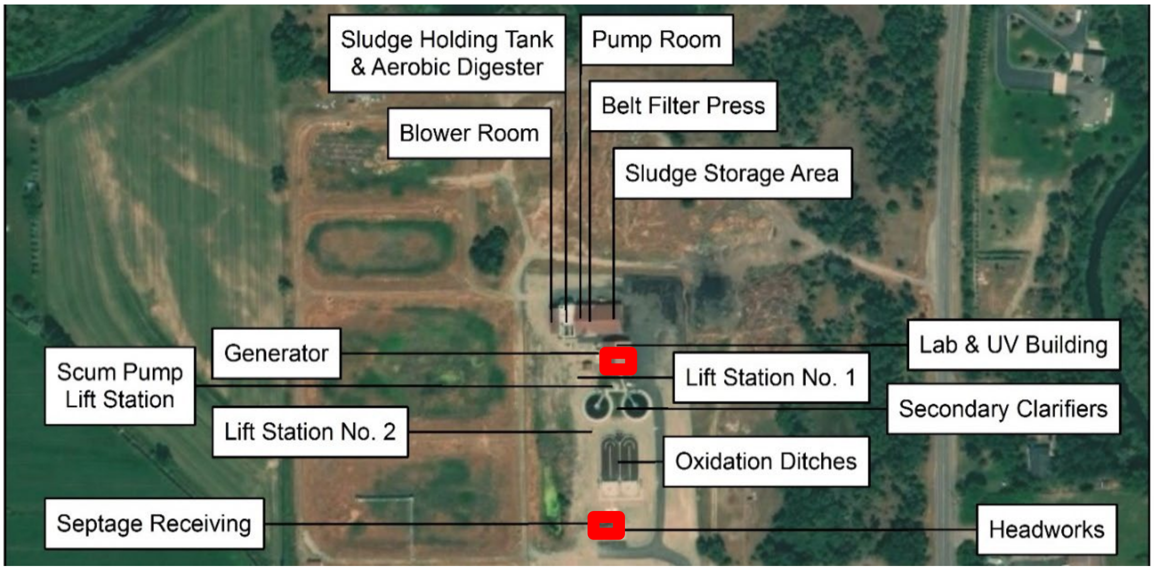
Item	Cost (2019)	
Demolition	$	10,000
Concrete and Parshall Flume	$	50,000
General Conditions (10%)	$	6,000
Contingency (30%)	$	20,000
Contractor OH&P (15%)	$	13,000
Total Construction Cost	**$**	**99,000**
Soft Costs (Engineering & CMS; 25%)	$	25,000
Total Project Cost	**$**	**124,000**

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Critical Spares and Lab Equipment**
Project Identifier: **1.2**

Objective: The WWTP is missing spare motors and pumps in the Headworks. Also the WWTP could benefit from having an oven and microscope for better process control. It is anticipated that these purchases will be made in house.

Project Location: Headworks and Lab



Item	Cost (2019)	
Headworks Critical Spare Parts	$	25,000
Lab Equipment	$	5,000
Contingency (30%)	$	9,000
Total Construction Cost	**$**	**39,000**
Assumed No Engineering	$	-
Total Project Cost	**$**	**39,000**

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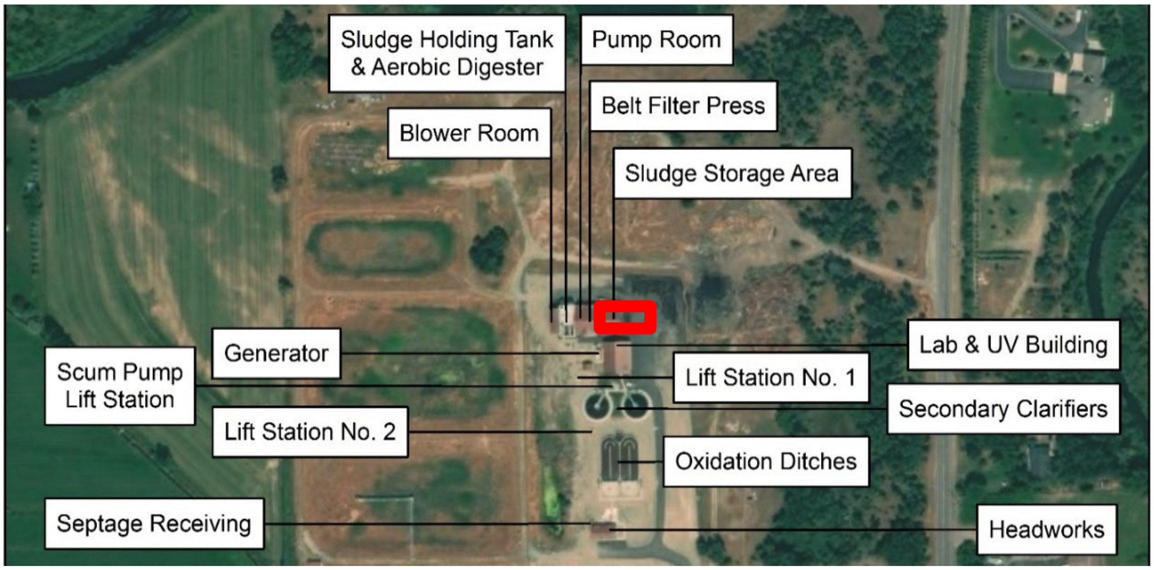
Wastewater Facilities Project: **Dewatering Improvements**
Project Identifier: **1.3**

