

Jurupa

Community Services District

Inland Empire Brine Line Rate Design Study

Memorandum / May 16, 2023



May 16, 2023

Mr. Steven Popelar
Director of Finance and Administration
Jurupa Community Services District
11201 Harrel Street
Jurupa Valley, CA 91752

Subject: Inland Empire Brine Line Rate Design Study Memorandum

Dear Mr. Popelar,

Raftelis is pleased to provide this Inland Empire Brine Line Rate Design Study Memorandum (Memo) to Jurupa Community Services District (JCSD). This Memo details Raftelis' recommended changes to the existing wastewater rate structure for JCSD's Inland Empire Brine Line (IEBL) customers and includes proposed IEBL rate calculations for FY 2023-24. It has been a pleasure working with you, and we'd like to thank you and other JCSD staff for the support provided to Raftelis.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kevin Kostiuk', with a stylized flourish at the end.

Kevin Kostiuk
Project Manager

A handwritten signature in black ink, appearing to read 'Charles Diamond', written in a cursive style.

Charles Diamond
Lead Analyst

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1. Introduction

1.1. Overview

The Jurupa Community Services District (JCSD) provides water, non-potable water, and wastewater collection services to approximately 32,000 customers in Riverside County's Jurupa Valley. The District maintains a wastewater collection system with discharges directed and treated at one of three regional treatment plants in which JCSD has capacity rights. These treatment plants are the City of Riverside (Riverside), the Western Riverside County Regional Wastewater Authority (WRCRWA), and the Orange County Sanitation District (OCSD) via the Inland Empire Brine Line (IEBL).

The IEBL is a pipeline constructed to transport high-saline wastewater from the Inland Empire to Orange County for treatment at OCSD's wastewater treatment plant and disposal in the Pacific Ocean. JCSD currently serves approximately 135 wastewater customer accounts that are connected to the IEBL system. These accounts are connected to the IEBL system rather than the other two regional wastewater treatment plant systems due to either:

1. **High strength wastewater discharges:** Customers with industrial processes that generate high strength wastewater discharges that exceed the limits of other regional wastewater treatment plants must discharge to the IEBL.
2. **Proximity to the IEBL pipeline:** Customers that are located in close proximity to the IEBL pipeline are connected to the IEBL system, as that is more practicable and efficient than connecting to the other regional wastewater treatment plant systems.

The IEBL system is operated by the Santa Ana Watershed Project Authority (SAWPA). JCSD is charged for use of the IEBL system and treatment at OCSD's treatment plan by Western Municipal Water District (WMWD), which is one of SAWPA's five member agencies. JCSD effectively passes through all IEBL-related charges from WMWD directly to its own IEBL customers using its SARI Industrial Billing System (SIBS). SIBS is an Excel-based model developed by an outside consultant, and it is designed to allocate all IEBL-related charges from WMWD to each JCSD IEBL customer and calculate the resulting monthly bill for each customer.

JCSD engaged Raftelis in July 2021 to conduct an Inland Empire Brine Line Rate Design Study (Study) to evaluate the current billing process and rate structure for JCSD's IEBL customers. The primary reason for this effort was to develop proposed alternatives to using SIBS, which is highly complex and has become effort and time intensive for JCSD staff to administer and update and ultimately drives up the cost of providing service. This Inland Empire Brine Line Rate Design Study Memorandum (Memo) details Raftelis' Study recommendations and results.

1.2. Objectives

The major objectives of this Study are to:

- » Review and evaluate JCSD's use of the existing SIBS model for IEBL customer billing purposes
- » Review and evaluate the existing wastewater rate structure for IEBL customers
- » Develop proposed changes to the existing wastewater rate structure for IEBL customers, if necessary
- » Document all Study recommendations and results in a technical memorandum (i.e., this Memo)

2. Existing IEBL Rate Structure

2.1. Existing JCSD Wastewater Rate Structure Overview

The vast majority of JCSD's wastewater customers are not served by the IEBL system. These wastewater customers are currently subject to a Fixed Monthly Service Charge per equivalent dwelling unit (EDU) and variable Commodity Rates per hundred cubic feet (HCF) of water use.¹ JCSD's IEBL customers are currently subject to the same Fixed Monthly Service Charges per EDU as all other JCSD wastewater customers, but are not subject to the Commodity Rates per HCF for all other JCSD wastewater customers. However, IEBL-related charges from WMWD are passed through directly to JCSD's IEBL customers based on detailed allocations from SIBS.

