Diablo Water District

2022 Facility Reserve Charge & MERA Update

This technical memorandum describes the 2022 update of the existing funding mechanisms used by Diablo Water District (DWD) to finance capital improvements to serve new development. These mechanisms are DWD's Facility Reserve Charge (FRC) and Main Extension Reimbursement Assessment (MERA). This memorandum documents the updated FRC schedule based on year 2021 and 2022 values, using the methodologies developed in DWD's 2006 Facilities Plan and most recently performed in 2020. This update reflects the potable water use history, projections and related facilities presented in DWD's 2020 Facilities Plan. The technical analysis supporting the update is provided in the appendix tables attached to this memo, which describes the assumptions, findings and recommended update of charges. A list of acronyms used in the study is also included in the appendix to memo.

Summary

The historic and updated FRC schedule is presented in Table 1 below:

Table 1 - Historical and Proposed FRC

History of Facilities Reserve Charge (FRC)								
Year	West of Jersey Is. Rd.		East of Jersey Is. Rd.		Bethel Island (b)		Delta Coves	
	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011	5/8" Meter (a)	Reduction from Pre-2011
Pre-2011	$9,251	--	$13,456	--	$6,607	--	$6,607	--
2011	$5,366	42%	$9,296	31%	$5,366	19%	$5,366	19%
2013	$5,113	45%	$8,929	34%	$5,113	23%	$5,113	23%
2015	$6,548	29%	$8,918	34%	$4,816	27%	$4,816	27%
2016	$6,865	26%	$9,316	31%	$5,072	23%	$5,072	23%
2018	$8,248	11%	$10,864	19%	$5,920	10%	$5,920	10%
2020	$7,880	15%	$12,911	4%	$8,034	-22%	$8,034	-22%
2022	**$12,243**	**-32%**	**$18,578**	**-38%**	**$12,790**	**-94%**	**$12,790**	**-94%**

These FRCs are based on the April 2022 ENR CCI for San Francisco (CCI = 15,103) and should be escalated annually.

[a] An Equivalent Meter (EM) represents a Single Family Dwelling (SFD) ⅝" meter service demand.

[b] For Bethel Island, specific requirements and funding arrangements are not included and will be determined on a case-by-case basis depending on requests for service. The FRC for Delta Coves subdivision is calculated and shown separately

The FRC values for all areas have increased significantly, primarily as a result of the estimated costs for future Capital Improvement Plan (CIP) increasing from $67.7 million in 2020 to $93.4 million in the 2022 CIP. In addition to the evolving nature of any capital improvement plan from year-to-year the 2022 capital costs also reflect an eighteen percent increase in construction costs

in the San Francisco region from April of 2020 to April of 2022 as measured by the Engineering News-Record's Construction Cost Index. The changes in the FRC funded capital costs from 2020 to 2022 are summarized in Table 2.

Table 2 - Summary of FRC Funded Capital Improvement Costs 2020 – 2022

FRC Funded CIP Expansion Projects	2020 Values	2022 Values	Difference	
Systemwide Projects (Including Delta Coves)	$67,701,000	$93,352,600	$25,651,600	38%
West of JIR	$0	$0	$0	
East of JIR (Not Including Bethel Island & Delta Coves)	$13,905,000	$17,273,800	$3,368,800	24%
Bethel Island (b) & Delta Coves	$1,020,000	$1,800,000	$780,000	76%
Totals	$82,626,000	$112,426,400	$29,800,400	36%
Engineering News Record Construction Cost Index for San Francisco	12,817	15,103		18%

Calculation of the FRCs is based on DWD's future costs associated with funding for system capacity that is or will be available for new services. The unit FRC value is based on the number of anticipated future developer connections (Equivalent Meters) that will support the expansion-related future costs. An Equivalent Meter (EM) represents a Single Family Dwelling (SFD) 5/8" meter service demand (or 1" meter for home with fire sprinkler system). The updated FRCs are based on cost values, existing DWD customer demand as of the year 2021 and reduced overall build out water demands as a result of water conservation. The values should be annually escalated for equity under inflationary impact using the Engineering News Report (ENR) Construction Cost Index (CCI) for the San Francisco region. Note that Bethel Island FRCs must be determined on a case-by-case basis depending on requests for service, even though the FRC value shown for that DWD service area now reflects both the system wide (Base) FRC and a dedicated project serving both Bethel Island and Delta Coves.

Purpose of Charge

The FRC is a funding mechanism for capital improvements constructed by DWD to serve new development. The funds collected from the program are used to finance new construction and retirement of bonded debt for capital facilities required to serve growth. This program ensures that growth is responsible for its fair share of the capital improvements needed within DWD's service area.

DWD's policy is that existing customers should not have to pay higher water rates attributable to the increased water supply, treatment and distribution facility costs required to serve growth. Through the FRC, DWD collects revenue from new water connections to finance the contractually related debt service on existing but unused water treatment plant capacity, and the financing of construction costs for new water facilities required to serve the new development within the DWD service area. The FRC uses a meter capacity-based schedule of charges to equitably share in the costs of new capacity.

All FRC proceeds, as well as interest earned on the balance of funds, are accounted for in a Facility Reserve Fund, which is used solely for growth-related capital project and financing costs as authorized by state law. DWD's Regulation No. 3 specifies that these uses include "…planning, designing, and

construction of facilities that increase the District's water supply or the capacity of its water treatment, storage and distribution system; for payment of principal and interest on indebtedness incurred for said facilities; and for payment of expenses of enlarging or relocating facilities to accommodate growth…".

DWD Service Areas

The FRC schedule is based on the division of the DWD sphere of influence into the following four service areas: West of Jersey Island Road, East of Jersey Island Road, Bethel Island (not including Delta Coves), and Delta Coves. The 2022 current and ultimate maximum water demands and facilities required to serve each of the four areas are identified in the detailed FRC calculations tables provided in Appendix A.

Each service area will pay a Base FRC for system-wide projects benefiting the entire system of water supply, transmission and storage capacities. In addition to the Base FRC, each area will pay a supplemental FRC for the specific distribution storage and pumping facilities to serve that particular area. However, all of the potential facilities and financing requirements of future Bethel Island water services are not known or identified in the FRC for that area and will be determined on a case-by-case basis depending on the specific service requested.

Basis for the Facilities Reserve Charge

The FRC is based on the general methodology provided in state law as applicable to county water districts and the current capital improvement plan costs for projects developed by DWD. The expansion-related project costs, the annual payments for unused water treatment plant capacity, and the projected future development requirements establish the link between the FRC and the DWD facility costs.

Table A-1 (in Appendix A) of this memorandum shows the tabulation of the capital improvement plan (CIP) expansion-related water supply costs and projects required for DWD's ultimate service area using the costs developed in the 2020 Facilities Plan, updated to present value costs, plus additional projects identified by DWD since 2020. These new facilities and capacity-related projects include: major transmission pipeline projects that provide system wide transmission capacity; reservoirs for meeting system storage, fire protection, and peak demand requirements; Supervisory Control and Data Acquisition (SCADA) system expansion; updating of facilities plan, data and distribution maps; and management of growth-related projects. The total 2022 CIP project costs of $112.4 million are divided between system-wide projects of $93.4 million, the East of Jersey Island Road Area projects of $17.3 million, and the Bethel Island and Delta Coves project of $1.8 million. As noted above, the Bethel Island and Delta Coves facilities and financing requirements will be evaluated on a case-by-case basis. Additional information on each of the CIP projects and basis for costs is included in Appendix B.