Objective: Provide needed dewatering capacity through purchasing a screw press. The improvements also include expanding the dewatering room to accomodate the screw press and adding berms and a sump pump station to collect runoff in the sludge storage area.

Project Location: Dewatering Room and Sludge Storage



Item	Cost (2019)	
Site Work for Sludge Storage	$	80,000
Asphalt Berms and Sump Pumps for Sludge Storage	$	100,000
Site Work for Dewatering Room Expansion	$	50,000
Demolition	$	50,000
Building Expansion	$	150,000
Dewatering Equipment	$	500,000
Polymer System	$	50,000
Thickening Critical Spare Parts	$	60,000
Electrical/Controls	$	100,000
General Conditions (10%)	$	120,000
Contingency (30%)	$	380,000
Contractor OH&P (15%)	$	250,000
Total Construction Cost	**$**	**1,890,000**
Soft Costs (Engineering & CMS; 25%)	$	480,000
Total Project Cost	**$**	**2,370,000**

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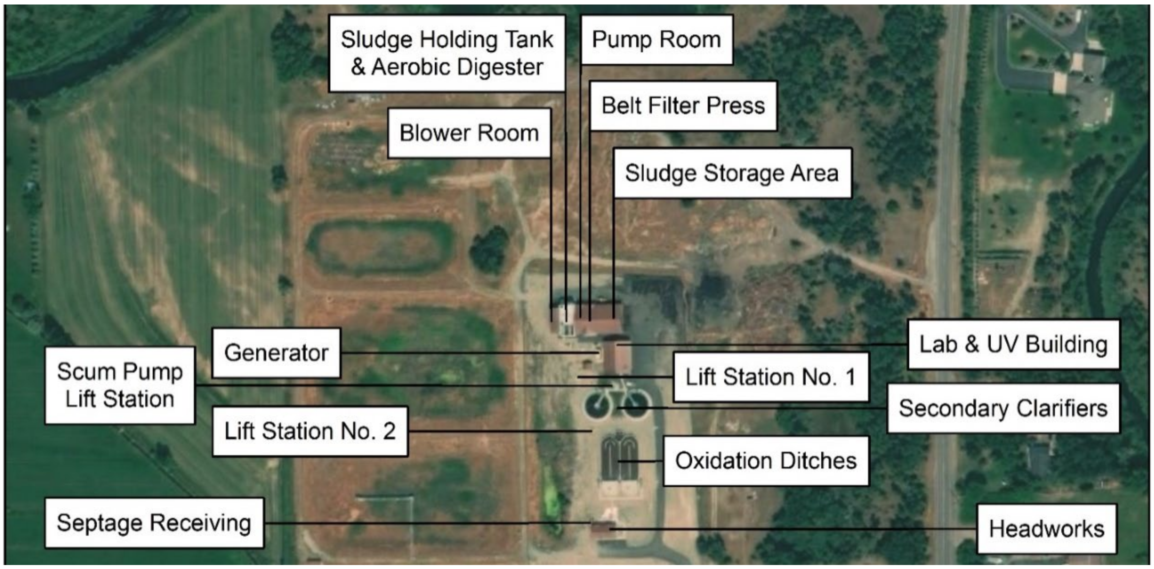
Wastewater Facilities Project: **Biosolids Management Plan**
Project Identifier: **1.4**

Objective: Prepare a biosolids management plan to document solids handling, treatment, and monitoring procedures.

