

BOARD OF WATER SUPPLY

City and County of Honolulu
Honolulu, Hawaii

SIX-YEAR CAPITAL IMPROVEMENT PROGRAM

For the Fiscal Years
Beginning July 1, 2014 and
Ending June 30, 2020

Submitted by: ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

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FOREWORD

The Six-Year Capital Improvement Program for fiscal years 2015 - 2020, contained herein, represents the projected funding requirements for research and development, renewal and replacement and capacity expansion to adequately meet system needs and the estimated water demand during the program period. Water demand estimates were derived from demographic and community planning data furnished by the Department of Planning and Permitting, City and County of Honolulu.

The level and rate of program execution in subsequent years will depend largely upon the financial capacity of the Board of Water Supply and the extent additional financing is available from various contributory sources.

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CHAIR AND MEMBERS
BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

In compliance with Section 7-105 (d) of the Revised Charter of the City and County of Honolulu, the following is the Six-Year Capital Improvement Program for the period July 1, 2014 - June 30, 2020.

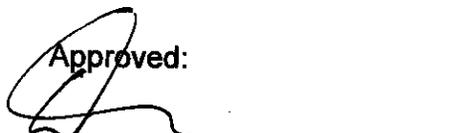
Submitted by:



ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

2/23/15
Date

Approved:



DUANE R. MIYASHIRO
Chair

FEB 23 2015
Date

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BOARD OF WATER SUPPLY

City and County of Honolulu

BOARD MEMBERS

DUANE R. MIYASHIRO, Chair

ADAM C. WONG, Vice Chair

THERESIA C. McMURDO

DAVID C. HULIHEE

ROSS S. SASAMURA, Ex-Officio

FORD N. FUCHIGAMI, Ex-Officio

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<u>SUMMARY OF COST ESTIMATES</u>	1					
<u>I. RESEARCH AND DEVELOPMENT (R&D)</u>	3					
1. HAUULA WELL REPLACEMENT	5	28	2	23	47	KOOLAULOLOA
2. ALA WAI MEMBRANE BIOREACTOR FACILITY	5	5	5	10	21	PUC
3. ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC) - BWS FACILITIES	5	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
4. CONSTRUCTION MANAGEMENT FOR VARIOUS BWS CONSTRUCTION PROJECTS	5	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
5. RED HILL GROUNDWATER MONITORING WELLS	6	17, 18, 20	6	14	31, 33	PUC
6. HAIKU STAIRS REMOVAL	6	30	3	24	49	KOOLAUPOKO
7. BERETANIA SITE MASTER PLAN	6	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
8. KAIMUKI PUMP STATION EXPLORATORY WELLS	6	5	5	10	21	PUC
9. NUUANU RESERVOIR NO. 1, 2 AND 3 DECOMMISSIONING STUDY	6	12	6	13	25, 27	PUC
FY 2015-2020 RESEARCH AND DEVELOPMENT (R&D) TOTAL	6					

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<u>II. RENEWAL AND REPLACEMENT (R&R)</u>	7					
A. PUMPS - R&R						
1. PUMP RENEWAL AND REPLACEMENT	9	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
2. KAMAILE WELLS RENOVATION	9	24	1	21	44	WAIANAE
3. MARINERS RIDGE BOOSTER I: REPLACE PUMPING UNITS	9	1	4	9	17	EAST HONOLULU
4. AINA KOA BOOSTER I: REPLACE PUMP NO. 2	9	3	4	9	18	EAST HONOLULU
5. MAUNAWILI BOOSTER: REPLACE PUMPING UNITS	10	31	3	24	51	KOOLAUPOKO
6. KAONOHU BOOSTER I: REPLACE PUMPING UNITS	10	20	8	16	33	PUC
7. PACIFIC HEIGHTS BOOSTER RENOVATION	10	12	6	13	25	PUC
8. MILILANI WELLS IV - REPLACEMENT OF PUMP NO. 2	10	35	2	22	36	CENTRAL OAHU
9. KALUANUI LINE BOOSTER: REPLACE PUMPING UNITS	11	28	2	23	47	KOOLAULOA
10. WAIALAE IKI WELL RENOVATION	11	2	4	9	18	EAST HONOLULU
11. MILILANI WELLS II IMPROVEMENTS	11	35	2	22	36	CENTRAL OAHU
12. PUNANANI WELLS MCC REPLACEMENT	11	20	8	16	33	PUC
13. PEARL CITY WELLS II ISOLATION VALVES	11	21	8	16	34	PUC
14. PEARL CITY WELLS I RENOVATION	12	21	8	16	34	PUC
15. KEANU LINE BOOSTER: REPLACE PUMPING UNITS	12	6	5	10	20	PUC
16. DIAMOND HEAD LINE BOOSTER: REPLACE PUMPING UNITS	12	5	5	10	21	PUC

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17. WAHIAWA WELLS I UNIT 3 REHABILITATION	12	26	2	22	46	CENTRAL OAHU
18. BERETANIA PUMP STATION RENOVATION	13	13	6	13	26	PUC
19. BARBERS POINT LINE BOOSTER IMPROVEMENTS	13	34	1	20	42	EWA
20. WAIHEE LINE BOOSTER: REPLACE PUMPING UNITS	13	29	2	23	48	KOOLAUPOKO
21. PUNALUU WELLS II RENOVATION	14	28	2	23	47	KOOLAULOA
22. KALIHI PUMP STATION LOW AND HIGH SERVICE RENOVATION	14	15	7	15	29	PUC
23. MILILANI WELLS I RENOVATION	14	35	2	22	36	CENTRAL OAHU
24. KAIMUKI PUMP STATION REDEVELOPMENT	15	5	5	10	21	PUC
 R&R PUMPS SUBTOTAL	 15					
 B. RESERVOIRS - R&R						
1. NUUANU 822/940 SYSTEM RESERVOIRS	16	12	6	13	25	PUC
 R&R RESERVOIRS SUBTOTAL	 16					

