

# SOUTH DAVIS SEWER DISTRICT

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## 2023 IMPACT FEE FACILITIES PLAN



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# TABLE OF CONTENTS

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<b>1. INTRODUCTION .....</b>	<b>2</b>
1.1. Introduction .....	2
<b>2. LEVEL OF SERVICE.....</b>	<b>3</b>
2.1. Treatment Plant Discharge Requirements .....	3
2.2. North Plant Per-Capita Data .....	3
2.3. South Plant Per-Capita Data.....	3
2.4. EDU Definition .....	3
2.5. Anticipated Growth in EDUs.....	4
<b>3. EXISTING TREATMENT FACILITIES.....</b>	<b>6</b>
3.1. Existing Treatment Facilities .....	6
<b>4. PLANNED CAPITAL PROJECTS.....</b>	<b>7</b>
4.1. Headworks .....	7
4.2. Primary Clarifier .....	7
4.3. MBBR System.....	7
4.4. Dewatering Building.....	7
4.5. Replace Effluent Pipe.....	7
4.6. New Admin Building.....	7
4.7. SDSD Future Investment .....	8
4.8. American Rescue Plan Act .....	8
<b>5. CERTIFICATION OF IMPACT FEE FACILITY PLAN BY CONSULTANT .....</b>	<b>9</b>
<b>FIGURES</b>	
Figure 2-1 Anticipated Growth in EDUs .....	5
<b>TABLES</b>	
Table 2-1 Per-Capita Data for the North Plant.....	3
Table 2-2 Per-Capita Data for the South Plant .....	3
Table 2-3 District Wide EDU Definition .....	4
Table 3-1 Existing Investment Eligible for Impact Fees .....	6
Table 4-1 SDSD Future Investment.....	8

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# **1. INTRODUCTION**

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## **1.1. INTRODUCTION**

The South Davis Sewer District's current impact fees and impact fee structure are based on an Impact Fee Analysis done by Zions Bank in 2012 which is now over ten years old.

The South Plant recently was upgraded with a Moving Bed Bio Reactor (MBBR) unit process which enhanced the biological process at the facility. The design flow for the South Plant is 4 million gallons per day (MGD). The 2022 Capital Facilities Plan evaluated several different treatment alternatives for the North Plant. The preferred alternative was to install an Eco Recovery Algae system. However, the process is new technology and is not fully vetted. Therefore, an interim project was selected that includes installing an MBBR that will address some current treatment concerns and allow several years of future growth. At that time a decision will need to be made for the North Plant to either add the Eco Recovery treatment system or continue to expand the MBBR System. The design flow for the North Plant is 12 MGD.

The purpose of this Impact Fee Facilities Plan (IFFP) is to summarize the 2022 Capital Facilities Plan and outline future capital project needs for the District. The IFFP is evaluating the two treatment plants together to allow for a single impact fee for the South Davis Sewer District (SDSD). The cost associated with the existing facilities is presented to allow for the development of an Impact Fee Analysis (IFA). The two documents will be used to recommend a maximum allowable Impact Fee for SDSD.

## 2. LEVEL OF SERVICE

### 2.1. TREATMENT PLANT DISCHARGE REQUIREMENTS

The Division of Water Quality has issued discharge permits for both the North and South plant. The North Plant permit number is UT0021636, and the South Plant permit number is UT0021628. Both permits establish acceptable levels for the following key constituents:

- Flow
- BOD
- TSS
- Ammonia
- Phosphorus

Both the North and South Plant have individual UPDES permits. The North Plant permit became effective October 9, 2022 and the South Plant permit became effective December, 9, 2021. Both permits are through December 8, 2026. Each permit reduced the limit on ammonia that could be discharged from the treatment facilities. This reduction in ammonia limits constitutes an increase in level of service.

### 2.2. NORTH PLANT PER-CAPITA DATA

The per-capita flow and loading data for the North Plant are shown in Table 2-1 below.

**Table 2-1 Per-Capita Data for the North Plant**

North Plant		
Flow	78	gal/capita/day
BOD	0.12	lbs/capita/day
COD	0.34	lbs/capita/day
TSS	0.16	lbs/capita/day
Ammonia	0.02	lbs/capita/day
Phosphorus	0.0033	lbs/capita/day

### 2.3. SOUTH PLANT PER-CAPITA DATA

The per-capita flow and loading data for the South Plant are shown in Table 2-2 below.