Project Location: Entire Plant



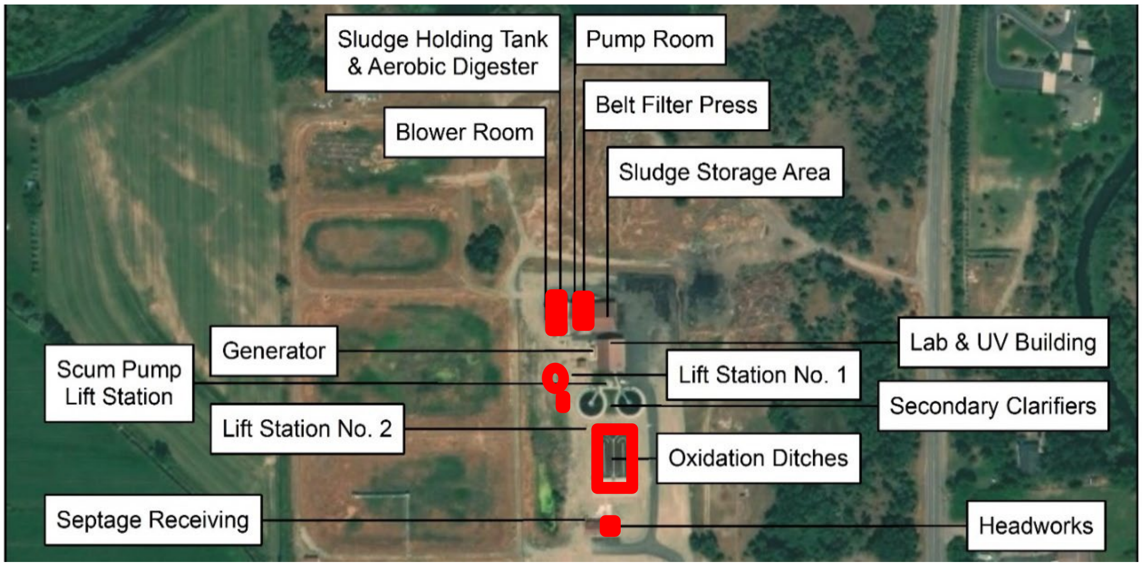
Item	Cost (2019)	
Biosolids Management Plan	$	25,000
Total Project Cost	**$**	**25,000**

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Ammonia Removal Improvements**
Project Identifier: **1.5 IFAS**

Objective: Provide ammonia removal to meet the compliance period in the City's discharge permit. The improvements would include a new IFAS system for the existing basins, new fine screens, a new secondary clarifier, splitter box, pumps, blowers, as well as pump and blower room modifications.

Project Location: Entire Plant



Item		Cost (2019)
Site Work	$	300,000
Demolition	$	30,000
Piping/Valves and Instrumentation	$	300,000
New Fine Screens	$	520,000
Existing Basin Modifications and Equipment	$	450,000
Blowers and Blower Room Expansion	$	600,000
Mixed Liquor Splitter Box	$	150,000
New Secondary Clarifier	$	550,000
RAS Pump and Pump Room Upgrades	$	210,000
Media and Basin Screens	$	900,000
Electrical/Controls	$	720,000
General Conditions (10%)	$	480,000
Contingency (30%)	$	1,570,000
Contractor OH&P (15%)	$	1,020,000
Total Construction Cost	**$**	**7,800,000**
Soft Costs (Engineering & CMS; 25%)	$	1,950,000
Total Project Cost	**$**	**9,750,000**