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C. PIPELINES - R&R						
1. LILIHA WATER SYSTEM IMPROVEMENTS, PART V	17	14	6	13	27	PUC
2. DIAMOND HEAD WATER SYSTEM IMPROVEMENTS, PART II	17	0	0	0	0	0
3. KULAAUPUNI AND ALTA STREET WATER SYSTEM IMPROVEMENTS	17	24, 36	1	21	43, 44	WAIANAE
4. PENSACOLA STREET WATER SYSTEM IMPROVEMENTS	18	10, 11	5	11, 12	24, 26	PUC
5. WILHELMINA RISE WATER SYSTEM IMPROVEMENTS, PART IV	18	4	4	10	20	PUC
6. KAPAHULU WATER SYSTEM IMPROVEMENTS, PART I	19	5	5	10	19, 20, 21, 23	PUC
7. KAWANANAKOA PLACE 8-INCH MAIN	19	12, 14	6	13	27	PUC
8. KUAHEA STREET 8-INCH MAIN	19	6	5	10	20	PUC
9. FIRE HYDRANT INSTALLATIONS AT VARIOUS LOCATIONS	19	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
10. WATER MAIN INSTALLATION & REPLACEMENT	20	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
11. PALOLO WATER SYSTEM IMPROVEMENTS, PART III	20	6	5	10	20	PUC
12. PALOLO WATER SYSTEM IMPROVEMENTS, PART IV	20	4, 5, 6	4, 5	10	20	PUC
13. PIPELINE TUNNEL RENOVATION AT VARIOUS LOCATIONS	21	1, 4, 5, 6, 20, 32	3, 4, 5, 6	9, 10, 14, 25	17, 19, 20, 33, 51	PUC, EAST HONOLULU
14. AULOA ROAD AND ULUKAHIKI STREET: 12-INCH MAIN	21	31	3	24, 25	49, 51	KOOLAUPOKO
15. WAIANAE WATER SYSTEM IMPROVEMENTS, PART III	21	24	1	21	44	WAIANAE
16. MOILILI WATER SYSTEM IMPROVEMENTS, PART IV	21	5, 8	5	10	21	PUC
17. KAMEHAMEHA HEIGHTS WATER SYSTEM IMPROVEMENTS, PART III	22	14	6	13, 14	27, 28	PUC

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18. AIEA KAI PLACE AND WAY 8-INCH MAINS	22	20	8	16	31	PUC
19. MANOA ESTATES WATER SYSTEM IMPROVEMENTS	22	7	5	11	23	PUC
20. KIPOU STREET 8-INCH MAIN	23	22	9	17	39	CENTRAL OAHU
21. MAKAKILO WATER SYSTEM IMPROVEMENTS, PART III	23	34	1	20	39, 42	EWA
22. KALIHI WATER SYSTEM IMPROVEMENTS, PART VI	24	15, 16	7	14, 15	28, 29, 30	PUC
23. HALEAHI AND PAHEEHEE ROAD 12-INCH AND 8-INCH MAINS	25	24, 36	1	21	44	WAIANAE
24. WAIIAU WATER SYSTEM IMPROVEMENTS, PART II	25	20, 21	8	16	33, 34	PUC
25. NORTH SCHOOL STREET WATER SYSTEM IMPROVEMENTS	26	14, 15, 16	6, 7	14	28, 29, 30	PUC
26. PEARL CITY WATER SYSTEM IMPROVEMENTS, PART IV	27	21	8	16, 17	34, 35	PUC
27. KEOLU HILLS WATER SYSTEM IMPROVEMENTS, PART II	28	31	3	25	51	KOOLAUPOKO
28. LANAKILA WATER SYSTEM IMPROVEMENTS	28	14, 15	6, 7	13	27	PUC
29. MARINER'S RIDGE WATER SYSTEM IMPROVEMENTS, PART II	29	1	4	9	17	EAST HONOLULU
30. PAUOA WATER SYSTEM IMPROVEMENTS	29	12	6	11, 13	25	PUC
31. ALA AOLANI 12-INCH MAIN	29	17	6	14	32	PUC
32. ANOI ROAD WATER SYSTEM IMPROVEMENTS	30	30	3	24	48, 49	KOOLAUPOKO
33. LULUKU ROAD WATER SYSTEM IMPROVEMENTS	30	30	3	24	49	KOOLAUPOKO
34. PUHAWAI ROAD, KUWALE ROAD AND PUUHULU ROAD WATER SYSTEM IMPROVEMENTS	30	24	1	21	44	WAIANAE

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35. POOLA STREET 8-INCH MAIN	30	2	4	9	18	EAST HONOLULU
36. KAIMUKI WATER SYSTEM IMPROVEMENTS, PART I	31	4	4	9	19	PUC
37. MONSARRAT AVENUE WATER SYSTEM IMPROVEMENTS	31	5	4	9, 10	19	PUC
38. WAHIAWA WATER SYSTEM IMPROVEMENTS, PART I	31	26	2	22	46	CENTRAL OAHU
39. WILHELMINA RISE WATER SYSTEM IMPROVEMENTS, PART V	32	4	4	10	20	PUC
40. PACIFIC HEIGHTS WATER SYSTEM IMPROVEMENTS, PART II	32	12	6	13	25	PUC
41. NIUMALU LOOP AND KUKII STREET 8-INCH MAIN	32	1	4	9	17	EAST HONOLULU
42. KAHUAILANI STREET WATER SYSTEM IMPROVEMENTS	33	22	8	17	38	CENTRAL OAHU
43. WAHIAWA WATER SYSTEM IMPROVEMENTS, PART III	33	26	2	22	46	CENTRAL OAHU
44. HUI ULILI STREET: 12-INCH, 8-INCH AND 4-INCH MAINS	33	29	3	24	48	KOOLAUPOKO
45. SEASIDE AND KAIULANI AVENUE 12-INCH MAINS	34	9	4	12	22	PUC
46. DIAMOND HEAD WATER SYSTEM IMPROVEMENTS, PART III	34	3, 4	4	9	19	PUC
47. BARBERS POINT 215 WATER SYSTEM IMPROVEMENTS	34	34	1	20	42	EWA
48. APIO LANE 8-INCH MAIN	34	14	6	13	27	PUC
49. KAILUA ROAD 8-INCH MAIN	35	31	3	24	51	KOOLAUPOKO
50. MAILILI ROAD 20-INCH MAIN	35	36	1	21	44	WAIANAE

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51. KALAMA VALLEY WATER SYSTEM IMPROVEMENTS, PART II	35	1	4	9	17	EAST HONOLULU
52. KILI DRIVE 16-INCH MAIN, PART II	36	24	1	21	44	WAIANAE
53. WAIPAHAU 36-INCH MAIN RELOCATION	36	22	8	17	38	CENTRAL OAHU
54. KAMEHAMEHA HIGHWAY - HALEIWA WATER SYSTEM IMPROVEMENTS, PART I & II	37	27	2	23	47	NORTH SHORE
 R&R PIPELINES SUBTOTAL	 37					
 D. TREATMENT - R&R						
 No Project Scheduled	 38	--	--	--	--	--
 R&R TREATMENT SUBTOTAL	 38					