2.2. Summary of Existing IEBL Rates and Charges

The existing wastewater rate structure for JCSD's IEBL customers is as follows:

1. **Fixed Monthly Service Charge:** Currently \$25.66 per EDU since January 2023.
2. **Direct pass-through of IEBL-related charges from WMWD:** IEBL-related charges invoiced to JCSD by WMWD are allocated to each JCSD IEBL customer using SIBS. Allocations are calculated on a quarterly basis and are designed to recover the following costs:
 - » WMWD Fixed Treatment Charges: allocated to each JCSD IEBL customer in proportion to each customer's allocated wastewater flow per calculations in SIBS.
 - » WMWD Fixed Pipeline Charges: allocated to each JCSD IEBL customer in proportion to each customer's allocated wastewater flow per calculations in SIBS.
 - » WMWD Flow Charges: allocated to each JCSD IEBL customer in proportion to each customer's allocated wastewater flow per calculations in SIBS.
 - » WMWD Biological Oxygen Demand (BOD) Charges: allocated to each JCSD IEBL customer in proportion to each customer's allocated BOD loadings per calculations in SIBS.
 - » WMWD Total Suspended Solids (TSS) Charges: allocated to each JCSD IEBL customer in proportion to each customer's allocated TSS loadings per calculations in SIBS.
 - » Rate Stabilization Funding: JCSD funds a rate stabilization fund at \$100,000 per year to provide sufficient cash on hand at all times to pay WMWD for IEBL-related charges. This component is allocated to each customer in proportion to a weighted average of each customer's allocated flow, BOD, and TSS loadings.

2.3. Monitored vs. Non-Monitored IEBL Customers

JCSD's IEBL customers can currently be classified within one of two main categories:

1. **Monitored IEBL Customers:** Customers with wastewater discharges that are periodically sampled by JCSD staff to measure customer-specific strength loadings for BOD and TSS.
2. **Non-Monitored IEBL Customers:** Customers with wastewater discharges that are not sampled by JCSD staff to measure customer-specific strength loadings for BOD and TSS.

¹ Subject to a monthly cap of 8 HCF per EDU for residential and institutional wastewater accounts.

At present, approximately 15 IEBL customer accounts are monitored, and 120 accounts are non-monitored. The allocation of WMWD charges in SIBS to each monitored IEBL customer is relatively straightforward, as flow, BOD, and TSS loadings can be reliably determined based on customer-specific sampling data. The allocation of all remaining loadings to non-monitored IEBL customers is distributed in proportion to flows only, as customer-specific BOD & TSS characteristics are not known for non-monitored customers. The overall complexity of SIBS is primarily a result of the detailed calculations necessary to allocate loadings between monitored and non-monitored IEBL customers on a quarterly basis. The proposed changes presented in the following section are fundamentally intended to eliminate the need to administer and maintain the complexities of the SIBS system.

3. Proposed IEBL Rate Structure

Raftelis worked closely with JCSD staff to review and evaluate the existing rate structure for IEBL customers and its relationship to SIBS. Based on detailed discussions with JCSD staff, Raftelis recommends four primary rate structure changes outlined below. The primary goals of the recommended changes are to eliminate the need to use SIBS to calculate IEBL customer bills, simplify the IEBL rate structure, and to more closely align the IEBL rate structure with the rate structure for JCSD's non-IEBL wastewater customers.

Proposed Change # 1: Unique IEBL Fixed Monthly Service Charges

IEBL customers are currently subject to the same Fixed Monthly Service Charge per EDU as all other JCSD non-IEBL wastewater customers. To ensure that IEBL-specific costs within JCSD's own budget are appropriately recovered from IEBL customers, Raftelis recommends that unique IEBL Fixed Monthly Service Charges be established for IEBL customers that are different than the existing Fixed Monthly Service Charges for JCSD wastewater customers that do not use the IEBL. These newly proposed IEBL Fixed Monthly Service Charges are designed to recover all direct IEBL costs incurred by JCSD (except for WMWD charges) plus a portion of indirect general and administrative costs within JCSD's Wastewater Fund budget. Under this proposed change, IEBL customers will no longer be subject to the current Fixed Monthly Service Charges per EDU, which will continue to be charged to all non-IEBL customers. A detailed proposed rate calculation is shown in Section 4.1 for FY 2023-24.