The CIP projects in Appendix Table A-1 are based on facility capacities required to serve customer demands at buildout in each of the DWD service areas. The calculations of these capacity requirements are described below:

- **Current DWD service customers.** The number of future growth-related capacity requests by developers is estimated from the difference between the numbers of water customers at buildout versus the number of current customers. The water use conditions of DWD service

customers in 2021 (base year for this analysis) is assumed to be representative of the water use conditions of customers in 2022. Appendix Table A-2 tabulates that as of December 31, 2021, there were 12,607 active service connections with a maximum daily demand (MDD) of 8.4 million gallons per day (MGD) of system wide services. The current maximum daily water use of a single-family dwelling is 546 gallons per day (gpd), which represents 1.0 equivalent meters (EMs) of DWD capacity demand. As such, DWD's current 2022 water demand is assumed to be 15,342 EMs, with 94 percent of active service connections attributed to the West of Jersey Island Road service area.

- **DWD buildout (ultimate) water supply requirements**. DWD's buildout water supply requirements are based on the ultimate number of customers multiplied by their projected unit water demand. Per the 2020 Facilities Plan, the projected ultimate ADD is 12.6 million gallons per day (MGD). When multiplied by 2.0, DWD's system wide future maximum to average day water demand ratio, the DWD buildout maximum day demand (MDD) is 25.1 MGD.
- **Future development requirements.** The effect of DWD's ongoing and future conservation practices will limit maximum daily water use to 828 gpd per EM, with the number of DWD customers at buildout projected to be 30,312 EMs. As provided in Appendix Table A-3, the difference between current and buildout customers is approximately 14,357 EMs, with most of the future customers to occur in the Bethel Island area.

  Appendix Table A-4 identifies the DWD capacity requirements at system buildout. These capacity requirements will first be served by existing but unused system capacities, as associated with each service area, and second by new capacity built from the projects identified in the CIP listed in Appendix Table A-1. As shown, the total buildout capacity requirement from DWD centralized sources of supply and District-wide distribution facilities is 24.6 MGD, which provides for some standby water supply in the event of disruption during high demand periods at build out. As provided in Appendix Table A-3, this total buildout capacity will serve 30,312 EMs, including 14,357 future EMs to be connected.

- **Future water supplies.** DWD's historical maximum day demand (from 2021) of the Randall-Bold Water Treatment Plant (RBWTP) is 8.4 MGD MDD of the current net capacity of 14.6 MGD (57.5 percent). In addition, DWD currently uses up to 1.7 MGD from groundwater production wells capable of supplying up to 4 MGD.[1] Therefore, DWD has determined that its additional water supply requirements for buildout are 5 MGD of RBWTP capacity and 3 MGD of groundwater supply well capacity. The costs of the 8 MGD of future capacity, plus the contractual payments on the debt service for the existing but unused capacity at the RBWTP, will be funded from future FRC proceeds.
- **Costs of financing capacity for future development.** To provide DWD with flexibility in implementing projects as required for development, the FRC is based on the financing of expansion-related capital projects provided in Appendix Table A-1. This is in contrast to a

[1] Maximum day well utilization in 2021 was 0.592 MGD on February 8. Well utilization decreased to relative insignificance later in the year.

pay-as-you-go approach, where it would be necessary to wait until all required funds were accumulated to construct development projects, which would inhibit DWD's ability to serve new development.

Future annual debt service payments for FRC funded CIP expansion projects are summarized on Table 3.

Table 3 - Projected Incremental Debt Service Generated from FRC Funded Expansion Projects

	Systemwide Projects *(Including Delta Coves)*	West of Jersey Island Road	East of Jersey Island Rd. *(Not Including Bethel Island & Delta Coves)*	Bethel Island & Delta Coves	Grand Total
	Principal Amounts from Appendix Table A-5				
Principal Amount	$93,352,600	$0	$17,273,800	$1,800,000	$112,426,400
Annual Debt Service[a]	$6,822,300	$0	$1,262,400	$131,500	$8,216,200
Total DWD Debt Service for 2023 - 2046[b]	$163,735,300	$0	$30,297,200	$3,157,100	$197,189,700

a. DWD Debt Service for 2022 CIP Projects is based on 25 year Certificate of Participation instruments with level annual payments, an annual interest rate of 5.0% and 3.0% issuance costs.

b. Assumes that CIP capital costs for 2022 will be funded through 2022 Certificate of Participation.

Table 5 details these cash flows based on a projected 25 year financing term for the future CIP projects with a 5 percent level payment bond at a 3 percent cost of issuance; the cumulative total debt service is $163.7 million for the system-wide projects, $30.3 million for the East of Jersey Island Road Area projects, and $3.2 million for the Bethel Island and Delta Coves Area-related project. These costs, net of interest earnings, are recovered from FRC proceeds based on the calculations of unit FRC rates.

The allocation of remaining outstanding debt to FRC funded CIP capacity expansion projects is shown on Appendix Table A-6. The outstanding debts shown on Appendix Table A-6 reflect the District's recent refinancing of older debt and projected 2022 borrowing through Certificates of Participation. As also shown on Appendix Table A-6, approximately 70% of the District's outstanding and projected 2022 debt is reimbursable i.e., subject to recovery through the FRC.

Update of Charges

The derivation of the recommended 2022 FRC charges shown in Table 1 is summarized on Table 4 and presented in more detail in Appendix Table A-7. The net value of the Base and Supplemental FRCs for each service area in is calculated by dividing the financing costs of DWD system capacity for future customers by the number of future customers expressed as equivalent meters. Offsetting the unit cost of the Base FRC are the unspent proceeds of past FRC payments in the Facilities Reserve Fund, which totals $7.02 million as of February 28, 2022.

Table 4 - Summary Derivation of Recommended 2022 FRC by Service Area

Service Area	Future Equivalent Meters		System-Wide FRC			Less Facilities Reserve Fund Fee Reduction	Net System-Wide Costs
			Future FRC Financing	Remaining Debt Service	Subtotal System-Wide		
	Quantity	%	$163,735,342	$19,068,546		($7,027,363)	
West of JIR	3,804	26.50%	$11,404	$1,328	$12,732	($489)	$12,243
East of JIR	4,782	33.31%	$11,404	$1,328	$12,732	($489)	$12,243
Bethel Island	5,333	37.14%	$11,404	$1,328	$12,732	($489)	$12,243
Delta Coves	438	3.05%	$11,404	$1,328	$12,732	($489)	$12,243
Total	14,357	100.00%	$11,404	$1,328	$12,732	($489)	$12,243

Service Area	Plus Incremental Area Specific Costs				Total Cost per Future Equivalent Meters
	West of Jersey Island Road	East of Jersey Island Road	Bethel Island	Delta Coves	
	$0	$30,297,232	$2,917,363	$239,738	
West of JIR	$0				$12,243
East of JIR		$6,335			$18,578
Bethel Island			$547		$12,790
Delta Coves				$547	$12,790

Appendix Tables A-8 through A-11 summarize the 2011, 2013, 2015, 2016, 2018, 2020 and updated 2022 FRC schedules by service area, as specified in DWD's Regulation No. 3. The tables also provide the FRCs for all water connections with meter sizes from 5/8-inch to 8-inches, based on meter capacity ratio factors defined by the American Water Works Association (AWWA) Manual M1 "Water Rates".