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E. FACILITIES - R&R						
1. SLOPE STABILIZATION AT VARIOUS FACILITIES	39	2, 4, 6	4, 5	9, 10	18, 20	PUC, EAST HONOLULU
2. NUUANU RESERVOIR NO. 4 DAM IMPROVEMENTS	39	12	6	13	25	PUC
3. FACILITY RENEWAL AND RENOVATION	39	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
4. 2-WAY RADIO UPGRADES	39	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
5. MICROBIOLOGICAL LABORATORY AIR CONDITIONING UPGRADE	39	13	6	13	26	PUC
6. RTU UPGRADES	40	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
7. STORM WATER MANAGEMENT PLAN IMPROVEMENTS	40	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
8. KAILUA IWI KUPUNA REINTERMENT	40	31	3	25	50	KOOLAUPOKO
9. SECURITY FENCING AT VARIOUS LOCATIONS	40	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
10. RENOVATE / REPLACE RESERVOIR ALTITUDE VALVE ASSEMBLIES - MAKIKI & WAIALAE IKI 180 RESERVOIRS	40	2, 10	4, 6	9, 11	18, 24	PUC, EAST HONOLULU
11. NUUANU RESERVOIR NO. 1 DAM IMPROVEMENTS	41	12	6	13	27	PUC
12. WEBSITE REDESIGN	41	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
13. CUSTOMER INFORMATION SYSTEM	41	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
14. COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM	41	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
15. IT PROJECT MANAGEMENT	41	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
16. PROFESSIONAL SERVICES FOR BWS PROJECTS	42	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
17. KRONOS UPGRADE	42	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS

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18. SHAREPOINT SERVICES AND SUPPORT	42	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
19. BERETANIA COMPLEX MODERNIZATION	42	13	6	13	26	PUC
20. FUTURE METER READING TECHNOLOGY	42	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
21. MAUNA OLU 530' RESERVOIR IMPROVEMENTS	42	24	1	21	44	WAIANAE
22. WAIMANALO TUNNEL I AND II AND WAIANAE PLANTATION TUNNEL III RENOVATION	43	24, 32	1, 3	21, 25	44, 51	KOOLAUPOKO, WAIANAE
23. NALU ENHANCEMENT	43	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
24. DOCUMENT MANAGEMENT SYSTEM	43	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
25. DATA CENTER RENOVATION PROJECT	44	13	6	13	26	PUC
26. SECURITY ENHANCEMENTS FOR ALL BWS CORPORATION YARDS	44	13, 16, 21, 20, 26, 30, 36	1, 2, 3, 6, 8	13, 14, 17, 21, 22, 24	26, 28, 33, 35, 43, 46, 48	PUC, CENTRAL OAHU, KOOLAUPOKO, WAIANAE
27. WAIPIO ACRES CONTROL VALVE IMPROVEMENTS	44	35	2	22	36	CENTRAL OAHU
28. PALOLO TUNNEL PORTAL IMPROVEMENTS	45	6	5	10	20	PUC
29. PILIUKA PRV REPLACEMENT	45	24	1	21	44	WAIANAE
30. KAMAILE PLANTATION WELLS SEALING	45	24	1	21	44	WAIANAE
31. BUSINESS INTELLIGENCE / DIGITAL DASHBOARD	45	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
32. WAIHEE WELLS CAPPING	45	29	2	23	48	KOOLAUPOKO
33. SCADA REPLACEMENT	46	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
R&R FACILITIES SUBTOTAL	46					
FY 2015-2020 RENEWAL AND REPLACEMENT (R&R) TOTAL	46					

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<u>III. CAPACITY EXPANSION (CapExp)</u>	47					
A. PUMPS - CapExp						
1. KAHUKU WELLS UNIT NO. 3	49	28	2	23	47	KOOLAULOA
2. WAIALAE WEST WELL	49	4	4	10	20	PUC
3. KALAELOA DESALINATION FACILITY	49	34	1	20, 21	43	EWA
4. LUALUALEI LINE BOOSTER IMPROVEMENTS	49	36	1	21	43	WAIANAE
5. MAAKUA WELL UNIT NO. 2	50	28	2	23	47	KOOLAULOA
6. MILILANI 994 BOOSTER STATION	50	35	2	22	36	CENTRAL OAHU
CapExp PUMPS SUBTOTAL	50					
B. RESERVOIRS - CapExp						
1. KALAWAHINE 180 2.0 MG RESERVOIR	51	10	6	11	24	PUC
2. AINA HAINA 170 0.5 MG RESERVOIR NO. 2	51	2	4	9	18	EAST HONOLULU
3. WAIALAE 180 3.0 MG RESERVOIR REPLACEMENT	51	2	4	9	18	EAST HONOLULU
4. EAST KAPOLEI 215 3.0 MG RECYCLED WATER RESERVOIR	52	34	1	20	42	EWA
CapExp RESERVOIRS SUBTOTAL	52					

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C. PIPELINES - CapExp						
1. HONOLULU DISTRICT 42-INCH MAINS - LILIHA TO MOILILI	53	8, 10, 11, 13, 15	5, 6, 7	10, 11, 12, 13	21, 23, 24, 25, 26, 29	PUC
2. ALA MOANA BOULEVARD 24-INCH MAIN	53	11	4, 5, 6	12	22, 26	PUC
3. KUALAKAI PARKWAY 16-INCH RECYCLED WATER MAIN	54	23, 34	1, 9	20	39, 42	EWA
4. KALAKAUA AVENUE WATER SYSTEM IMPROVEMENTS	54	5, 8, 10, 11	4, 5	9, 10, 12	19, 22, 24, 26	PUC
5. ALA MOANA WATER SYSTEM IMPROVEMENTS	55	9	4	12	22	PUC
6. ALA MOANA WATER SYSTEM IMPROVEMENTS, PART II	55	11, 13	6	12, 13	26	PUC
7. NIMITZ HIGHWAY 16-INCH MAIN	55	15	7	13, 15	29	PUC
8. SALT LAKE BOULEVARD 36-INCH MAIN - FOSTER VILLAGE TO ALIAMANU	56	18, 19	7	15	31, 32	PUC
CapExp PIPELINES SUBTOTAL	56					
D. TREATMENT - CapExp						
1. GAC FACILITY IMPROVEMENTS	57	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
2. GAC TREATMENT FOR WAIPIO HEIGHTS WELLS AND WAIPIO HEIGHTS WELLS I	57	22	8	17	35	CENTRAL OAHU
CapExp TREATMENT Land SUBTOTAL	57					

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E. FACILITIES - CapExp						
1. SECURITY CAMERA SYSTEMS	58	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
2. PROJECT MANAGEMENT INFORMATION SYSTEM	58	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
3. WIRELESS & SECURITY CAMERA SYSTEM UPGRADES	58	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
4. BACKUP POWER SYSTEMS FOR WIRELESS SYSTEMS	58	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
5. HONOULIULI WATER RECYCLING FACILITY	58	34	1	21	43	EWA
6. SECURITY CAMERA MANAGEMENT SYSTEM	58	VARIOUS	VARIOUS	VARIOUS	VARIOUS	VARIOUS
7. EMERGENCY GENERATOR INSTALLATION	59	16, 22, 20, 34	6, 9	14, 18, 20	28, 33, 39	PUC, CENTRAL OAHU
CapExp FACILITIES SUBTOTAL	59					
FY 2015-2020 CAPACITY EXPANSION (CapExp) TOTAL	59					
FY 2015-2020 TOTAL	59					