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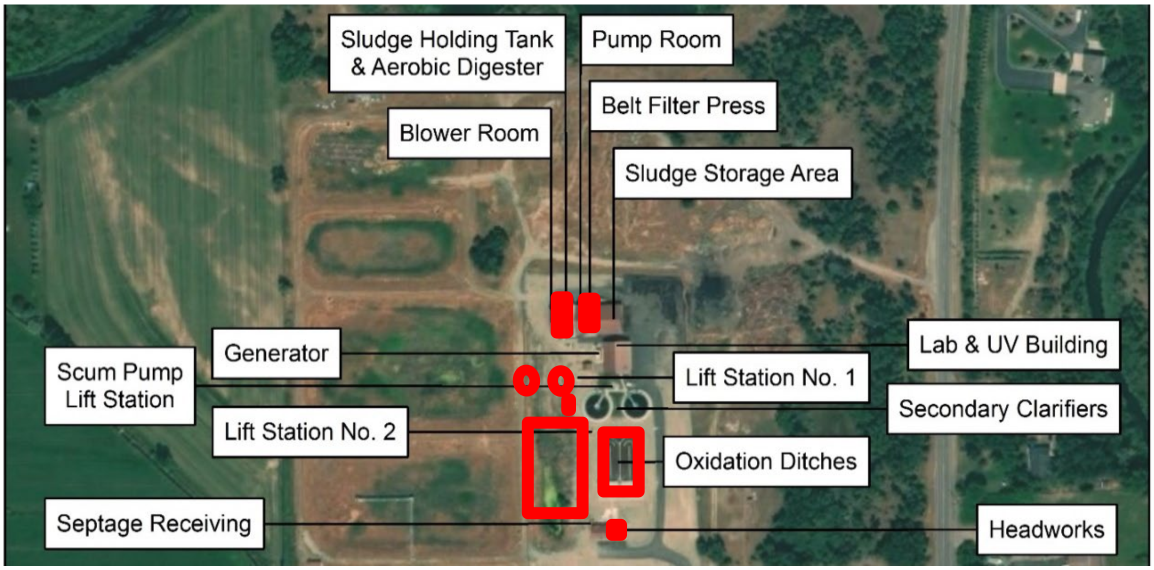
Wastewater Facilities Project: **Ammonia Removal Improvements**
Project Identifier: **1.5 Similar Oxidation Ditch**

Objective: Provide ammonia removal to meet the compliance period in the City's discharge permit. The improvements would include twp new, larger oxidation ditches with aeration similar to the existing, two new secondary clarifiers, splitter box, pumps, and pump room modifications.

Project Location: Entire Plant



Item		Cost (2019)
Site Work	$	1,300,000
Piping/Valves and Instrumentation	$	300,000
Influent Splitter Box	$	150,000
New Oxidation Ditch Basins and Equipment	$	1,700,000
Mixed Liquor Splitter Box	$	150,000
New Secondary Clarifiers	$	1,100,000
RAS Pumps and Pump Room Upgrades	$	250,000
Electrical/Controls	$	890,000
General Conditions (10%)	$	590,000
Contingency (30%)	$	1,930,000
Contractor OH&P (15%)	$	1,260,000
Total Construction Cost	**$**	**9,620,000**
Soft Costs (Engineering & CMS; 25%)	$	2,410,000
Total Project Cost	**$**	**12,030,000**

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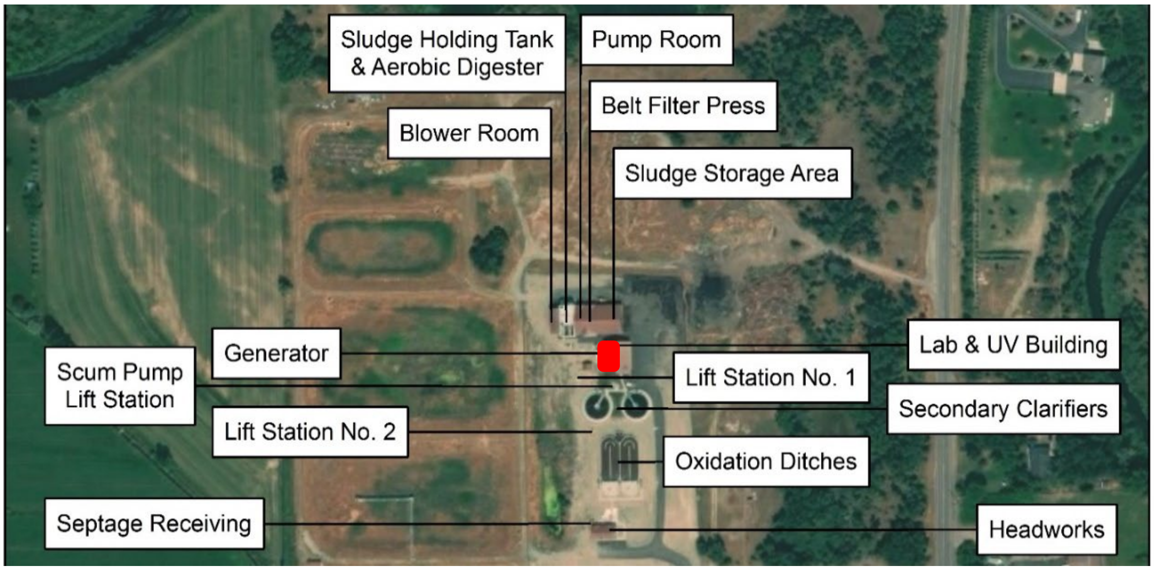
Wastewater Facilities Project: **UV Improvements**
Project Identifier: **1.6**

Objective: Replace the obsolete UV system with a new inclined vertical UV system and add a second UV channel for redundancy.