CDM Smith recommends that on an annual basis, DWD increase the FRC charges to reflect inflation, based on the increase in the ENR CCI for San Francisco as well as to reflect changes in the annual Capital Improvements Program and other system changes that would materially affect the Facilities Reserve Charge.

MERA Update

The Main Extension Reimbursement Assessment (MERA) obligations are meant to estimate the reimbursement owed to developers because DWD requires a pipe to be sized larger than is strictly needed to serve a particular new development. Table 5 summarizes the historic and updated MERA.

Table 5 - Historical and Proposed MERA

Current vs Updated MERA[a] Charge	
Year	**MERA Incremental Unit Payments, $/EM (Based on 5/8" Meter on SFD)**
Pre-2011	$488
2011	$488
2015	$488
2016	$488
2018	$562
2020	$615
2022	**$1,185**

The derivation of the 2022 MERA is summarized in Table 6.

Table 6 - Derivation of 2022 MERA

Description	Value
Outstanding MERA Reimbursement Obligations	$581,500
Future MERA Project Reimbursements	$16,424,950
Total MERA Obligations	$17,006,450
Future Development Customers Paying FRC (EM)	14,357
Calculated 2022 MERA Incremental Unit Payments ($/EM or ⅝" Meter on SFD) (a)	**$1,185**
Calculated 2020 MERA Payment (⅝" Meter) (a)	$615
Pre-2011 MERA Payment (⅝" Meter)	$488

Appendices Tables A-12 and A-13 detail the outstanding DWD obligation at the end of 2021, the MERA projects, and the calculation of the updated 2022 MERA. DWD has $581,500 in currently outstanding MERA related obligations.

Appendix A – Acronyms and Detailed Calculation Worksheets

List of Acronyms

20x2020: Refers to the conservation goal in DWD's 2015 Urban Water Management Plan

ADD: Average Day Demand

AWWA: American Water Works Association

BSNF: Burlington Northern Santa Fe

CCI: Construction Cost Index

CCWD: Contra Costa Water District

CIP: Capital Improvement Plan

COI: Bond Cost of Issuance (%)

COM: Commercial, Business & Light Industrial

COP: Certificate of Participation

CY: Calendar Year

DU: dwelling unit

DWD: Diablo Water District

DWR: Department of Water Resources

EDU: Equivalent Dwelling Unit

EM: Equivalent Meter (⅝ Inch connected to SFD)

ENR: Engineering News Report

FRC: Facility Reserve Charge

FY: Fiscal Year

gpcd: gallons per capita per day

gpd: gallons per day

ID: inside diameter

IND: industrial accounts

INS: institutional accounts: schools, public service

IRR: irrigation accounts

JIR: Jersey Island Road

LF: linear foot

MDD: Maximum Day Demand

MERA: Main Extension Reimbursement Assessment

MFD: Multiple-Family Dwelling

MG: million gallon

MGD: million gallons per day

RBWTP: Randall-Bold Water Treatment Plant

SCADA: Supervisory Control and Data Acquisition

SF: San Francisco

SFD: Single Family Dwelling

SOI: Sphere of Influence

TIC: True Interest Cost
WTP: Water Treatment Plant

Detailed Worksheets

Appendix Table A-1	FRC Funded CIP Expansion Projects
Appendix Table A-2	Current Water Use
Appendix Table A-3	Buildout Water Demands & Equivalent Meters
Appendix Table A-4	Future Development
Appendix Table A-5	CIP Expansion Project Financing
Appendix Table A-6	Current DWD Debt Amortization Schedule
Appendix Table A-7	2022 FRC Update
Appendix Table A-8	West of Jersey Island Rd 2022 FRC
Appendix Table A-9	East of Jersey Island Rd 2022 FRC
Appendix Table A-10	Bethel Island 2022 FRC
Appendix Table A-11	Delta Coves 2022 FRC
Appendix Table A-12	Main Extension Reimbursement Assessment-Related DWD Obligations
Appendix Table A-13	Pipeline Projects Funded by Developers
Appendix B	Summary of Recommended Capital Improvement Projects for Ultimate DWD System

Table A-1
FRC Funded CIP Expansion Projects

Future CIP Expansion Projects	Burdened Project Costs (Apr 2022 Values)
Systemwide Projects (Including Delta Coves)	
Additional Randall-Bold WTP Contract Capacity of 5 MGD	$41,055,000
Maintain Existing 15 MGD at Randall-Bold WTP	$1,762,322
Future Groundwater Supply Well (1 well @ 2 MGD Capacity)	$4,650,000
Future Well Supply Pipeline (From Well to Blending Facility Pipeline)	$3,250,000
Future Well #4	$6,400,000
Transmission Capacity: 24" Pipeline in Neroly/ Delta Roads and Sellers Road to Cypress Road	$17,900,000
Transmission Capacity: 24" Pipeline in Neroly Road between Laurel and Carpenter Roads	$2,500,000
Permanent Generators at Existing Wells	$1,250,000
Stonecreek Well Iron and Manganese Removal System	$1,380,000
SCADA System Expansion (main control systems)	$483,070
Facilities Plan Updates and Distribution System Map and Facilities Database Updates (a)	$989,705
Growth Related Project Management	$4,000,000
Solar	$1,250,000
Corporation Yard - New Building (Debt)	$4,500,000
Seismic Upgrades at R2	$1,190,000
Vehicles	$216,250
Asset Management System/GIS/Mapping Update	$576,275
Subtotal - Systemwide Facilities	**$93,352,623**
East of Jersey Island Road - Expansion Facilities (Not Including Bethel Island & Delta Coves)	
Cypress Reservoir & Pump Station - first 2.5 MG reservoir all site work, pump station building and initial pumps	$10,143,766
Cypress Reservoir & Pump Station - second 2.5 MG reservoir add one pump	$5,000,000
Transmission Line Parallel to Cypress Road	$2,130,000
Subtotal - East of Jersey Island Road Expansion Facilities	**$17,273,766**

Future CIP Expansion Projects	Burdened Project Costs (Apr 2022 Values)
Project Cost Summary by Area	
Systemwide Projects (Including Delta Coves)	$93,352,623
West of JIR	$0
East of JIR (Not Including Bethel Island & Delta Coves)	$17,273,766
Bethel Island (b) & Delta Coves	$1,800,000
Grand Total	**$112,426,389**

Burdened Project Costs include: 35% capital construction contingency, and implementation allowance of 35% (RBWTP) and 25% (other projects). See Appendix A.

a Assumes the following documents would be produced prior to District system buildout, anticipated to be 2040: Facilities Plan updates (2 updates x $250k) = $500k; System Mapping updates (2 updates x $100k) = $200k; and bi-annual FRC Model updates ($7k each on average).

b For Bethel Island, specific requirements and funding arrangements are not included and will be determined on a case-by-case basis depending on the request for service.