BOARD OF WATER SUPPLY SIX-YEAR CAPITAL IMPROVEMENT PROGRAM

FISCAL YEARS 2015 TO 2020

SUMMARY OF COST ESTIMATES

<u>CATEGORY</u>	(FY15-20) TOTAL (\$ 000)	PRIOR APPNS (\$ 000)	FISCAL YEARS (FY) TOTALS (\$ 000)					
			<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
I. RESEARCH AND DEVELOPMENT	11,530	2,400	2,380	2,900	3,250	1,000	1,000	1,000
II. RENEWAL AND REPLACEMENT	314,812	65,057	58,817	55,940	61,920	55,035	59,170	23,930
III. CAPACITY EXPANSION	122,303	17,865	2,223	15,275	20,580	22,635	16,955	44,635
SUB-TOTAL CATEGORIES I - III	448,645	85,322	63,420	74,115	85,750	78,670	77,125	69,565
Construction Cost Index Adjustment			4,406	5,624	7,450	7,226	7,188	6,642
Contract Adjustment Account			5,193	4,845	5,579	5,022	3,525	3,500
TOTAL CAPITAL IMPROVEMENT PROGRAM BUDGET	514,844		73,019	84,584	98,779	90,918	87,838	79,707

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CATEGORY I

RESEARCH AND DEVELOPMENT

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BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
I. RESEARCH AND DEVELOPMENT (R&D)										
1. HAUULA WELL REPLACEMENT										
Prepare Environmental Assessment for replacement exploratory/production well at existing Hauula Wells Station	P&E	80	0	80	--	--	--	--	--	Replace existing artesian well and connect to existing line shaft pumps. Well to be located within existing site
Drill and case replacement exploratory well at existing Hauula Wells Station (TMK: 5-4-015:030)	Const	350	0	--	--	350	--	--	--	
2. ALA WAI MEMBRANE BIOREACTOR FACILITY										
Conduct Feasibility Study and conceptual design for Ala Wai Golf Course MBR facility to conserve potable irrigation water. Develop Environmental Assessment and RFP for Design-Build-Operate-Maintain contract	P&E	300	0	300	--	--	--	--	--	
3. ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC) - BWS FACILITIES										
Implement an ESPC project on BWS facilities with a goal of reducing energy demand by 20%	P&E	500	800	500	--	--	--	--	--	
Construct identified ESPC projects	Const	500	0	--	500	--	--	--	--	
4. CONSTRUCTION MANAGEMENT FOR VARIOUS BWS CONSTRUCTION PROJECTS										
Provide construction management and training services for selected BWS construction projects	Const	6,500	1,600	1,500	1,000	1,000	1,000	1,000	1,000	Investigate and implement process and procedure improvements for construction inspection and contract administration, incorporating new tools, resources and training to improve project management and oversight, workforce efficiency, and quality assurance/quality control

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
5. RED HILL GROUNDWATER MONITORING WELLS										
Construct monitor wells around the Navy Red Hill Underground Fuel Storage Facility to monitor the movement of fuel constituents toward BWS drinking water wells and provide hydrologic data for groundwater modeling	Const	400	0	--	400	--	--	--	--	To be designed under an existing contract
6. HAIKU STAIRS REMOVAL										
Prepare Preliminary Engineering Study, Environmental Assessment and a CDUP for the removal of the stairs	P&E	500	0	--	500	--	--	--	--	
7. BERETANIA SITE MASTER PLAN										
Prepare a master plan for the future redevelopment of the BWS Beretania property	P&E	500	0	--	500	--	--	--	--	
8. KAIMUKI PUMP STATION EXPLORATORY WELLS										
Drill and case five (5) replacement exploratory wells at existing Kaimuki Wells Pump Station (TMK: 2-7-030:012)	Const	1,700	0	--	--	1,700	--	--	--	Replace existing artesian wells constructed between 1898 and 1928
9. NUUANU RESERVOIR NO. 1, 2 AND 3 DECOMMISSIONING STUDY										
Prepare study to identify the alternatives for decommissioning or retaining all three reservoirs, including but not limited to operations & maintenance requirements, improvements, costs, permitting, regulatory requirements, liabilities and potential issues	P&E	200	0	--	--	200	--	--	--	
R&D P&E TOTAL	P&E	2,080	800	880	1,000	200	0	0	0	
R&D Land TOTAL	Land	0	0	0	0	0	0	0	0	
R&D Const TOTAL	Const	9,450	1,600	1,500	1,900	3,050	1,000	1,000	1,000	
FY 2015-2020 RESEARCH AND DEVELOPMENT (R&D) TOTAL		11,530	2,400	2,380	2,900	3,250	1,000	1,000	1,000	

CATEGORY II

RENEWAL AND REPLACEMENT

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BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
II. RENEWAL AND REPLACEMENT (R&R)										
A. PUMPS - R&R										
1. PUMP RENEWAL AND REPLACEMENT										Annual emergency and design for renewal/maintenance and replacement of BWS pumps
Renewal and replacement of various BWS pumps and plant facilities	P&E	3,000	3,388.4	500	500	500	500	500	500	
	Const	4,500	5,478	1,500	1,000	500	500	500	500	
2. KAMAILE WELLS RENOVATION										
Prepare plans and specifications	P&E	0	150	--	--	--	--	--	--	
Renovate and install drain line for pump discharges	Const	1,400	0	1,400	--	--	--	--	--	
3. MARINERS RIDGE BOOSTER I: REPLACE PUMPING UNITS										
Replace two (2) existing pumps and motors including diaphragm and butterfly valves. Replace the existing two (2) check valves and four (4) rubber-seated butterfly valves on suction and discharge lines of the pumping units in the basement of the pump station. Install new MCC. Replace existing low voltage transformers and panel, which are used primarily for lighting and control power. Corrosion control and repaint all interior piping	Const	970	0	970	--	--	--	--	--	Design under Pump R&R
4. AINA KOA BOOSTER I: REPLACE PUMP NO. 2										
Replace Pump No. 2 motor. Replace altitude valve along with existing solenoid control valves and control panel. Replace existing rubber-seated butterfly valves at the suction and discharge lines of Pump No. 2. Replace gate valves at emergency discharge piping in the pump building. Replace existing cracked drain pipes, including fittings in the pump building basement. Replace compressor located in the utility room. Corrosion control and repaint all interior piping	Const	310	0	310	--	--	--	--	--	Design under Pump R&R