**Table 2-2 Per-Capita Data for the South Plant**

South Plant		
Flow	108	gal/capita/day
BOD	0.25	lbs/capita/day
COD	0.69	lbs/capita/day
TSS	0.41	lbs/capita/day
Ammonia	0.04	lbs/capita/day
Phosphorus	0.0070	lbs/capita/day

### 2.4. EDU DEFINITION

The per-capita data from both the North Plant and the South Plant were combined to develop an

Equivalent Dwelling Unit (EDU). An EDU is defined as the flow and load coming from a single-family residential household. EDUs can be used to equate industrial users to residential users. The highest limiting factor should be used for calculating EDUs for industrial users. Based on the data in the 2022 Capital Facilities report, there are on average 3.08 people per household. Table 2-3 combines the per-capita values for both the North and South plant to establish a District wide EDU. The flow of 260 gallons per day per EDU has been calculated using the weighted average from both treatment facilities. This report will base the available EDUs on flow assuming all other constituents are encompassed in the EDU definition.

**Table 2-3 District Wide EDU Definition**

SDSD EDU Definition			
Description	Unit	Per Capita	Per EDU
Flow	gpd	84	260
BOD	lbs/day	0.15	0.45
COD	lbs/day	0.41	1.27
TSS	lbs/day	0.21	0.65
Ammonia	lbs/day	0.024	0.074
Phosphorus	lbs/day	0.0040	0.012

**2.5. ANTICIPATED GROWTH IN EDUS**

Using the population projection in the 2022 Capital Facilities Plan, the EDUs have been projected out to 2050. Figure 2-1 illustrates the EDU growth for the District. It is projected that the District will increase from 43,409 to 44,409 EDUs in the next six years.