Table A-2
Current Water Use

Description	Customer Classifications					Total
	Single Family Dwelling	Multi-Family Dwelling[a]	Commercial / Other	Irrigation	Industrial	
Ratio of Maximum to Average Water Demand (a)						
Average Day Demands (MGD)	4.02	0.14	0.20	0.49	0.00	4.85
Max. Month (MGD)	5.47	0.16	0.27	0.82	0.00	6.72
Ratio of Max. Month to Average Day Demand	1.36	1.10	1.34	1.69		1.39
Maximum Day Demands (MGD, MDD)[b]	6.89	0.16	0.27	1.07	0.00	8.38
Estimated Ratio of Max. Day to Max. Month	1.26	1.10	1.00	1.30		1.25
Ratio of Maximum Day to Average Day Demand	1.71	1.10	1.34	2.20	0.00	**1.73**
Active Service Connections[c]						
West of JIR	11,883	20	157	161	0	12,221
East of JIR (excludes 215 accounts on local wells)	626	0	9	19	0	654
Bethel Island (excludes unmetered local wells)[d]	98	0	1	5	0	104
Total Active Service Connections (excluding fire)	12,607	20	167	185	0	12,979
Average Use per SFD Dwelling Unit (gpd/DU, ADD)	319					
Current Maximum Daily Use per DU (gpd/DU, MDD)	546					
Total Current Uses (Equivalent Meters, MDD)	**12,607**	**292**	**486**	**1,957**	**0**	**15,342**
Estimated Average Daily Demand by Service Area						
West of JIR (MGD)	3.79	0.14	0.19	0.42		4.54
East of JIR (MGD)	0.20	0.00	0.01	0.05		0.26
Bethel Island (MGD)(b)	0.03	0.00	0.00	0.01		0.05
Total Average Day Demands (MGD)	4.02	0.14	0.20	0.49	0.00	4.85
Estimated Total Current Maximum Day Demand (MGD, MDD)						
RBWTP						8.31
Wells						0.06
Estimated Total						8.38
Current Sources of Supply	**Capacity in Use**	**Existing System Net Capacity (MGD)**	**Max Day Demand MGD[e]**		**Average Day Demand**	
					(MGD)	**(MG/yr)**
RBWTP Surface Water	57%	14.6	8.31		5.48	1,999
Groundwater	2%	4.0	0.06		0.04	15.6
Total	59%	18.6	8.38		5.52	2,014
Unaccounted for Water				12.2%	0.67	
Total Metered Water Use					4.85	

[a] Includes apartments, condominiums and mobile home courts

[b] Demand values used for FRC and MERA are Maximum Day Demands (MDD).

[c] As of December 31, 2021

[d] Bethel Island data on this tab includes Delta Coves current uses.

Table A- 3
Buildout Water Demands & Equivalent Meters

Description	Customer Classes					Total
	Single Family Dwelling	Multi-Family Dwelling	Commercial / Other	Irrigation	Industrial	
Customer Average Day Demands at Buildout (a)						
West of Jersey Island Road (MGD) (b)	5.3	0.9	1.5	0.5	0.1	8.2
East of Jersey Island Road (MGD)	1.5	0.5	0.1	0.3	0.0	2.4
Bethel Island (MGD) (includes Delta Coves)	1.0	0.2	0.3	0.5	0.0	2.0
Total Diablo Water District (MGD)	7.8	1.6	1.8	1.3	0.1	12.6
Single Family Average Day Unit Demand, gpd/du (a)	**360**					
Future Ratio of Max Day to Avg Daily Demand	2.3	1.1	1.3	4.8	0.0	1.9
Maximum Day Demands (MGD)	14.1	1.8	2.4	6.2	0.0	**24.6**
System Demand at Buildout (EM) (c)	17,070	2,185	2,935	7,509	0	29,699
Est Avg. Use per DU (gpd/DU @ MDD) (equal to gpd/EM @ MDD)	**828**					
Maximum Day Demands at Buildout (MGD)						
West of JIR	9.6	1.0	1.9	2.5	0.0	15.0
East of JIR	2.8	0.6	0.1	1.2	0.0	4.7
Bethel Island (includes Delta Coves)	1.8	0.3	0.3	2.5	0.0	4.9
Total System	14.1	1.8	2.4	6.2	0.0	24.6
Current System Demand	6.9	0.2	0.3	1.1	0.0	8.4
New System Demand (MGD @ MDD)	7.2	1.6	2.2	5.1	0.0	**16.2**
Maximum Day Demands at Buildout (Equivalent Meters (EM))						
West of JIR	11,562	1,199	2,351	3,027	0	18,140
East of JIR	3,322	679	178	1,455	0	5,635
Bethel Island	1,692	262	356	3,022	0	5,333
Delta Coves (d)	494	44	49	5	0	592
Total System EM at Buildout	17,070	2,185	2,935	7,509	0	29,699
Current System EM	12,607	292	486	1,957	0	15,342
New (Future) Demands	4,463	1,892	2,449	5,553	0	14,357
New (Future) Equivalent Meters by Area (EM) (a)						
West of JIR	302	951	1,914	1,075	0	**3,804**
East of JIR	2,469	679	178	1,455	0	**4,782**
Bethel Island	1,692	262	356	3,022	0	**5,333**
Delta Coves	340	44	49	5	0	**438**
Total	4,463	1,892	2,449	5,553	0	**14,357**

a. Future (new) demand in DWD service areas at buildout (2040) per Table 5-9 of the June 2020 Facilities Plan assumptions and current usage

b. Build out Industrial demand is presumed to equal the anticipated demand at Oakley, page 5-4 of 2020 Facilities Plan.

c. DWD total SFR DUs at buildout per 2020 Facilities Plan, Table 5-3.

d. Delta Coves EM values are based on the following information provided by Yousra Tilden (BKF) on October 18, 2013:

Single family residential = 494 units

Condominiums = 96 units,

Commercial establishments = 6 units over 7 acres, plus 5.8 acres for the Yacht Club, totals 13 acres.

To convert the number of condominium units to equivalent meters (EMs), we have presumed that MFD customers have an average of 8 dwelling units (DU) per account at buildout. Buildout MFD accounts total 600 (2020 Facilities Plan Table 5-3), or 4,800 DU. Estimate one MFD DU equals 0.45 EDUs based on the 2019 and 2020 water use and EMs data. Therefore, 96 MFD equates to 44 EM. To convert the commercial acres to EMs, we used the 2020 Facilities Plan, Table 5-5, unit demand factors for SFD and Commercial to estimate the number of DUs per acre of commercial user class land (1,360 gallons per acre per day divided by 360 gpd/du = 3.8 du/acre). Presume one EM equals one single family DU. Therefore, 13 acres of commercial class land equates to 49 EMs.

Table A-4
Future Development

Description	Planned Buildout Capacity	FY 2020 Used System Capacity	Existing System Capacity (2020)	Future Development (New EM Customers)
Total System Water Sources of Supply				
Current RBWTP Capacity (MGD) (a)	15.0		15	
Future RBWTP Capacity (MGD) (a)	5.0			
Total RBWTP Capacity (MGD) (a)	20.0			
Less current in-plant water uses of 3% (a)	(0.45)		(0.45)	
Net Capacity (MGD)	19.6			
WTP at Maximum Day (MGD) (b)	19.6	6.6	14.6	13.0
Groundwater Supply at Max Day (MGD) (c)	7.0	1.7	4.0	5.3
Total Capacity (MGD with standby and blending reserves)	26.6	8.4	18.6	18.2
Customer Buildout Demands (EM)	**Planned Buildout Demands (EM)**	**Existing Active Demands (EM)**	**Existing Capacity of Distribution System**	**Future Development (New EM Customers)**
West of JIR (b)	18,140	14,335	18,140	3,804
East of JIR	5,635	853	2,644	4,782
Bethel Island	5,333	0	0	5,333
Delta Coves	592	154	120	438
Total (EM)	29,699	15,342	20,904	14,357
Water Use per EM (gpd/EM, MDD)	828			
Total Demand (MDD, MGD)	24.6			
Total Capacity (Percentage)	**Planned Buildout Demands**	**Existing Active Demands**		
West of JIR	100%	79%		
East of JIR	100%	15%		
Bethel Island	100%	0%		
Delta Coves	100%	26%		
Total	100%	52%		

Equivalent Meter (EM) provides water service to one single-family dwelling.
a. Current net DWD capacity at Randall-Bold WTP less in-plant water uses of 3%. Table assumes future 5 MGD increase will be as net capacity. Both per 2020 Facilities Plan Section 9.3.1.
b. Includes 1.1 MGD in reserved industrial capacity, in West of JIR area, assigned to RBWTP.
c. Total groundwater supply as of 2020 includes 2 MGD from the Stonecreek Well, 2 MGD for the Glen Park Well, and presumes the Bethel Island residential wells will be retired before buildout.