Proposed Change # 2: New IEBL Fixed Treatment/Pipeline Charge to Recover WMWD Fixed Charges

Raftelis proposes that JCSD introduce a new IEBL Fixed Monthly Treatment/Pipeline Charge per EDU to recover the following IEBL-related costs from all IEBL customers: WMWD Fixed Treatment Charges, WMWD Fixed Pipeline Charges, and WMWD Minimum Flow Charges.² SIBS is currently used to allocate these costs to all IEBL customers in proportion to each customer's allocated wastewater flow. The proposed introduction of new fixed charges to recover these costs would eliminate the need for detailed SIBS calculations to pass through these costs to JCSD's customers. Because these costs charged by WMWD to JCSD generally are stable from month to month within each fiscal year, a fixed charge per EDU is an appropriate method to recover such costs. Under this proposed change, SIBS would no longer have to be used to pass through any of the associated WMWD fixed costs to either monitored or non-monitored customers. A detailed proposed rate calculation is shown in Section 4.2 for FY 2023-24.

Proposed Change # 3: New Non-Monitored IEBL Commodity Rate to Recover WMWD Variable Costs

Raftelis proposes that JCSD introduce a new Commodity Rate per HCF for non-monitored IEBL customers to recover the non-monitored customers' share of the following IEBL-related WMWD charges: WMWD Flow Charges (excluding the Minimum Flow Charge component), WMWD BOD Charges, and WMWD TSS Charges. SIBS is currently used to allocate these costs to all IEBL customers in proportion to each customer's allocated flow, BOD, and TSS, respectively. Allocating these costs to the limited number of monitored IEBL customers is straightforward because customer-specific sampling data can be used to attribute loadings to each customer. However, detailed calculations are currently required in SIBS to allocate all residual WMWD Flow, BOD, & TSS Charges to non-monitored customers in proportion to each non-monitored customer's flow allocation. In order to simplify the rate structure and eliminate the need for complex SIBS calculations, Raftelis proposes that all non-monitored IEBL customers be charged per HCF of wastewater flow based on standardized strength calculations