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS	
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020		
5. MAUNAWILI BOOSTER: REPLACE PUMPING UNITS											
Replace the existing four (4) gate valves on the suction and discharge lines with four (4) new non-rising stem, resilient seated gate valves, in place complete. Replace the existing two (2) control valves located in the valve vault with straight sections of pipe. Replace existing metal grating on top of the existing valve vault with new grating. Replace existing valve vault rungs with new service ladder. Replace deteriorated metal support beam in vault. No electrical work is to be performed at the Maunawili BPS site. Corrosion control and repaint all piping including booster pumping units	Const	100	0	100	--	--	--	--	--	--	Design under Pump R&R
6. KAONOHI BOOSTER I: REPLACE PUMPING UNITS											
Replace both existing pumping units with new pumping units including pumps, motors, pump mounting bases, valves, piping, and components. Provide new Low Suction Pressure Switches on the suction side of each pumping unit. Provide new rubber-seated butterfly valves and check valves on the suction and discharge lines of each pumping unit. Provide new surge-anticipator valve, piping, and appurtenances	Const	585	0	585	--	--	--	--	--	--	Design under Pump R&R
7. PACIFIC HEIGHTS BOOSTER RENOVATION											
Prepare plans and specifications	P&E	0	97	--	--	--	--	--	--	--	
Replace pumping units, valves, discharge piping, MCC, replace roof and renovate building	Const	1,500	0	1,500	--	--	--	--	--	--	
8. MILILANI WELLS IV - REPLACEMENT OF PUMP NO. 2											
Replace pump, motor, MCC, starters, breakers, and conductors	Const	1,200	0	1,200	--	--	--	--	--	--	Design under Pump R&R

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
9. KALUANUI LINE BOOSTER: REPLACE PUMPING UNITS										
Replace three (3) existing pumping units with new pumping units on existing concrete pads including pumps, motors, and pump supports. Pumps and motors will be downsized from 2 MGD to 1 MGD. Provide new piping and valves. Perform corrosion control and repaint all interior piping. Renew/replace tiles on concrete pump bases. Replace existing RVAT starters with new solid-state soft start motor starters. Remove butterfly valves and their actuators	Const	935	0	935	--	--	--	--	--	Design under Pump R&R
10. WAIALAE IKI WELL RENOVATION										
Prepare plans and specifications	P&E	150	0	150	--	--	--	--	--	
Replace pump unit, MCC, conduits, controls and wires	Const	600	0	--	--	600	--	--	--	
11. MILILANI WELLS II IMPROVEMENTS										
Prepare plans and specifications	P&E	150	0	150	--	--	--	--	--	
Install permanent PRV assembly for system operations	Const	350	0	--	--	350	--	--	--	
12. PUNANANI WELLS MCC REPLACEMENT										Redesign
Prepare plans and specifications	P&E	300	50	300	--	--	--	--	--	
Replace MCC, power cables and control wiring	Const	2,000	0	--	--	2,000	--	--	--	
13. PEARL CITY WELLS II ISOLATION VALVES										
Prepare plans and specifications	P&E	150	0	150	--	--	--	--	--	
Install isolation valves	Const	700	0	--	--	700	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
14. PEARL CITY WELLS I RENOVATION										
Prepare plans and specifications	P&E	150	0	150	--	--	--	--	--	
Replace MCC and renovate building	Const	1,500	0	--	--	1,500	--	--	--	
15. KEANU LINE BOOSTER: REPLACE PUMPING UNITS										
Replace all three (3) existing pump units including pumps, motors, discharge head assemblies, valves, flow tube, and all above-ground piping and components. The construction work will be properly sequenced to maintain two (2) pumps in service at all times. Replace center-guided check valves with new tilting-disc check valves. Install mute structure if feasible. Replace/relocate MCC from existing weather-proof enclosures and install new into existing pump building; remove existing equipment from existing pump building. Install new solid-state soft-starters	Const	2,500	0	--	2,500	--	--	--	--	Design under Pump R&R
16. DIAMOND HEAD LINE BOOSTER: REPLACE PUMPING UNITS										
Replace four (4) existing pumping units with four (4) new pumping units including pumps, motors, discharge head assemblies, valves, piping, and components. Provide new metal-seated butterfly valve and check valve on bypass lines to match existing. Replace safety disconnect switches and junction boxes at bypass control valve and all four pumps. Perform corrosion control and repaint all piping	Const	2,000	0	--	2,000	--	--	--	--	Design under Pump R&R
17. WAHIAWA WELLS I UNIT 3 REHABILITATION										In-house design Units 1 & 2 are active
Rehabilitate Well Unit 3: Clean and clear well of pump equipment debris; videolog entire length of well; test plumbness and alignment of well using 10-inch diameter dummy; install new solid and louvered casing and cement grout in annulus; surge well clean of particulates and pump test well	Const	375	0	--	375	--	--	--	--	Design the well repair to extend the well casing and address the partial well collapse causing turbidity in the well

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
18. BERETANIA PUMP STATION RENOVATION										Redesign to update plans & permits
Prepare plans and specifications	P&E	0	205	--	--	--	--	--	--	
Replace four (4) pump units (3 low, 1 high service), valves, MCC, cables, controls and wires	Const	1,200	0	--	1,200	--	--	--	--	
19. BARBERS POINT LINE BOOSTER IMPROVEMENTS										
Prepare plans and specifications	P&E	0	200	--	--	--	--	--	--	
Replace pumps and motors, discharge piping and valves, MCC, wiring and appurtenances	Const	3,000	0	--	3,000	--	--	--	--	
20. WAIHEE LINE BOOSTER: REPLACE PUMPING UNITS										
Replace motors at Pumps No. 1, No. 3, and No. 4 of Waihee set of pumps. Replace motors at Pump No. 1, No. 3, and No. 4 of Punaluu set of pumps. Replace shaft seals and flow switches for Pump No. 2, No. 3, and No. 4 of Waihee set of pumps. Replace shaft seals and flow switches for Pump No. 3 and No. 4 of Punaluu set of pumps. Coordinate with HECO to shut down overhead 46,000-volt line during crane lift operation for motor replacement. Perform corrosion control and repaint all above-ground piping for all eight (8) Waihee and Punaluu pumping units	Const	3,500	0	--	3,500	--	--	--	--	Design under Pump R&R