Table A-5
CIP Expansion Project Financing

	Systemwide Projects *(Including Delta Coves)*	West of Jersey Island Road	East of Jersey Island Rd. *(Not Including Bethel Island & Delta Coves)*	Bethel Island & Delta Coves	Grand Total
	Principal Amounts from Table 1				
Principal Amount	$93,352,623	$0	$17,273,766	$1,800,000	$112,426,389
First Year of Debt Service	2022	2022	2022	2022	
Last Year of Debt Service	2046	2046	2046	2046	
Annual Debt Service[a]	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2022	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2023	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2024	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2025	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2026	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2027	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2028	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2029	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2030	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2031	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2032	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2033	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2034	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2035	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2036	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2037	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2038	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2039	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2040	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2041	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2042	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2043	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2044	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2045	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
2046	$6,822,306	$0	$1,262,385	$131,546	$8,216,236
Total DWD Debt Service for 2023 - 2046[b]	**$163,735,342**	**$0**	**$30,297,232**	**$3,157,101**	**$197,189,674**

a. DWD Debt Service for 2022 CIP Projects is based on 25 year Bonds, Level Payments at 5% TIC and 3% COI.

b. Assumes that CIP capital costs for 2022 will be funded through 2022 Certificate of Participation.

Table A-6
Current DWD Debt Amortization Schedule

Year	2019 COP New Corporation Yard			2019 Refinance - 2010 Stony Creek			2019 Restructure - 2014 Admin Building			2013 Refinance - Glenn Park / Blending			2022 COP -			Roll-Up All Debt		
	Total Annual	General	Reimbursable	Total Annual	General	Reimbursable	Total Annual	General	Reimbursable	Total Annual	General	Reimbursable	Total Annual	General	Reimbursable	Total Annual	General	Reimbursable
		0%	100%		0%	100%		58%	43%		24%	76%		50%	50%		29.9%	70.1%
2022	$215,200	$0	$215,200	$234,200	$0	$234,200	$262,400	$150,880	$111,520		$0	$0		$0	$0	$711,800	$150,880	$560,920
2023	$212,400	$0	$212,400	$233,800	$0	$233,800	$260,000	$149,500	$110,500	$438,333	$105,200	$333,133	$257,700	$128,850	$128,850	$1,402,233	$383,550	$1,018,683
2024	$214,600	$0	$214,600	$238,200	$0	$238,200	$262,400	$150,880	$111,520	$435,000	$104,400	$330,600	$484,800	$242,400	$242,400	$1,635,000	$497,680	$1,137,320
2025	$211,600	$0	$211,600	$237,200	$0	$237,200	$259,400	$149,155	$110,245	$436,800	$104,832	$331,968	$482,200	$241,100	$241,100	$1,627,200	$495,087	$1,132,113
2026	$213,600	$0	$213,600	$231,000	$0	$231,000	$261,200	$150,190	$111,010	$438,000	$105,120	$332,880	$484,400	$242,200	$242,200	$1,628,200	$497,510	$1,130,690
2027	$215,400	$0	$215,400	$234,800	$0	$234,800	$257,600	$148,120	$109,480	$438,600	$105,264	$333,336	$481,200	$240,600	$240,600	$1,627,600	$493,984	$1,133,616
2028	$212,000	$0	$212,000	$238,200	$0	$238,200	$258,800	$148,810	$109,990	$438,600	$105,264	$333,336	$482,800	$241,400	$241,400	$1,630,400	$495,474	$1,134,926
2029	$213,600	$0	$213,600	$231,200	$0	$231,200	$259,600	$149,270	$110,330	$438,000	$105,120	$332,880	$484,000	$242,000	$242,000	$1,626,400	$496,390	$1,130,010
2030	$215,000	$0	$215,000	$234,200	$0	$234,200	$260,000	$149,500	$110,500	$436,800	$104,832	$331,968	$484,800	$242,400	$242,400	$1,630,800	$496,732	$1,134,068
2031	$211,200	$0	$211,200	$231,800	$0	$231,800							$485,200	$242,600	$242,600	$928,200	$242,600	$685,600
2032	$212,400	$0	$212,400	$234,200	$0	$234,200							$485,200	$242,600	$242,600	$931,800	$242,600	$689,200
2033	$213,400	$0	$213,400	$236,200	$0	$236,200							$484,800	$242,400	$242,400	$934,400	$242,400	$692,000
2034	$214,200	$0	$214,200	$232,800	$0	$232,800							$484,000	$242,000	$242,000	$931,000	$242,000	$689,000
2035	$214,800	$0	$214,800	$239,200	$0	$239,200							$482,800	$241,400	$241,400	$936,800	$241,400	$695,400
2036	$215,200	$0	$215,200										$481,200	$240,600	$240,600	$696,400	$240,600	$455,800
2037	$215,400	$0	$215,400										$484,200	$242,100	$242,100	$699,600	$242,100	$457,500
2038	$215,400	$0	$215,400										$481,600	$240,800	$240,800	$697,000	$240,800	$456,200
2039	$215,200	$0	$215,200										$483,600	$241,800	$241,800	$698,800	$241,800	$457,000
2040	$214,800	$0	$214,800										$485,000	$242,500	$242,500	$699,800	$242,500	$457,300
2041	$214,200	$0	$214,200										$480,800	$240,400	$240,400	$695,000	$240,400	$454,600
2042	$213,400	$0	$213,400										$481,200	$240,600	$240,600	$694,600	$240,600	$454,000
2043	$212,400	$0	$212,400										$481,000	$240,500	$240,500	$693,400	$240,500	$452,900
2044	$211,200	$0	$211,200										$485,200	$242,600	$242,600	$696,400	$242,600	$453,800
2045	$214,800	$0	$214,800										$483,600	$241,800	$241,800	$698,400	$241,800	$456,600
2046	$213,000	$0	$213,000										$481,400	$240,700	$240,700	$694,400	$240,700	$453,700
2047	$216,000	$0	$216,000										$483,600	$241,800	$241,800	$699,600	$241,800	$457,800
2048	$213,600	$0	$213,600													$213,600	$0	$213,600
2049	$211,000	$0	$211,000													$211,000	$0	$211,000
2050	$213,200	$0	$213,200													$213,200	$0	$213,200
Totals 2022 through 2050	**$6,198,200**	**$0**	**$6,198,200**	**$3,287,000**	**$0**	**$3,287,000**	**$2,341,400**	**$1,346,305**	**$995,095**	**$3,500,133**	**$840,032**	**$2,660,101**	**$11,856,300**	**$5,928,150**	**$5,928,150**	**$27,183,033**	**$8,114,487**	**$19,068,546**