Project Location: UV Building



Item		Cost (2019)
Demolition	$	10,000
New Channel and Building Modifications	$	250,000
UV Equipment	$	440,000
Electrical/Controls	$	80,000
General Conditions (10%)	$	80,000
Contingency (30%)	$	260,000
Contractor OH&P (15%)	$	170,000
Total Construction Cost	**$**	**1,290,000**
Soft Costs (Engineering & CMS; 25%)	$	330,000
Total Project Cost	**$**	**1,620,000**

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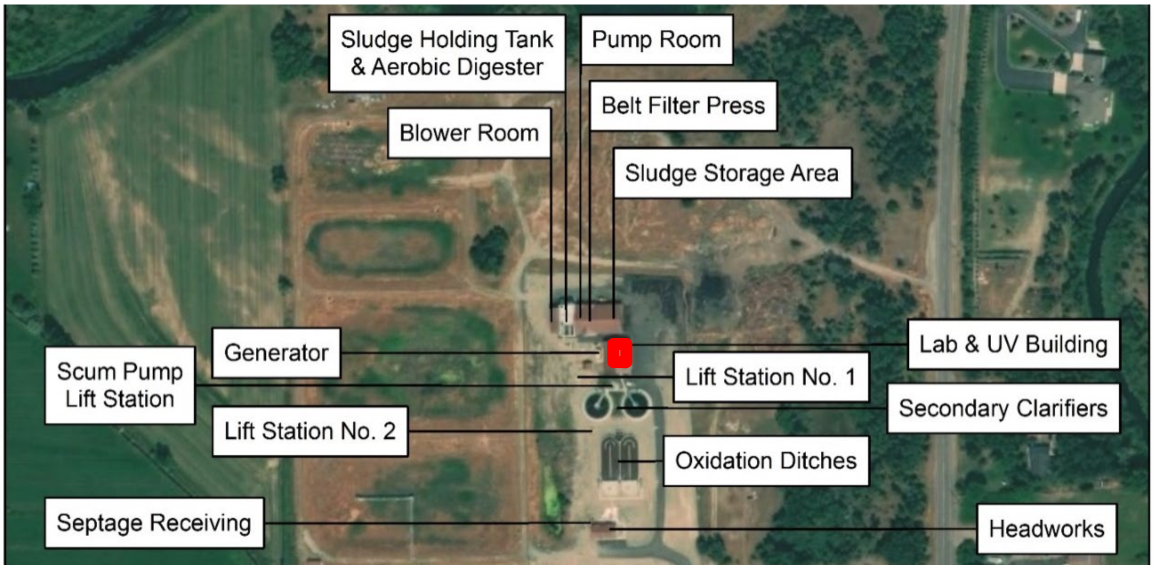
Wastewater Facilities Project: **Tertiary Filters**
Project Identifier: **1.7**

Objective: Place filters in the empty filter basins to protect the plant water system and to maintain consistent effluent quality from periodic difficulties with achieving TSS and BOD_5 removal.

Project Location: UV Building



Item		Cost (2019)
Demolition	$	10,000
New Filters	$	400,000
Electrical/Controls	$	50,000
General Conditions (10%)	$	50,000
Contingency (30%)	$	150,000
Contractor OH&P (15%)	$	100,000
Total Construction Cost	**$**	**760,000**
Soft Costs (Engineering & CMS; 25%)	$	190,000
Total Project Cost	**$**	**950,000**