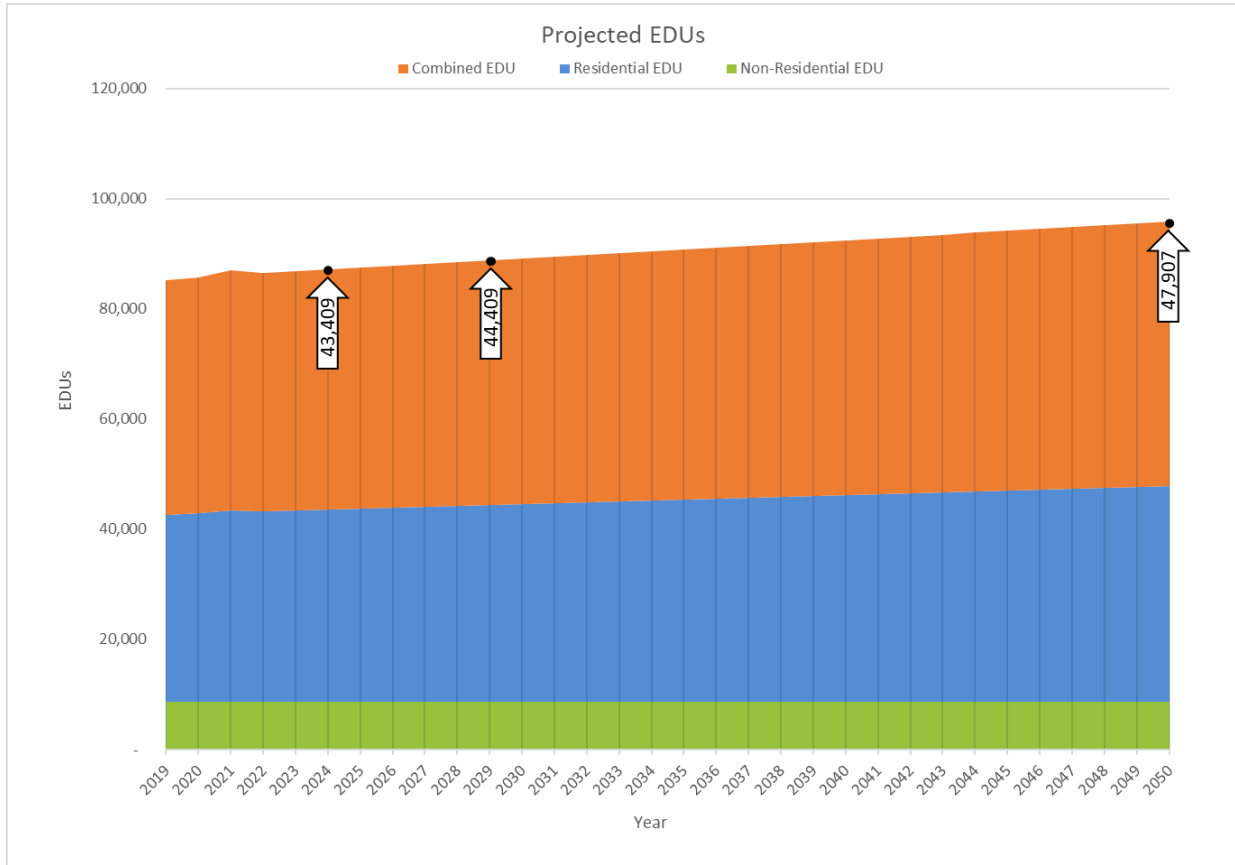


Figure 2-1 Anticipated Growth in EDUs

### 3. EXISTING TREATMENT FACILITIES

#### 3.1. EXISTING TREATMENT FACILITIES

The total capital that the District has invested on both the North Plant and South Plant is outlined in Table 3-1. The combined design capacity for both plants is 16 MGD which equates to 61,538 EDUs. Currently, 43,409 EDUs are connected to both treatment plants thus, 18,129 EDUs are still available. This means that 29% of the capacity is still available for new users and is eligible for impact fees. The total amount that is eligible for impact fees is \$24.9 million.

It is important to note that the collection system has the same capacity available as the treatment system. This is because the collection system was designed to match the assumed buildout of the treatment system. If additional capacity exceeds the 16 MGD capacity the collection system will also require an upgrade in the future.

**Table 3-1 Existing Investment Eligible for Impact Fees**

Description	Existing Investment						Ammount Eligible For Impact Fees
	Current Design Capacity (MGD)	Design Capacity (EDU)	Current (EDU)	Available (EDU)	Cost (USD)	% to Impact Fees	
Collections Historical Costs					\$ 13,521,237		
Credit for Trunkline Reimbursement (UDOT)					\$ (227,028)		
Treatment Plant Historical Costs					\$ 52,802,776		
Credit for Grant Funding of Treatment Plant					\$ (800,000)		
South Plant Expansion					\$ 15,648,921		
Collections Site Improvements					\$ 2,486,448		
North and South Plant Bulk Solution Disinfection					\$ 374,291		
North and South Plant Shops, South Plant Generator Building					\$ 874,839		
	16	61,538	43,409	18,129	\$ 84,681,484	29%	\$ 24,946,820

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## 4. PLANNED CAPITAL PROJECTS

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The 2022 Capital Facilities Plan evaluated several alternatives for expansion at the North Plant. The projects are summarized below and the cost for these projects are summarized in Table 4-1. An outline of the split between existing users and new users is defined in each section.

### 4.1. HEADWORKS

A new headworks is planned to be constructed at the North Plant that will replace the existing headworks. The hydraulic design capacity of the new headworks is 12 MGD which is equal to 46,154 EDUs. Of the design capacity 66% or 30,633 EDUs are being used by existing users. Therefore, 34% of the new facility would be used by new users and is eligible for impact fees. The cost to construct the new headworks is estimated to be \$8.3 million.

### 4.2. PRIMARY CLARIFIER

The hydraulic capacity of the primary clarifiers are limited at the North Plant. The addition of an additional clarifier will allow the bottleneck in that unit process to utilize the full 12 MGD capacity of the rest of the plant. The additional clarifier will increase the hydraulic capacity through the primary clarifier unit process by 4 MGD or 15,385 additional EDUs. Since the current primary clarifiers are limited at the North Plant, the new clarifier allow for future growth and 100% of the cost is eligible for impact fees. The primary clarifier is estimated to cost \$4.3 million.