Table A-7
2022 FRC Update

Description	Facilities Reserve Fund for Fee Reduction (c)	FRC Financing of Expansion Projects (From CIP)	Remaining Debt Service for Expansion-Related Systemwide Facilities					Totals		
			2019 COP New Corporation Yard	2019 Refinance - 2010 Stony Creek	2019 Restructure - 2014 Admin Building	2013 Refinance - Glenn Park / Blending	2022 COP -			
			% Reimbursable	% Reimbursable	% Reimbursable	% Reimbursable	% Reimbursable			
			100%	100%	43%	76%	50%			
DWD Assets, Costs & Contractual Obligations										
Base Systemwide	($7,027,363)	$163,735,342	$6,198,200	$3,287,000	$995,095	$2,660,101	$5,928,150	$182,803,888		
West of JIR		$0						$0		
East of JIR		$30,297,232						$30,297,232		
Bethel Island[a]		$2,917,363						$2,917,363		
Delta Coves[a]		$239,738						$239,738		
Total		$197,189,674	$6,198,200	$3,287,000	$995,095	$2,660,101	$5,928,150	$216,258,221		
Future Development Customers Paying FRCs (EM)	**Future Equivalent Meters**									
Base Systemwide	14,357									
West of JIR	3,804									
East of JIR	4,782									
Bethel Island	5,333									
Delta Coves	438									
Incremental Unit Payments ($/EM, Future Customers)		**FRC Projects ($ per EM)**	**FRC Debt Service Payments ($ per EM)**					**Total FRC Cost per Equivalent Meter[d]**	**Less Facilities Reserve Fund for Fee Reduction[e]**	**Net FRC Cost per Equivalent Meter**
Systemwide Base FRC		$11,404	$432	$229	$69	$185	$413	$12,732	($489)	$12,243
Supplemental FRCs										
West of JIR		$0						$12,732	($489)	$12,243
East of JIR		$6,335						$19,068	($489)	$18,578
Bethel Island[b]		$547						$13,280	($489)	$12,790
Delta Coves		$547						$13,280	($489)	$12,790

The 2022 FRC Update is based on Future Cashflows Associated with Facility Expansion.

a. Allocated the Bethel Island/ Delta Coves project based on buildout equivalent meters.

b. The Bethel Island Supplemental FRC for Distribution Storage & Pumping Facilities will be determined on a case-by-case basis depending on requests for service.
The Total FRC for Bethel Island will be the Base Fee plus the Supplemental Fee identified on a case-by-case basis.

c. Facilities Reserve Fund balance of $7,027,363, as of February 28, 2022. Source: DWD Monthly Financial Report for Period Ending February 1, 2022 to February 28, 2022 pg. 1

d. System-wide base FRC + the supplemental FRC amounts for the respective service areas.

e. Reserve fund reduction is calculated by dividing the amount in the facilities reserve fund of $7.027 million by the base system-wide future equivalent meters [14,357]

Table A-8

West of Jersey Island Rd 2022 FRC

Meter Size (inches)[a]	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges	2020 FRC Charges	2022 FRC Charges
⅝" (EM)	**1.0**	**$5,366**	**$5,113**	**$6,548**	**$6,865**	**$8,248**	**$7,880**	**$12,243**
1"	1.4	$7,512	$7,158	$9,167	$9,611	$11,547	$11,032	$17,140
1.5"	1.8	$9,658	$9,203	$11,786	$12,357	$14,847	$14,184	$22,037
2"	2.9	$15,560	$14,828	$18,989	$19,909	$23,920	$22,852	$35,505
3"	11.0	$59,021	$56,243	$72,025	$75,516	$90,730	$86,680	$134,673
4"	14.0	$75,118	$71,582	$91,669	$96,112	$115,475	$110,320	$171,402
6"	21.0	$112,677	$107,373	$137,503	$144,168	$173,212	$165,480	$257,104
8"	29.0	$155,602	$148,277	$189,885	$199,088	$239,197	$228,520	$355,048

a. All meter capacity ratio factors are from AWWA Manual M1. Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.

The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Table A-9

East of Jersey Island Rd 2022 FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges	2020 FRC Charges	2022 FRC Charges
⅝" (EM)	**1.0**	**$9,296**	**$8,929**	**$8,918**	**$9,316**	**$10,864**	**$12,911**	**$18,578**
1"	1.4	$7,512	$12,501	$12,485	$13,043	$15,210	$18,075	$26,010
1.5"	1.8	$9,658	$16,072	$16,052	$16,769	$19,556	$23,240	$33,441
2"	2.9	$15,560	$25,894	$25,861	$27,017	$31,507	$37,442	$53,878
3"	11.0	$59,021	$98,219	$98,095	$102,478	$119,507	$142,021	$204,363
4"	14.0	$75,118	$125,006	$124,848	$130,427	$152,100	$180,754	$260,099
6"	21.0	$112,677	$187,509	$187,273	$195,640	$228,151	$271,131	$390,148
8"	29.0	$155,602	$258,941	$258,614	$270,170	$315,065	$374,419	$538,776

a. All meter capacity ratio factors are from AWWA Manual M1. Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.

The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Table A-10

Bethel Island 2022 FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges	2020 FRC Charges	2022 FRC Charges
⅝" (EM)	**1.0**	**$5,366**	**$5,113**	**$4,816**	**$5,072**	**$5,920**	**$8,034**	**$12,790**
1"	1.4	$7,512	$7,158	$6,742	$7,100	$8,288	$11,248	$17,906
1.5"	1.8	$9,658	$9,203	$8,669	$9,129	$10,656	$14,461	$23,022
2"	2.9	$15,560	$14,828	$13,966	$14,708	$17,169	$23,299	$37,091
3"	11.0	$59,021	$56,243	$52,975	$55,789	$65,122	$88,374	$140,691
4"	14.0	$75,118	$71,582	$67,422	$71,004	$82,883	$112,476	$179,062
6"	21.0	$112,677	$107,373	$101,133	$106,506	$124,324	$168,714	$268,592
8"	29.0	$155,602	$148,277	$139,660	$147,080	$171,685	$232,986	$370,913

a. All meter capacity ratio factors are from AWWA Manual M1. Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.

The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Table A-11

Delta Coves 2022 FRC

Meter Size (inches)	Capacity Ratio Factors (a)	2011 FRC Charges	2013 FRC Charges	2015 FRC Charges	2016 FRC Charges	2018 FRC Charges	2020 FRC Charges	2022 FRC Charges
⅝" (EM)	**1.0**	**$5,366**	**$5,113**	**$4,816**	**$5,072**	**$5,920**	**$8,034**	**$12,790**
1"	1.4	$7,512	$7,158	$6,742	$7,100	$8,288	$11,248	$17,906
1.5"	1.8	$9,658	$9,203	$8,669	$9,129	$10,656	$14,461	$23,022
2"	2.9	$15,560	$14,828	$13,966	$14,708	$17,169	$23,299	$37,091
3"	11.0	$59,021	$56,243	$52,975	$55,789	$65,122	$88,374	$140,691
4"	14.0	$75,118	$71,582	$67,422	$71,004	$82,883	$112,476	$179,062
6"	21.0	$112,677	$107,373	$101,133	$106,506	$124,324	$168,714	$268,592
8"	29.0	$155,602	$148,277	$139,660	$147,080	$171,685	$232,986	$370,913

a. All meter capacity ratio factors are from AWWA Manual M1. Charges for meters greater than 8" to be determined by DWD on a case-by-case basis.