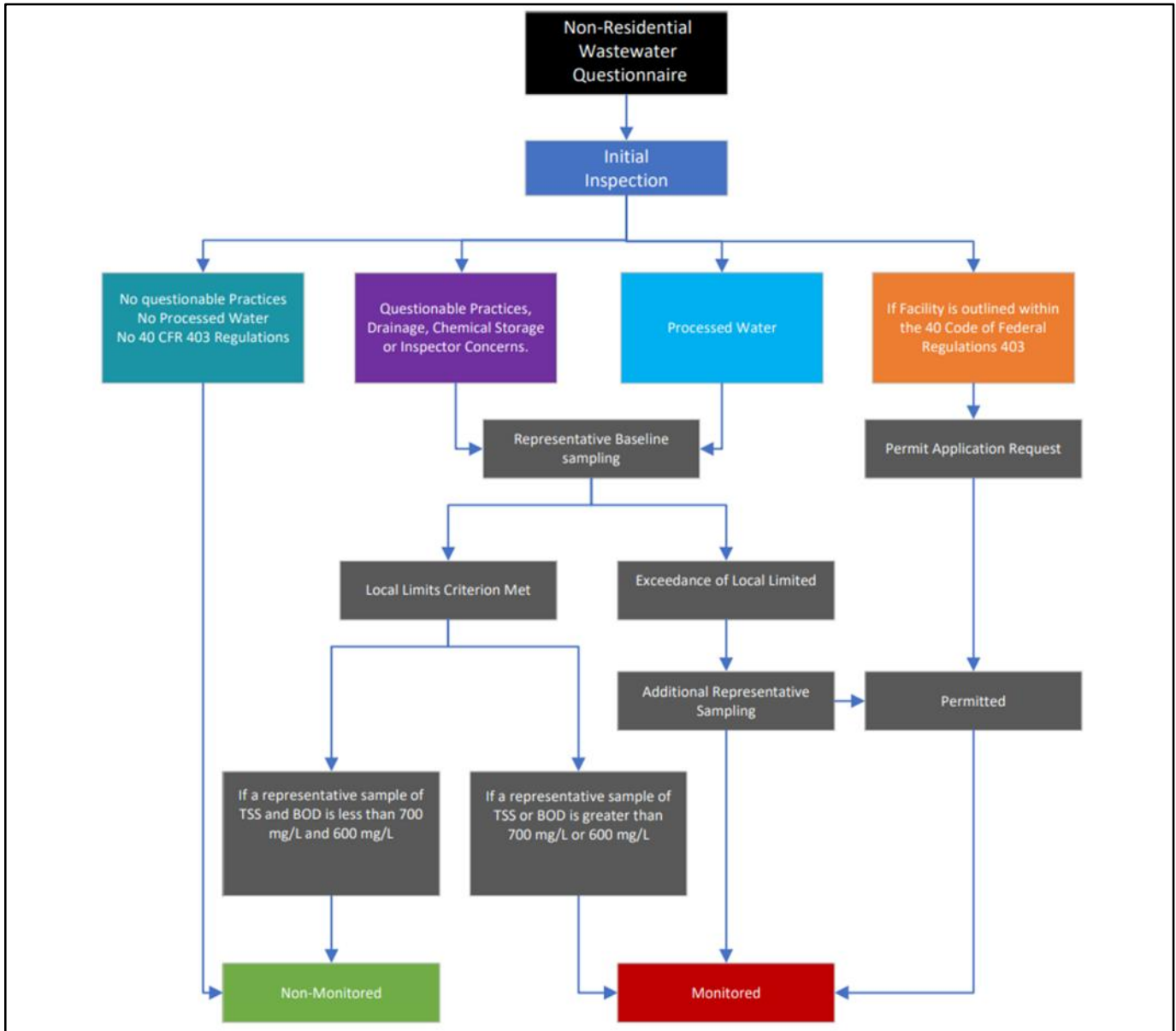
² A small portion of total WMWD Flow Charges is comprised of Minimum Flow Charges, which are billed to JCSD by WMWD regardless of actual flows.

and WMWD's Flow, BOD, and TSS Charge rates per million gallons of flow, pounds of BOD, and pounds of TSS, respectively. A detailed proposed rate calculation is shown in Section 4.3 for FY 2023-24.

Proposed Change # 4: Implement New Criteria to Determine if IEBL Customers Require Monitoring

Approximately 15 IEBL customer accounts are currently monitored and 120 accounts are currently non-monitored. However, not all currently monitored customers engage in industrial processes that generate high-strength wastewater relative to typical commercial wastewater customers. Monitoring is not needed for those customers. During this Study, JCSD staff evaluated and developed formalized criteria to determine if IEBL customers require monitoring (see Figure 3-1). Under the proposed criteria, the number of monitored customers will decrease to approximately five accounts and will only include customers that generate high-strength wastewater from industrial processes, and therefore actually need monitoring. The multi-step process of determining whether customers require monitoring is based on multiple considerations outlined in the flow chart shown in Figure 3-1.

Figure 3-1: Proposed Criteria to Determine if IEBL Customers Shall Require Monitoring



4. Proposed IEBL Rate Calculations

IEBL rate calculations for FY 2023-24 that incorporate the proposed rate structure changes from Section 3 are presented below. Detailed calculations are shown for proposed IEBL Fixed Monthly Service Charges, IEBL Fixed Monthly Treatment/Pipeline Charges, and Non-Monitored IEBL Commodity Rates.

4.1. IEBL Fixed Monthly Service Charge Calculation

Proposed IEBL Fixed Monthly Service Charges are designed to recover direct IEBL costs and a portion of indirect administrative costs within JCSD’s Wastewater Fund budget (see Table 4-1). Direct IEBL costs include all “Collections – IEBL” and “Source Control – IEBL” costs. IEBL customers are also allocated five percent of indirect “Wastewater Administration” expenses, which is consistent with allocations from the prior adopted wastewater rate study in 2019.