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS	
		TOTAL	APPNS	(\$ 000)							
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020		
21. PUNALUU WELLS II RENOVATION											
Provide new pumping unit at Pump No. 6. Provide new piping, valves, wiring, and appurtenances at Pumps No. 1, 2, 3, 5, and 6. Provide new surge anticipating valve at Pumps No. 1, 3, and 6. Replace sodium hypochlorite system. Replace all existing motor controls with new soft starters. Provide new telemetering and supervisory control equipment in new SCADA cabinet with new UPS system. Replace existing underground pump discharge line from Pumps No. 1, 2, 3, 5, and 6. Replace existing main discharge line along access road, install a new main bypass line along the access road to serve as a redundant main discharge line. Provide new discharge lines from surge anticipator valves at Pumps No. 1, 2, 3, 5 and 6 to the existing storm drainage system. Widen access road to accommodate new utilities and to accommodate trailer for emergency generator. Renovate existing control building	Const	10,700	0	--	10,700	--	--	--	--	--	Design under Pump R&R
22. KALIHI PUMP STATION LOW AND HIGH SERVICE RENOVATION											
Prepare plans and specifications	P&E	0	200	--	--	--	--	--	--	--	
Replace pumps, motors, discharge piping, valves, MCC, wiring and chlorinator	Const	4,500	0	--	4,500	--	--	--	--	--	
23. MILILANI WELLS I RENOVATION											
Prepare plans and specifications	P&E	250	0	--	250	--	--	--	--	--	
Repaint and renovate GAC's, replace two (2) pumps, redesign mute roofs and ventilation system to facilitate motor pulls	Const	0	0	--	--	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
24. KAIMUKI PUMP STATION REDEVELOPMENT										
Prepare Environmental Assessment and Redevelopment Plan for five (5) new wells. Perform Condition Assessment of existing suction piping for potential reuse	P&E	0	620	--	--	--	--	--	--	Plan to assess transition from artesian to submersible pump system
Prepare plans and specifications	P&E	400	0	--	--	--	400	--	--	
Incorporate five (5) new wells into existing suction piping	Const	4,000	0	--	--	--	--	--	4,000	
R&R PUMPS P&E SUBTOTAL	P&E	4,550	4,910	1,400	750	500	900	500	500	
R&R PUMPS Land SUBTOTAL	Land	0	0	0	0	0	0	0	0	
R&R PUMPS Const SUBTOTAL	Const	48,425	5,478	8,500	28,775	5,650	500	500	4,500	
R&R PUMPS SUBTOTAL		52,975	10,388	9,900	29,525	6,150	1,400	1,000	5,000	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
B. RESERVOIRS - R&R										
1. NUUANU 822/940 SYSTEM RESERVOIRS										
Prepare an Environmental Assesment and CDUP for the 0.2 MG 822 system replacement reservoir and the new 60,000 gallon 940 system reservoir	P&E	250	0	--	--	250	--	--	--	Existing 822 reservoir requires replacement, new 940 foot reservoir needed to meet domestic and fireflow requirements
Prepare plans and specifications	P&E	400	0	--	--	--	--	400	--	
Install reservoirs, booster pumps, connecting pipelines, landscaping and appurtenances	Const	0	0	--	--	--	--	--	--	PES on-going
R&R RESERVOIRS P&E SUBTOTAL		P&E	650	0	0	0	250	0	400	0
R&R RESERVOIRS Land SUBTOTAL		Land	0	0	0	0	0	0	0	0
R&R RESERVOIRS Const SUBTOTAL		Const	0	0	0	0	0	0	0	0
R&R RESERVOIRS SUBTOTAL			650	0	0	0	250	0	400	0

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS	
		TOTAL	APPNS	(\$ 000)							
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020		
C. PIPELINES - R&R											
1.	LILIHA WATER SYSTEM IMPROVEMENTS, PART V									In-house design	
	Install 8-inch mains and appurtenances along Liliha Street from Wylie Street to end, along Puunui Avenue from Wylie Street to Hawaii Street, along Kauai Street from Liliha Street to Puunui Avenue, along Lanai Street from Wylie Street to Liliha Street and along Hawaii Street from Liliha Street to Puunui Avenue - approx. 5,600 lin.ft.	Const	2,600	0	2,600	--	--	--	--	--	Replacement of failing mains (over 20 main breaks) within this residential community (1920's, 1930's)
2.	DIAMOND HEAD WATER SYSTEM IMPROVEMENTS, PART II									Replacement of aging mains in Diamond Head residential area will eliminate easement mains (1930)	
	Prepare plans and specifications	P&E	0	317	--	--	--	--	--	--	
	Install 12-inch mains and appurtenances along 22nd Avenue from Kilauea Avenue to Diamond Head Road, along Diamond Head Road from 22nd Avenue to Kahala Avenue, and along Kulamanu Street from Kahala Avenue to Kulamanu Place - approx. 5,235 lin. ft. Install 8-inch mains and appurtenances along Kulamanu Place from Kulamanu Street to end, along Malapua Place from 22nd Avenue to end, along Ulupua Place from 22nd Avenue to end, along Huanui Street from 22nd Avenue to Huanui Place, along Kaalawai Place from Diamond Head Road to easement, and along Kuine Place from Kulamanu Street to end - approx. 2,270 lin. ft.	Const	3,700	0	3,700	--	--	--	--	--	
3.	KULAAUPUNI AND ALTA STREET WATER SYSTEM IMPROVEMENTS										
	Install 8-inch mains and appurtenances along Kulaaupuni Street from 90 feet south of FH L03646 to St. Johns Road, from Apakee Street to FH L02925, from Kaukamana Street to Ohiohi Place; along Ohiohi Place from Kulaaupuni Street to End and along Alta Street from Glenmonger Street to Pokai Bay Street - approx. 2,455 lin. ft.	Const	1,150	0	1,150	--	--	--	--	--	In-house design Replacement of failing mains (1975)