The charge for a 1" meter for residential services, which is made necessary for the installation of a fire sprinkler system, is the same as the charge for a 5/8" meter for one- and two-family residential systems.

Table A-12

Main Extension Reimbursement Assessment-Related DWD Obligations

Developer	Development	Date Accepted	MERA Total		Jul-22	Jul-23
Centex Homes	8530 /8790 Riata	8/31/2008 Payments started in 2012	$158,870	Year End Balance	$0	$0
				Payments	$0	$0
Pulte Homes	8731 - Magnolia Park	8/15/2011 Payments started in 2012	$220,405	Year End Balance	$0	$0
				Payments	$0	$0
Discovery Homes	8736 - Pheasant Meadows	Pending/On Hold	$7,612	Year End Balance	$7,612	$7,612
				Payments	$0	$0
City of Oakley	CIP 92	7/1/2016	$35,360	Year End Balance	$0	$0
				Payments	$5,360	$0
SDC Delta Coves LLC	6013 - Delta Coves - 18" Offsite	4/24/2019	$810,606	Year End Balance	$486,366	$405,306
				Payments	$81,060	$81,060
Brookfield Emerson Land, LLC	9032, 9349, 9350, & 9351 Emerson Ranch	2/26/2020	$30,250	Year End Balance	$15,250	$10,250
				Payments	$5,000	$5,000
AD Seeno Construction	8760/9027 - Carpenter Road Improvements - 18" Waterline	Pending Acceptance	$90,340	Year End Balance	$72,272	$63,238
				Payments	$9,034	$9,034
Totals:			**$1,353,443**	Year End Balance	**$581,500**	**$486,406**
				Payments	**$100,454**	**$95,094**

Table A-13
Pipeline Projects Funded by Developers

General Location	Pipe Capacity Reqd for Build out (Inch ID)	Fully Burdened Unit Cost (2022 per LF)	Pipe Length Reqd for Buildout (LF)	Construction Contingency	Est Pipe Distribution Cost	Pipe Capacity Reqd for Current Developers (Inch ID)	Current Developer Reimbursement Unit Cost ($ per LF)	DWD Payments to Developer for Oversizing Reimbursement (10 yr payment)
West of Jersey Island Road Area								
12" pipelines	12	$207	24,000	25%	$6,210,000	8	$161	$2,346,000
16" pipelines	16	$261	9,150	25%	$2,990,000	8	$161	$1,516,850
18" pipelines	18	$283	3,850	25%	$1,360,000	8	$161	$740,150
Subtotal West of Jersey Island Road Area			37,000		$10,560,000			$4,603,000
East of Jersey Island Road Area								
12" pipelines	12	$217	56,200	25%	$15,240,000	8	$169	$5,742,200
18" pipelines	18	$303	2,250	25%	$850,000	8	$169	$469,750
20" pipelines	20	$330	8,800	25%	$3,630,000	8	$169	$2,142,800
24" pipelines	24	$386	1,400	25%	$680,000	8	$169	$443,400
Contra Costa Canal Crossing just northwest of Jersey Island Road & East Cypress Rd. (pipe and casing)	20	$1,419	200	25%	$350,000	8	$856	$178,800
Subtotal East of Jersey Island Road Area			68,850		$20,750,000			$8,976,950
Bethel Island								
16" pipelines on Bethel Island (DIP)	16	$373	24,500	25%	$11,420,000	12	$350	$2,845,000
Subtotal Bethel Island			24,500		$11,420,000			$2,845,000
Summary								
Subtotal West of Jersey Island Road Area			37,000		$10,560,000			$4,603,000
Subtotal East of Jersey Island Road Area			68,850		$20,750,000			$8,976,950
Subtotal Bethel Island			24,500		$11,420,000			$2,845,000
Total DWD Sphere of Influence			130,350		$42,730,000			**$16,424,950**

These projects represent the remaining facilities required to buildout. Distribution pipes already constructed are listed in the fixed assets.

Note: The MERA calculation is for DWD's Sphere of Influence, including service to Delta Coves on Bethel Island. Specific requirements for service to other parts of Bethel Island will be determined on a case-by-case basis.

All costs in this table are in April 2022 dollars. Unit costs for pipes include pipes, fittings, valves and corrosion protection. The unit costs are average values including both simple and difficult projects. Unit costs do not include any construction contingency. Pave unit costs are used for major transmission projects. The estimated construction cost includes a 25 percent contingency.

Applicable costs for potential reimbursement are calculated as: 1) For SOI except Delta Coves, the estimated construction cost minus the cost for an 8-inch pipeline using unit costs of 8-inch pipeline (unpaved) and for 8-inch pipe in casing; and 2) For Bethel Island as the estimated construction cost of 16-inch DIP minus the cost for a 12-inch DIP pipeline using unit costs specifically developed by CDM Smith in April 2022 dollars. Unit costs by CDM Smith do not include mobilization, restoration, patching, or other ancillary items/activities. Specific reimbursement amounts are determined on a case-by-case basis for each development based on DWD's MERA policy. New development is reimbursed for the difference between the cost of the required waterline and the cost of either an 8-inch or 12-inch pipeline depending on what is required to provide adequate service, including fire flows, for the development.

Appendix B
Summary of Recommended Capital Improvement Projects for Ultimate DWD System