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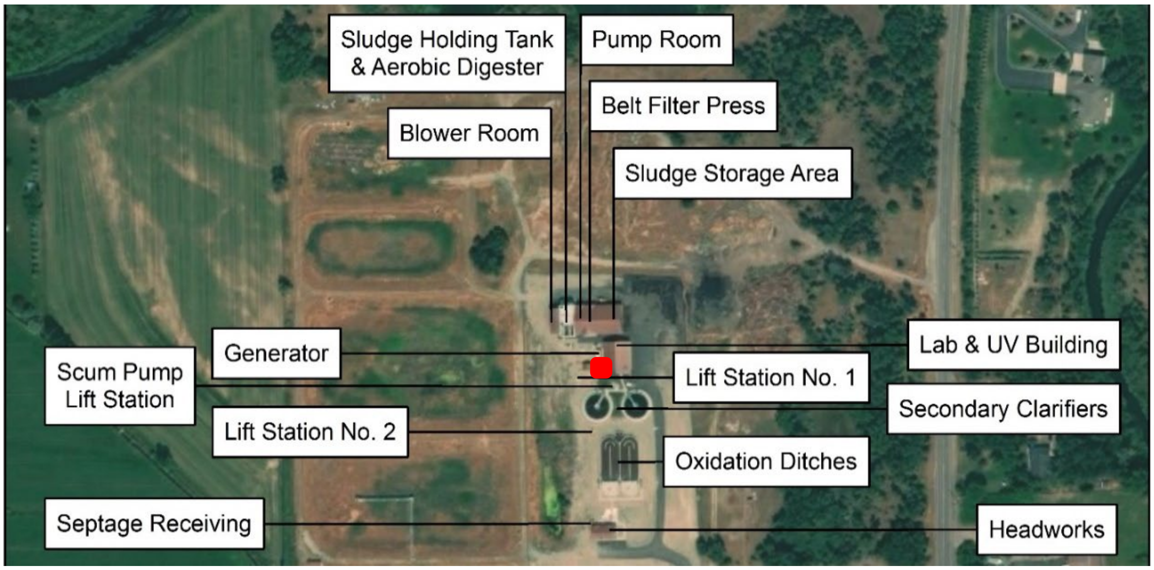
Wastewater Facilities Project: **Plant Water Pumps**
Project Identifier: **1.8**

Objective: Replace the existing plant water pumps to provide sufficient flow and pressure throughout the WWTP.

Project Location: UV Building



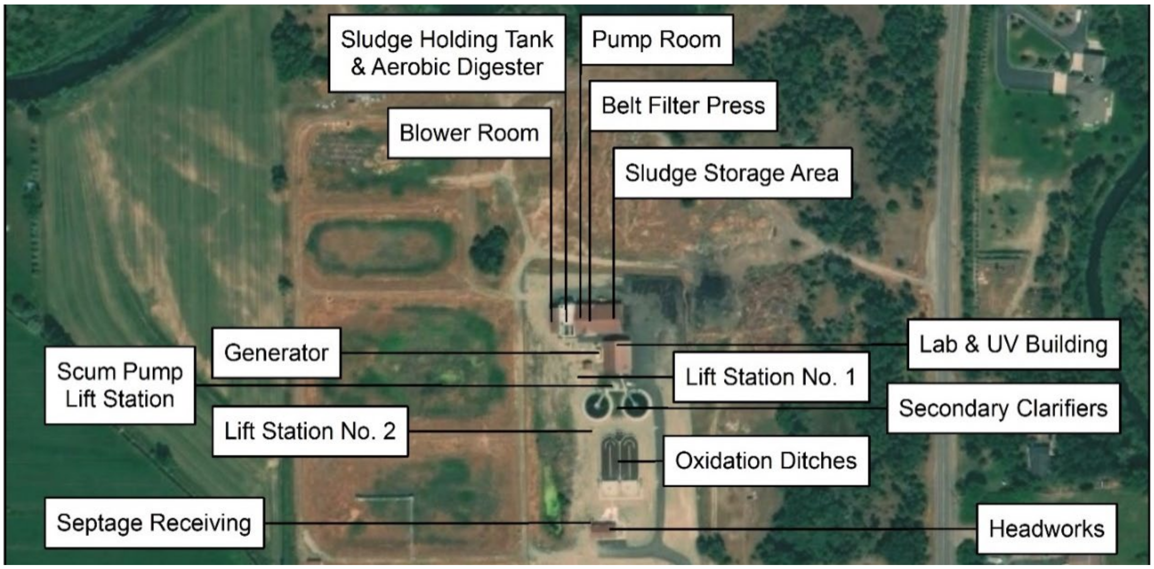
Item	Cost (2019)	
Demolition	$	5,000
New Plant Water Pumps	$	30,000
General Conditions (10%)	$	4,000
Contingency (30%)	$	12,000
Contractor OH&P (15%)	$	8,000
Total Construction Cost	**$**	**59,000**
Soft Costs (Engineering & CMS; 25%)	$	15,000
Total Project Cost	**$**	**74,000**

The opinion of most probable cost herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented herein.

Wastewater Facilities Project: **Electrical Upgrades**
Project Identifier: **1.9**

Objective: Add sufficient backup power for existing and new equipment including lift stations. Also replace the outdoor lighting with LED lights for power savings.