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
4. PENSACOLA STREET WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	0	396	--	--	--	--	--	--	
Install 12-inch main and appurtenances along Pensacola Street from Kapiolani Boulevard to Young Street - approx. 2,550 lin. ft. Install 8-inch main and appurtenances along Pensacola Street from Young Street to existing 8-inch main (TMK 2-4-033:028) - approx. 3,540 lin. ft. Install 8-inch and 4-inch mains and appurtenances along Piikoi Street from Pensacola Street to Lewalani Drive - approx. 430 lin. ft.	Const	2,050	0	2,050	--	--	--	--	--	
5. WILHELMINA RISE WATER SYSTEM IMPROVEMENTS, PART IV										
Prepare plans and specifications	P&E	0	636	--	--	--	--	--	--	
Install 8-inch mains and appurtenances along Sierra Drive from Wilhelmina Rise to 125 feet east of FH M01653; along Nihipali Place from Sierra Drive to end; along Hilo Place, and Lilinoe Place from Wilhelmina Rise to end; along Lanihale Place from Sierra Drive to end; along Mariposa Drive from Sierra Drive to Monterey Drive; along Paula Drive from Mariposa Drive to FH M02338; along Iwi Way from Paula Drive to end of existing water main; along Niele Place from Iwi Way to end; along Nioi Place from Niele Place to end; and along Pakahi Place from Paula Drive to end - approx. 11,340 lin. ft. Install 4-inch mains and appurtenances along Palua Place from Paula Drive to end - approx. 170 lin. ft.	Const	6,000	0	6,000	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
6. KAPAHULU WATER SYSTEM IMPROVEMENTS, PART I										Project to address service pressure complaints from residential customers (1935)
Prepare plans and specifications	P&E	0	401	--	--	--	--	--	--	
Install 8-inch mains and appurtenances along Paliuli Street, Mokihana Street, and Olu Street, along Kaimuki Avenue from 4th Avenue to Kapahulu Avenue; along Lincoln Avenue from 4th Avenue to Kapahulu Avenue; along Pahoa Avenue from 4th Avenue to 3rd Avenue; along 3rd Avenue from Kaimuki Avenue to H-1 and from H-1 to Waialae Avenue; along Belser Street from Kaimuki Avenue to H-1 and from H-1 to Harding Avenue; along 2nd Avenue from Lincoln Avenue to FH M01349 and from H-1 to Waialae Avenue; and along Aloalo Place from Harding Avenue to end - approx. 8,400 lin. ft.	Const	4,000	0	4,000	--	--	--	--	--	
7. KAWANANAKOA PLACE 8-INCH MAIN										In-house design
Install 8-inch and 4-inch mains and appurtenances along Kawanakoa Place from Nuuanu Avenue to end - approx. 1,600 lin. ft.	Const	750	0	750	--	--	--	--	--	Fire protection upgrades (1931)
8. KUAHEA STREET 8-INCH MAIN										
Phase I - Install 8-inch mains and appurtenances along Kuahea Street from 2373 Kuahea Street to 2395 Kuahea Street - approx. 300 lin. ft.	Const	0	150	--	--	--	--	--	--	Design for Phase I and Phase II to be coordinated with DDC
Phase II - Install 8-inch mains and appurtenances along Kuahea Street from Waiomao Road to Kuahea Place - approx. 410 lin. ft.	Const	200	0	200	--	--	--	--	--	
9. FIRE HYDRANT INSTALLATIONS AT VARIOUS LOCATIONS										
Fire hydrant installation at various locations	P&E	600	200	100	100	100	100	100	100	
	Const	1,800	0	300	300	300	300	300	300	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
10. WATER MAIN INSTALLATION & REPLACEMENT										
Prepare plans and specifications	P&E	600	500	100	100	100	100	100	100	
Install and replace water mains at various locations	Const	600	3,325	100	100	100	100	100	100	
11. PALOLO WATER SYSTEM IMPROVEMENTS, PART III										
Prepare plans and specifications	P&E	740	300	740	--	--	--	--	--	Redesign
Install 12-inch mains and appurtenances along Palolo Avenue from Kiwila Street to Palolo Place and along 10th Avenue from Palolo Place to Ahe Street - approx. 5,220 lin. ft. Install 8-inch mains and appurtenances along Kaululoa Place from Palolo Avenue to end, along Palolo Avenue from Kauhana Street to Palolo Place, along 10th Avenue from Palolo Place to Ahe Street, and along Makanui Place from 10th Avenue to end - approx. 4,520 lin. ft. Install 4-inch mains and appurtenances along Holomua Place from Makanui Place to end - approx. 365 lin. ft.	Const	1,895	0	--	--	--	1,895	--	--	
12. PALOLO WATER SYSTEM IMPROVEMENTS, PART IV										
Prepare plans and specifications	P&E	670	300	670	--	--	--	--	--	Redesign
Install 16-inch mains and appurtenances along Pakui Street from 10th Avenue to Wilhelmina Rise 405 Reservoir, along 10th Avenue from Maluhia Avenue to Pakui Street, along Pukele Avenue from 7th Avenue to Maluhia Avenue, along 7th Avenue from Kaau Street to Pukele Avenue, along Kaau Street from Palolo Avenue to 7th Avenue and along Palolo Avenue from Kaau Street to Waialae Avenue - approx. 4,150 lin. ft. Install 12-inch mains and appurtenances along Kalua Road from Mahana Street to 10th Avenue - approx. 985 lin. ft. Install 8-inch mains and appurtenances along 9th Avenue from Paalea Street to Kiwili Street - approx. 2,410 lin. ft.	Const	4,700	0	--	--	4,700	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
13. PIPELINE TUNNEL RENOVATION AT VARIOUS LOCATIONS										
Prepare plans and specifications	P&E	200	0	200	--	--	--	--	--	
Renovate pipeline and tunnel at Keanu, Halawa, Makapuu and Ruger Tunnels	Const	1,000	0	--	--	1,000	--	--	--	
14. AULOA ROAD AND ULUKAHIKI STREET: 12-INCH MAIN										
Prepare plans and specifications	P&E	690	0	690	--	--	--	--	--	
Install 12-inch mains and appurtenances along Auloa Road from FH W03044 to Kalaniana'ole Highway and along Ulukahiki Street from Kalaniana'ole Highway to Kailua Road - approx. 7,635 lin. ft.	Const	4,200	0	--	--	--	4,200	--	--	
15. WAIANAE WATER SYSTEM IMPROVEMENTS, PART III										
Prepare plans and specifications	P&E	690	0	690	--	--	--	--	--	
Install 16-inch mains and appurtenances along Farrington Highway from Kaulawaha Road to Lualualei Homestead Road - approx. 6,470 lin. ft. Install 8-inch mains and appurtenances along Old Government Road from Farrington Highway to Plantation Road - approx. 1,200 lin. ft.	Const	4,600	0	--	--	--	4,600	--	--	
16. MOILILI WATER SYSTEM IMPROVEMENTS, PART IV										
Prepare plans and specifications	P&E	450	0	450	--	--	--	--	--	
Install 12-inch mains and appurtenances along Kapiolani Boulevard from Date Street to Kaimuki Avenue - approx. 2,400 lin. ft. Install 8-inch mains and appurtenances along University Avenue from Kapiolani Boulevard to Hihiwai Street, along Hihiwai Street from University Avenue to Kamoku Street, along Lauiki Street from Hihiwai Street to Kamoku Street and along Kamoku Street from Hihiwai Street to Kapiolani Boulevard - approx. 3,535 lin. ft.	Const	3,300	0	--	--	--	3,300	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	TOTAL	PRIOR	Fiscal Year (FY)						REMARKS
		(\$ 000)	APPNS	(\$ 000)						
		(FY15-20)	(\$ 000)	2015	2016	2017	2018	2019	2020	
17. KAMEHAMEHA HEIGHTS WATER SYSTEM IMPROVEMENTS, PART III										
Prepare plans and specifications	P&E	750	0	750	--	--	--	--	--	
Install 8-inch mains and appurtenances along Kealia Drive from Kapalama Avenue to Hillcrest Street, along Hillcrest Street from Kealia Drive to Skyline Drive, along Naio Street from Kealia Drive to end, along Makanani Drive from Naio Street to Lolena Street, along Skyline Drive from Hillcrest Street to Puna Street, along Puna Street from Aulii Street to end, along Aulii Street from Makanani Drive to Kealakai Street, along Kula Street from Lolena Street to Kealakai Street and along Lolena Street from Makanani Drive to Kealakai Street - approx. 10,160 lin. ft.	Const	4,850	0	--	--	--	4,850	--	--	
18. AIEA KAI PLACE AND WAY 8-INCH MAINS										
Prepare plans and specifications	P&E	0	90	--	--	--	--	--	--	
Install 8-inch mains and appurtenances along Aiea Kai Place from Kamehameha Highway to end and along Aiea Kai Way from Aiea Kai Place to end - approx. 1,260 lin. ft.	Const	570	0	--	570	--	--	--	--	
19. MANOA ESTATES WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	0	140	--	--	--	--	--	--	
Install 12-inch mains and appurtenances along Waaloa Way from Waaloa Place to Manoa Chlorinator - approx. 1,630 lin. ft. Install 8-inch mains and appurtenances along Manoa Estates Road from Pinoa Street to Waaloa Way - approx. 1,290 lin. ft.	Const	1,310	0	--	1,310	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
20. KIPOU STREET 8-INCH MAIN										In-house design
Install 8-inch and 4-inch mains and appurtenances along Kipou Street from Hene Street to Hulahe Street and along Kenola Place from Kipou Street to end - approx. 1,850 lin. ft.	Const	710	0	--	710	--	--	--	--	
21. MAKAKILO WATER SYSTEM IMPROVEMENTS, PART III										
Prepare plans and specifications	P&E	560	0	--	560	--	--	--	--	
Install 8-inch mains and appurtenances along Nohopono Street, Nohopaa Street, Nohona Street and Nenelea Street from Lihau Street to Palailai Street, along Newa Street from Makakilo Drive to Palailai Street, along Newa Place from Newa Street to end, along Lihau Street from Palailai Street to Newa Street, along Palailai Street from Nohona Street to Nohohale Street, along Nohohale Street from Palailai Street to Makakilo Drive, along Mehani Street from Akaula Street to Auwaea Street, along Mehani Place from Mehani Street to end, and along Makakilo Drive from 65 feet West of FH L02483 to 80 feet East FH L01850 - approx. 10,890 lin. ft. Install 4-inch mains and appurtenances along Nonohale Street from Makakilo Drive to Palailai Place - approx. 845 lin. ft.	Const	5,300	0	--	--	--	5,300	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
22. KALIHI WATER SYSTEM IMPROVEMENTS, PART VI										
Prepare plans and specifications	P&E	690	0	--	690	--	--	--	--	
Install 12-inch mains and appurtenances along Gulick Avenue from King Street to School Street - approx. 2,940 lin. ft. Install 8-inch mains and appurtenances along Gulick Avenue from North School Street to 66 feet southwest of Puaala Lane, along Ulana Street from Owawa Street to 78 feet southeast of FH M07178, along Uhu Street from Gulick Avenue to end, along Kealoha Street from Gulick Avenue to Nakuina Street, along Pahukui Street from Gulick Avenue to Nakuina Street, along Nakuina Street from Kealoha Street to Beckley Street, along Beckley Street from Gulick Avenue to Kalihi Street, along Kalihi Street from King Street to end of 6-inch near FH M02379, along Kaili Street from King Street to Beckley Street, along Kopke Street from King Street to Pacheco Street and along Pacheco Street from Kopke Street to Gulick Avenue - approx. 7,480 lin. ft.	Const	5,400	0	--	--	--	--	5,400	--	
Install 4-inch mains and appurtenances along Beckley Place from Beckley Street to end, along Day Place from Kalihi Street to end and along Ulana Place from Ulana Street to end - approx. 575 lin. ft. Install 2-inch mains and appurtenances along Gertz Lane from Gulick Avenue to end, along Harvey Lane from King Street to end, along Hanu Lane from Kopke Street to end and along Lukela Lane from Kopke Street to end - approx. 1,060 lin. ft.										