Type of Project and Area Served	Project	Estimated Cost (April 2022 $) (1)				
		Base Construction Cost	Total Construction Cost (2)	Project Implementation Allowance (3)	Land Cost	Total Capital Cost (Apr 2022 dollars) (1)
Systemwide Projects (Including Delta Coves)						
Treated Water Supply (4,10)	Future expansion of Randall-Bold WTP for additional 5 mgd capacity. WTP expansion cost includes replacement of Randall-Bold high lift pumps for additional pumping capacity, additional clearwell capacity, and treatment upgrades and associated documentation.	$26,509,963	$35,800,000	$12,500,000	$0	$48,300,000
Treated Water Supply (4)	Projects between 2021-2030 at Randall-Bold WTP associated with maintaining existing 15 mgd capacity available for near-term development. Costs obtained from CCWD's draft 2020 Water Treatment Plant Master Plan Report. Costs shown herein of $1,762,322 provided by DWD from its Fund 02 Special Projects.	NA	NA	NA	$0	$1,762,322
Groundwater Supply (5)	Groundwater Well #3: New well at 1.5 mgd average capacity. Well and pump station costs based on Stonecreek Well and Pump Station. Includes treatment system at $825k and generator at $232k. Assumes Land cost for 1 acre per site at up to $400,000 per acre for developable land.	$2,500,000	$3,400,000	$850,000	$400,000	$4,650,000
	Pipeline to connect new High School well to Blending Facility pipeline. Pipeline anticipated to consist of installation of 18-inch DI pipe w/ 2,000 ft unpaved construction, and 3,500 ft paved construction. Pipe unit cost of $284 per LF in unpaved roads, and $376 per LF along Sellers Rd.	$1,900,000	$2,600,000	$650,000	$0	$3,250,000
	Groundwater Well #4: New well at 1.5 mgd average capacity. Assumes 2,000 ft of 18-inch DI pipe in paved alignment to connect to Well #3. Includes treatment system at $825k and generator at $232k. Assumes 50% increase from Base to Total Construction Cost due to additional planning required. Assumes land cost for 1 acre per site at up to $400,000 per acre for developable land.	$3,200,000	$4,800,000	$1,200,000	$400,000	$6,400,000
Transmission Capacity (6)	Transmission pipeline in Neroly/Delta Roads, Sellers Avenue to Cypress Road (21,700 linear feet [LF] of 24-inch pipe at $460 per LF assuming paved unit costs; plus 400 LF total for two cased crossings at Marsh Creek and Railroad at $1425 per LF). Does not include 1,566 LF installed under MERA for Riata project.	$10,600,000	$14,300,000	$3,600,000	$0	$17,900,000
Transmission Capacity (6)	Transmission pipeline in from Reservoirs R-2 and R-3 to Neroly Road (2,700 LF of 24-inch steel pipe at $473 per LF assuming paved unit costs). Transmission pipeline coming out of Randall-Bold WTP (500 LF of 30-inch steel pipe at $542 per LF assuming paved unit cost).	$1,500,000	$2,000,000	$500,000	$0	$2,500,000
Permanent Generators at Existing Wells	New permanent generators placed at South Park Well Pump Station (250kW/312.5kVA); Glen Park Well Pump Station (200kW/250kVA); Stonecreek Well Pump Station: 200kW/250kVA	$718,715	$1,000,000	$250,000	$0	$1,250,000
Stonecreek Well Iron and Manganese Removal System	Package treatment system to be installed at Stonecreek Well Pump Station. Treatment system quote of $350k received; assume additional improvements required will result in 2x construction price; inflation also added.	$824,754	$1,100,000	$280,000	$0	$1,380,000
SCADA System Expansion (7)	Upgrade main SCADA control system (PLC's and HMI workstations) for future expansion to serve ultimate system facilities	NA	NA	NA	NA	$483,070
Facilities Plan Updates; Distribution System Map Updates (10)	Periodic updates of DWD's facilities plan to reflect actual growth and adjust facilities requirements for future growth; and periodic updates of the distribution system maps and facilities database to add new facilities as growth occurs.	NA	NA	NA	NA	$989,705
Growth Related Project Management	Pre-planning, planning and related staff labor for growth projects. Assumed to be constant for five years. Budgeted based on FY 21-22 staff costs of $800,000. (5 x $800,000 = $4,000,000)	NA	NA	NA	NA	$4,000,000
Solar	Based on cost information provided by DWD from its Fund 02 Special Projects.	NA	NA	NA	NA	$1,250,000
Corporation Yard - New Building (Debt)	Based on cost information provided by DWD from its Fund 02 Special Projects.	NA	NA	NA	NA	$4,500,000
Seismic Upgrades R1 and R2	Based on cost information provided by DWD from its Fund 02 Special Projects.	NA	NA	NA	NA	$1,190,000
Vehicles	Based on cost information provided by DWD from its Fund 02 Special Projects.	NA	NA	NA	NA	$216,250
Asset Management System/GIS/Mapping	Based on cost information provided by DWD from its Fund 02 Special Projects.	NA	NA	NA	NA	$576,275
Subtotal for Systemwide Projects (Including Delta Coves)						***$100,597,623***

Type of Project and Area Served	Project	Estimated Cost (April 2022 $) (1)				
		Base Construction Cost	Total Construction Cost (2)	Project Implementation Allowance (3)	Land Cost	Total Capital Cost (Apr 2022 dollars) (1)
East of Jersey Island Road - Expansion Facilities (Not Including Bethel Island & Delta Coves)						
Storage and Pumping Facilities (8) (9)	Cypress Reservoir & Pump Station: First phase including all site work, 2.5 MG tank, and pump station building with capacity for 5 x 60 HP pumps (4 duty + 1 standby pumps, each at 1,200 gpm and 150 total dynamic head design point). Also assumes chemical storage @ $253k, tank mixer @ $80k, and generator @ $295k. Land cost for 3.7 acres at $400k per acre.	$4,948,526	$6,700,000	$1,700,000	$1,743,766	$10,143,766
	Cypress Reservoir & Pump Station: Second phase with second 2.5 MG tank, add additional pump at pump station as needed, up to 5 duty pumps at build out.	$2,945,551	$4,000,000	$1,000,000	$0	$5,000,000
Transmission Capacity (6)	Transmission pipeline parallel to Cypress Road (3,100 LF of 20-inch pipe at $404 per LF assuming paved unit costs).	$1,250,000	$1,700,000	$430,000	$0	$2,130,000
Subtotal for East of Jersey Island Road - Expansion Facilities (Not Including Bethel Island & Delta Coves)						*$17,273,766*
Bethel Island and Delta Coves						
Transmission Capacity (6)	Transmission pipeline in Bethel Island Road (500 LF of 18-inch pipe at $396 per LF assuming paved unit costs and 650 LF of 18-inch pipe assuming trenchless unit cost of $1076 per LF). Assumes 50% implementation allowance.	$900,000	$1,200,000	$600,000	$0	$1,800,000
Subtotal for Bethel Island & Delta Coves						*$1,800,000*
GRAND TOTAL FOR ALL RECOMMENDED PROJECTS						***$119,671,389***

(1) All costs in these columns as marked are in April 2022 dollars, ENR CCI for San Francisco of 15103.81.

(2) Unless noted otherwise, Total Construction Cost equals the base construction cost plus a 35% construction contingency to cover required work not yet identified at the planning level, unforeseen conditions, bid climate, and change orders during construction.

(3) Project implementation allowance equals 25% of total construction cost for all projects except the Randall-Bold WTP expansion to cover engineering design, construction services, environmental, permitting, and legal. The implementation allowance for the Randall-Bold WTP expansion project is 35% of total construction cost to include an additional 10% for CCWD project administration.

(4) Due to existing and planned DWD groundwater wells, current financial plan anticipates DWD owned capacity of Randall-Bold WTP will be 20 mgd, requiring expansion of the Randall-Bold WTP by 5 mgd.

(5) Groundwater well costs include standby power capability for use as emergency storage. Costs are based on the Stonecreek Well and Pump Station construction.

(6) Pipeline unit construction costs include valves and appurtenances, pavement removal and replacement, traffic control, and an average allowance for correction of utility interferences.

(7) Costs of projects for supply and distribution storage and pumping include the costs of SCADA equipment for those facilities. Work associated with this item assumed to include: new Monitoring panel PLC at the Corp Yard; new PLC at the DWD/Randall-Bold WTP control panel; new PLC at the Blending Facility, new Ethernet switch at the Corp Yard, radio system upgrades/replacement, Local Operating Panel replacements at South Park PS, Glen Park Well PS, and Blending Facility. Capital cost reflects rough estimate for all work to be performed.

(8) Reservoir costs assume above-ground concrete tanks, and include site work, valve vault, telemetry, piping and appurtenances. Costs for reservoirs east of Jersey Island Road include a soil/foundation allowance due to the poor soils in those areas.

(9) Distribution pump station costs assume an above-ground building, and include standby pump, standby power, and telemetry.

(10) Existing customer receive benefit from pump replacement and treatment upgrades. Estimated 85% for growth.

Source: Table 9-4 of 2020 Facilities Plan

Data reference area below:

35% Capital Constrution Contingency
35% Implementation Allowance (RBWTP)
25% Implementation Allowance (other)