Table 4-1: IEBL Fixed Monthly Service Charge Revenue Requirement (FY 2023-24)

JCSD Operating Expenses (IEBL-Related Only)	FY 2023-24 Budget	Allocation to IEBL Customers (%)	Allocation to IEBL Customers (\$)
Collections - IEBL	\$133,620	100.0%	\$133,620
Source Control - IEBL	\$344,405	100.0%	\$344,405
Wastewater Administration	\$6,815,738	5.0%	\$340,787
Total	\$7,293,762		\$818,811

The “Source Control – IEBL” cost allocation is differentiated between monitored and non-monitored customers (see Table 4-2), as monitored customers are more responsible for JCSD incurring certain costs relating to monitoring and sampling. JCSD staff have determined that 75 percent of “Source Control – IEBL” costs are attributable to monitored customers and 25 percent are attributable to non-monitored customers.

Table 4-2: Source Control – IEBL Cost Allocation (FY 2023-24)

Source Control – IEBL Costs	Allocation (%)	Allocation (\$)
Monitored IEBL Customers	75.0%	\$258,303
Non-Monitored IEBL Customers	25.0%	\$86,101
Total	100.0%	\$344,405

Proposed IEBL Fixed Monthly Service Charges are calculated per EDU. The number of EDUs for IEBL customers are determined by taking each customer’s average daily wastewater flows in gallons per day (gpd) and dividing by 220 gpd. The number of EDUs can therefore fluctuate as each customer’s average daily flow value is updated (currently on a quarterly basis in SIBS). Projected IEBL EDUs in FY 2023-24 were determined by taking the average of four quarters of recent EDU data from SIBS (see Table 4-3).

Table 4-3: Number of EDUs (IEBL Only)

Number of EDUs	Quarter 4, 2021	Quarter 1, 2022	Quarter 2, 2022	Quarter 3, 2022	Average
Monitored IEBL Customers	1,285	1,285	1,320	1,171	1,265
Non-Monitored IEBL Customers	1,714	1,711	1,780	1,714	1,730
Total	2,999	2,996	3,100	2,885	2,995

Unit costs used to develop the proposed IEBL Fixed Monthly Service Charges were calculated by dividing each component of the revenue requirement (from Table 4-1 and Table 4-2) by the appropriate number of EDUs (from Table 4-3) and then dividing by 12 monthly bills per year (see Table 4-4). Note that the “Source Control – IEBL” unit costs are differentiated between monitored and non-monitored customers.

Table 4-4 Unit Costs for IEBL Fixed Monthly Service Charge (FY 2023-24)

Description	Revenue Requirement	EDUs	Unit Cost
Collections - IEBL (All Customers)	\$133,620	3,812	\$2.92
Source Control - IEBL (Monitored Customers)	\$258,303	1,610	\$13.37
Source Control - IEBL (Non-Monitored Customers)	\$86,101	2,202	\$3.26
Wastewater Administration (All Customers)	\$340,787	3,812	\$7.45
Total	\$818,811		

Proposed IEBL Fixed Monthly Service Charges for FY 2023-24 were calculated by summing the three individual unit costs (from Table 4-4) to establish a total monthly charge per EDU (see Table 4-5). Monitored charges are significantly higher than non-monitored charges because the “Source Control – IEBL” costs are significantly higher for monitored customers than for non-monitored customers.

Table 4-5 Proposed IEBL Fixed Monthly Service Charge Calculation (FY 2023-24)

Description	Monitored Customers	Non-Monitored Customers
Collections – IEBL Unit Cost	\$2.92	\$2.92
Source Control - IEBL Unit Cost	\$13.37	\$3.26
Wastewater Administration Unit Cost	\$7.45	\$7.45
Proposed FY 2023-24 IEBL Fixed Monthly Service Charge (per EDU)	\$23.74	\$13.64

4.2. IEBL Fixed Monthly Treatment/Pipeline Charge Calculation

Proposed IEBL Fixed Monthly Treatment/Pipeline Charges are designed to recover WMWD Fixed Treatment Charges, Fixed Pipeline Charges, and Minimum Flow Charges from all IEBL customers (see Table 4-6). Because FY 2023-24 WMWD charges were not yet available at the time of this Study, Raftelis projected FY 2023-24 WMWD charges by increasing actual FY 2022-23 charges (per invoices from WMWD to JCSD) by five percent.