### 4.3. MBBR SYSTEM

With the most current UPDES permit lowering the ammonia limit at the North Plant. A new MBBR will be constructed to remove additional ammonia. This is a new bottleneck that was created by reducing the effective biological capacity of the treatment system. The biological capacity was converted to flow units and this process will allow an additional 3 MGD of capacity to the North Plant which is 11,538 EDUs. Of that additional capacity, 7,077 EDUs or 61% is used by existing users. Therefore 4,462 EDU or 39% of the total cost for the MBBR system is eligible for impact fees. The capital cost for the MBBR system is estimated to be \$13.5 Million.

### 4.4. DEWATERING BUILDING

A new dewatering building is planned to be constructed at the North Plant. The dewatering building is sized to provide dewatering for the 12 MGD facility or 46,154 EDUs of capacity. The North Plant current EDU capacity is 30,633 which means that there is an additional 15,521 EDUs available. In other words, 34% of the total cost for the dewatering building is eligible for impact fees. The capital cost for the dewatering building is estimated to be \$5.4 million.

### 4.5. REPLACE EFFLUENT PIPE

This project involves replacing the existing effluent pipe with a new one. The cost associated with this project is estimated to be \$4.1 million. The effluent pipe will provide 12 MGD of hydraulic capacity or 46,154 EDUs of capacity. Currently 30,633 EDU are entering the North Plant therefore there is 15,521 EDUs available. Thus, only 34% is eligible for impact fees.

### 4.6. NEW ADMIN BUILDING

A new admin building is also part of the North Plant upgrade project. The new admin building is assumed to provide service for both the North and South plant. Thus, the admin building will provide an equivalent to 16 MGD of hydraulic capacity. Of that design capacity, 71% or 43,409 EDU is used by existing users. That being said, only 29% of the total cost is eligible for impact fees. The cost to construct the New Admin Building is estimated to be \$2.5 million.

**4.7. SDSA FUTURE INVESTMENT**

Table 4-1 below summarizes the different future investment project planned for the North Plant developed above. The total capital cost for the future projects is anticipated to be \$38.1 million of which only \$16.2 is eligible for impact fees which is about 43%.

**Table 4-1 SDSA Future Investment**

SDSA Future Investment							
Description	Current Design Capacity (MGD)	Design Capacity (EDU)	Current Capacity (EDU)	Available (EDU)	Cost (USD)	% to Impact Fees	Amount Eligible For Impact Fees
Headworks	12	46,154	30,633	15,521	\$ 8,295,620	34%	\$ 2,789,763
Primary Clarifier	4	15,385	0	15,385	\$ 4,289,840	100%	\$ 4,289,840
MBBR System	3	11,538	7,077	4,462	\$ 13,476,280	39%	\$ 5,210,828
Dewatering Building	12	46,154	30,633	15,521	\$ 5,431,400	34%	\$ 1,826,545
Effluent Pipe Replacment	12	46,154	30,633	15,521	\$ 4,059,060	34%	\$ 1,365,036
New Adming Building	16	61,538	43,409	18,129	\$ 2,500,000	29%	\$ 736,490
					\$ 38,052,200.00		\$ 16,218,502

**4.8. AMERICAN RESCUE PLAN ACT**

The American Rescue Plan Act (ARPA) are fund provided by the U.S. Department of Treasury. The ARPA allocates funds to local governments such as South Davis Sewer District. The District plans to receive 1.3 million in funds to aid in the construction of the North Plant. These funds will reduce the amount of impact fees eligible.

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## 5. CERTIFICATION OF IMPACT FEE FACILITY PLAN BY CONSULTANT

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In accordance with Utah Code Annotated, 11-36a-306(2), Brad Rasmussen on behalf of Aqua Engineering, makes the following certification:

I certify that the attached impact fee facilities plan:

1. includes only the costs of public facilities that are:
  - a. allowed under the Impact Fees Act; and
  - b. actually incurred; or
  - c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
  - a. costs of operation and maintenance of public facilities;
  - b. costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents; or
  - c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. complies in each and every relevant respect with the Impact Fees Act.

Brad Rasmussen, Aqua Engineering