Project Location: Entire Plant



Item	Cost (2019)	
Plant Generator, Portable Generator, and Backup Power	$	160,000
LED Outdoor Lighting	$	50,000
General Conditions (10%)	$	21,000
Contingency (30%)	$	70,000
Contractor OH&P (15%)	$	46,000
Total Construction Cost	**$**	**347,000**
Soft Costs (Engineering & CMS; 25%)	$	87,000
Total Project Cost	**$**	**434,000**

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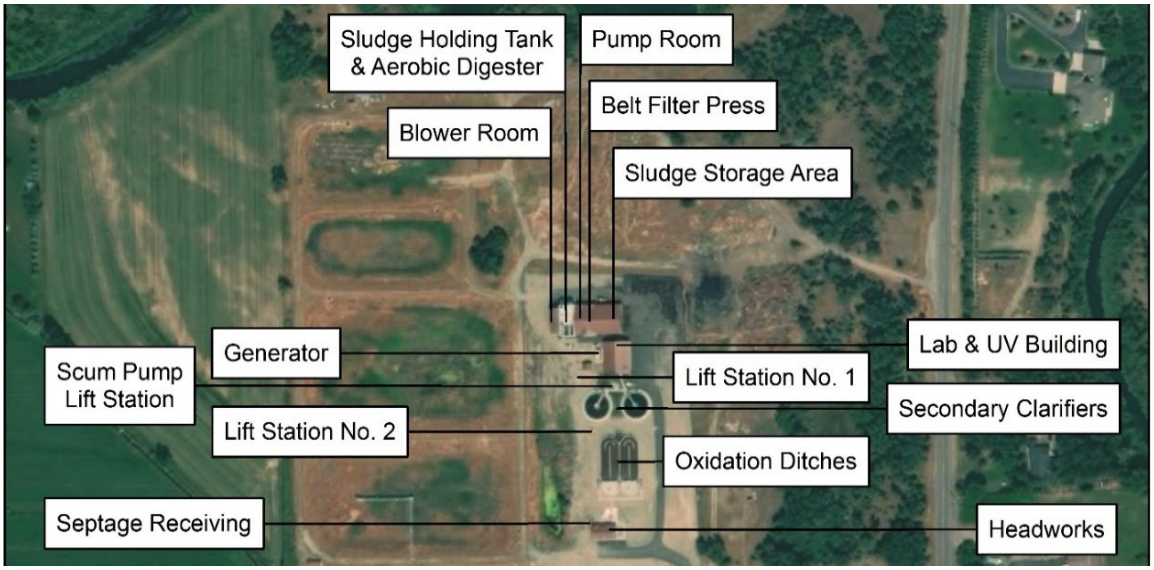
Wastewater Facilities Project: **SCADA Upgrades**
Project Identifier: **1.10**

Objective: Upgrade the SCADA system to provide control and data trending of existing and new equipment.

Project Location: Entire Plant



Item		Cost (2019)
SCADA	$	150,000
General Conditions (10%)	$	15,000
Contingency (30%)	$	50,000
Contractor OH&P (15%)	$	33,000
Total Construction Cost	**$**	**248,000**
Soft Costs (Engineering & CMS; 25%)	$	62,000
Total Project Cost	**$**	**310,000**

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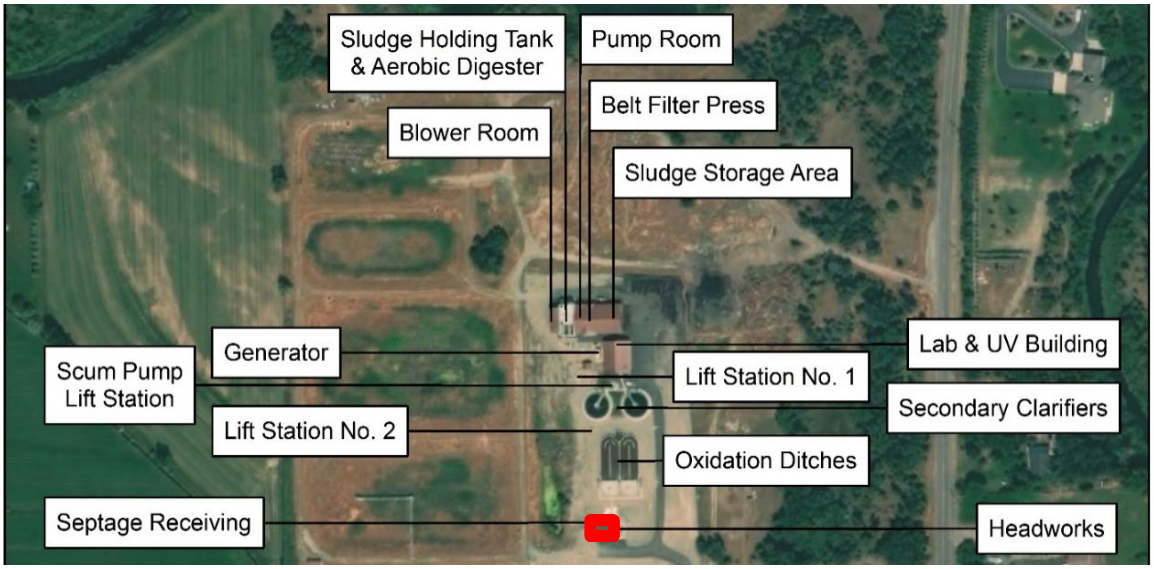
Wastewater Facilities Project: **Headworks Improvements**
Project Identifier: **2.1**