Table 4-6: IEBL Fixed Monthly Treatment/Pipeline Charge Revenue Requirement (FY 2023-24)

IEBL Fixed Charges from WMWD	Actual FY 2022-23	Assumed Increase in FY 2023-24	Projected FY 2023-24
WMWD Fixed Treatment & Pipeline Charges	\$40,382	5.0%	\$42,401
MWWD Minimum Flow Charges	\$1,050	5.0%	\$1,103
Total	\$41,432		\$43,504

Proposed IEBL Fixed Monthly Treatment/Pipeline Charges for FY 2023-24 (see Table 4-7) were calculated by dividing the monthly revenue requirement (from Table 4-6) by total number of IEBL EDUs (from Table 4-3). Under the proposed IEBL rate structure, both monitored and non-monitored customers would be subject to the proposed charge shown in Table 4-7.

Table 4-7: Proposed IEBL Fixed Monthly Treatment/Pipeline Charge Calculation (FY 2023-24)

Description	FY 2023-24
Fixed Monthly Treatment/Pipeline Charge Revenue Requirement	\$43,504
Number of IEBL EDUs (Monitored and Non-Monitored)	3,812
Proposed FY 2023-24 IEBL Fixed Monthly Treatment/Pipeline Charge (per EDU)	\$11.42

4.3. Non-Monitored IEBL Commodity Rate Calculation

Proposed Non-Monitored IEBL Commodity Rates are designed to recover WMWD Flow Charges, BOD Charges, and TSS Charges from non-monitored IEBL customers. Because FY 2023-24 WMWD rates were not yet available at the time of this Study, Raftelis projected FY 2023-24 WMWD Flow, BOD, and TSS rates by increasing actual FY 2022-23 rates by five percent (see Table 4-8).

Table 4-8: Projected WMWD Flow, BOD, & TSS Charge Rates (FY 2023-24)

WMWD Variable Charges	Actual FY 2022-23 Rate	Assumed Increase in FY 2023-24	Projected FY 2023-24 Rate
WMWD Flow Charge (per million gallons)	\$1,084	5.0%	\$1,138
WMWD BOD Charge (per pound of BOD)	\$0.3530	5.0%	\$0.3707
WMWD TSS Charge (per pound of TSS)	\$0.5200	5.0%	\$0.5460

To calculate a single Commodity Rate designed to incorporate WMWD’s Flow, BOD, and TSS charges, standardized BOD and TSS strength assumptions were established for all non-monitored customers. Currently, non-monitored BOD and TSS strengths are calculated on a quarterly basis in SIBS based on total measured loadings at metering stations. To accommodate the proposed simplification to the rate structure, Raftelis proposes that non-monitored BOD and TSS concentrations be calculated based upon the five-year historical average from Hamner metering station, which only serves non-monitored customers. This proposal is justified because non-monitored customers will continue to exhibit generally similar wastewater strength concentrations characteristic of typical commercial wastewater users. The five-year average concentrations at Hamner metering station are 301 milligrams per liter (mg/L) for BOD and 455 mg/L for TSS.

The proposed Non-Monitored IEBL Commodity Rates were calculated based on the projected FY 2023-24 WMWD rates (from Table 4-8) and the BOD and TSS concentrations outlined above. Individual rate components were calculated for Flow, BOD, and TSS and are shown in detail in the formulas below. All values shown in the

formulas below that were not previously discussed represent standard unit conversions. Each individual rate component is summed to establish the total proposed FY 2023-24 Non-Monitored IEBL Commodity Rate per HCF of wastewater flow (see Table 4-9).

$$F \text{ C} : [\$1,138 \text{ p m g}] \times \left[\frac{1 \text{ m g}}{1,000,000 \text{ g}} \right] \times \left[\frac{748.05 \text{ g}}{1 \text{ H}} \right] = \$0.851 \text{ p H}$$

$$B \text{ C} : [\$0.3707 \text{ p ll}] \times [301 \text{ m /L}] \times \left[8.3454 \frac{\text{ll p m g}}{\text{m /L}} \right] \times \left[\frac{1 \text{ m g}}{1,000,000 \text{ g}} \right] \\ \times \left[\frac{748.05 \text{ g}}{1 \text{ H}} \right] = \$0.697 \text{ p H}$$

$$T \text{ C} : [\$0.5460 \text{ p ll}] \times [455 \text{ m /L}] \times \left[8.3454 \frac{\text{ll p m g}}{\text{m /L}} \right] \times \left[\frac{1 \text{ m g}}{1,000,000 \text{ g}} \right] \\ \times \left[\frac{748.05 \text{ g}}{1 \text{ H}} \right] = \$1.552 \text{ p H}$$

Table 4-9: Non-Monitored IEBL Commodity Rate Calculation (FY 2023-24)

Non-Monitored IEBL Commodity Rate Component	FY 2023-24
Flow Component	\$0.851
BOD Component	\$0.697
TSS Component	\$1.552
Proposed FY 2023-24 Non-Monitored IEBL Commodity Rate (per HCF)	\$3.11

4.4. Summary of Proposed IEBL Rates

Under the proposed rate structure changes outlined in Section 3, JCSD’s IEBL customers will be charged based on the rates shown below in Table 4-10. Proposed IEBL Fixed Monthly Service Charges, IEBL Fixed Monthly Treatment/Pipeline Charges, and Non-Monitored IEBL Commodity Rates were calculated previously in Sections 4.1 through 4.3. Note that Monitored IEBL customers will continue to be charged based on a pass-through of WMWD Flow, BOD, and TSS Charge rates actually incurred and estimated flow/strength loadings per sampling/monitoring data.

Table 4-10: Summary of Proposed IEBL Wastewater Rates (FY 2023-24)

Proposed IEBL Wastewater Rates (FY 2023-24)	Monitored Customers	Non-Monitored Customers
Fixed Charges		
IEBL Fixed Monthly Service Charge (per EDU)	\$23.74	\$13.64
IEBL Fixed Monthly Treatment/Pipeline Charge (per EDU)	\$11.42	\$11.42
Variable Charges		
Non-Monitored IEBL Commodity Rate (per HCF)	N/A	\$3.11
WMWD Flow Charge (per million gallons)	\$1,138*	N/A
WMWD BOD Charge (per pound of BOD)	\$0.3707*	N/A
WMWD TSS Charge (per pound of TSS)	\$0.5460*	N/A

*Estimate only based on 5% assumed increase in WMWD charges in FY 2023-24

5. Customer Bill Impacts

Proposed rate structure changes typically result in distributional impacts to various customers. Customer bill impacts help demonstrate the estimated magnitude of the impacts on customers by comparing sample customer bills under the proposed rate structure versus recent customer bills under the existing rate structure. Raftelis evaluated four quarters worth of recent IEBL billing data from SIBS, covering a period from quarter 4 of 2021 through quarter 3 of 2022, thus spanning the last three quarters of FY 2021-22 and the first quarter of FY 2022-23. Raftelis then calculated what each customer bill would be based on the proposed FY 2023-24 IEBL rates presented in Section 4.4. Table 5-1 shows total annual IEBL billings for three different IEBL customer groups: monitored customers, non-monitored customers, and customers anticipated to change from monitored to non-monitored status under the proposed monitoring criteria (from Section 3). Figure 5-1 shows a histogram of monthly bill changes under the proposed FY 2023-24 IEBL rates for all IEBL customers.

Table 5-1: Estimated IEBL Customer Bill Impacts (FY 2023-24)

IEBL Annual Bill Impacts	Monitored Customers	Non-Monitored Customers	Customers Changing from Monitored to Non-Monitored Status	Total
Estimated FY 2023-24 Charges	\$846,375	\$273,046	\$192,341	\$1,311,762
Actual Charges (Qtr 4, 2021–Qtr 3, 2022)	\$764,038	\$294,832	\$179,421	\$1,238,291
<i>Difference (\$)</i>	<i>\$82,336</i>	<i>(\$21,786)</i>	<i>\$12,920</i>	<i>\$73,471</i>
<i>Difference (%)</i>	<i>10.8%</i>	<i>-7.4%</i>	<i>7.2%</i>	<i>5.9%</i>

Figure 5-1: Monthly Bill Impacts for IEBL Customers (FY 2023-24)