Objective: Replace the existing grit removal with the needed capacity and add redundancy. Expand the building.

Project Location: Headworks



Item		Cost (2019)
Site Work	$	50,000
New Vortex Grit Removal	$	900,000
Headworks Building Expansion	$	200,000
Electrical/Controls	$	250,000
General Conditions (10%)	$	140,000
Contingency (30%)	$	470,000
Contractor OH&P (15%)	$	310,000
Total Construction Cost	**$**	**2,320,000**
Soft Costs (Engineering & CMS; 25%)	$	580,000
Total Project Cost	**$**	**2,900,000**

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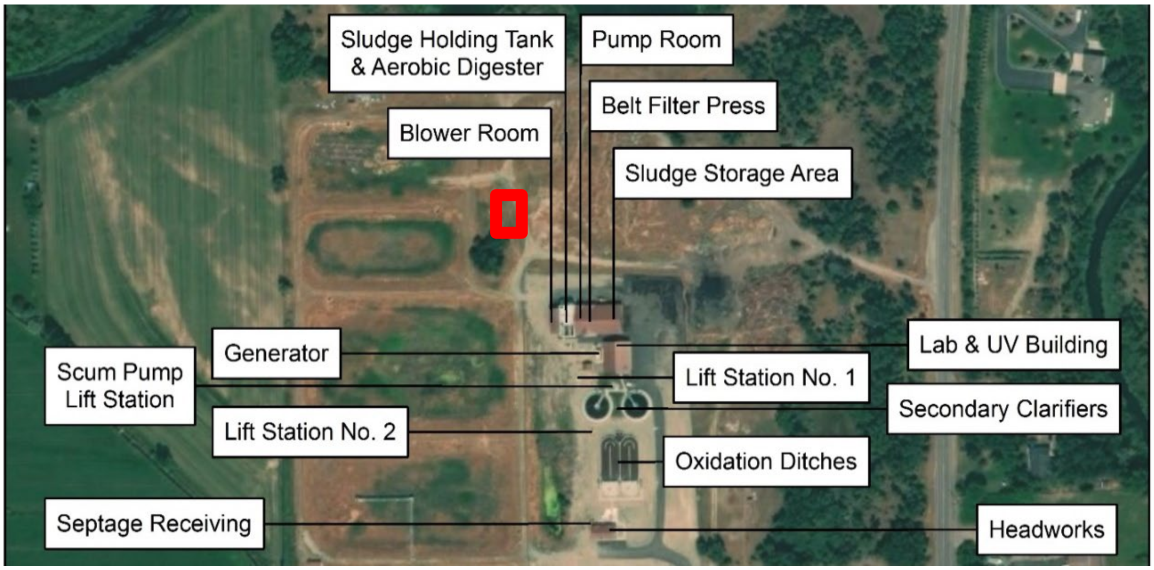
Wastewater Facilities Project: **Maintenance Building**
Project Identifier: **2.2**

Objective: Add a maintenance building that can be used for equipment and parts storage as well as maintenance activities.

Project Location: Near Old Lagoons



Item		Cost (2019)
Site Work	$	50,000
Maintenance Building	$	350,000
General Conditions (10%)	$	40,000
Contingency (30%)	$	140,000
Contractor OH&P (15%)	$	90,000
Total Construction Cost	**$**	**670,000**
Soft Costs (Engineering & CMS; 25%)	$	170,000
Total Project Cost	**$**	**840,000**

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