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
23. HALEAHI AND PAHEEHEE ROAD 12-INCH AND 8-INCH MAINS										
Prepare plans and specifications	P&E	270	0	--	270	--	--	--	--	
Install 12-inch mains and appurtenances along Haleahi Road from Paheehee Road to the existing check valves - approx. 1,135 lin. ft. Install 8-inch mains and appurtenances along Paheehee Road from Puhawai Street to Haleahi Road - approx. 4,210 lin. ft.	Const	2,400	0	--	--	--	--	2,400	--	
24. WAI AU WATER SYSTEM IMPROVEMENTS, PART II										
Prepare plans and specifications	P&E	160	0	--	160	--	--	--	--	
Install 12-inch mains and appurtenances along the private lanes within Hillside Subdivisions I and II - approx. 1,900 lin. ft. Install 8-inch mains and appurtenances along the private lanes within Hillside Subdivisions I to IV - approx. 1,235 lin. ft.	Const	1,400	0	--	--	--	--	1,400	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
25. NORTH SCHOOL STREET WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	880	0	--	880	--	--	--	--	
Install 16-inch mains and appurtenances along North School Street from Kam IV Road to Houghtailing Street - approx. 4,510 lin. ft. Install 8-inch mains and appurtenances along Ahonui Street from North School Street to Linapuni Street, along Hulali Place from Ahonui Street to end, along North School Street from Amelia Street to Leilani Street, along North School Street from Likelike Highway to Houghtailing Street, along Amelia Street from North School Street to Waikoa Road, along Waikoa Road from Amelia Street to Martin Street, along Martin Street from North School Street to Waikoa Road, along Kapalama Avenue from North School Street to Peter Buck Street and along Brigham Street from Kapalama Avenue to Kapalama Avenue - approx. 8,330 lin. ft. Install 4-inch mains and appurtenances along Palapala Place from Kapalama Avenue to end - approx. 205 lin. ft.	Const	7,200	0	--	--	--	--	7,200	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
26. PEARL CITY WATER SYSTEM IMPROVEMENTS, PART IV										
Prepare plans and specifications	P&E	940	0	--	940	--	--	--	--	
Install 8-inch mains and appurtenances along Palamoi Street from Kuahaka Street to end of 8" main near FH L02004, along Panee Street from Palamoi Street to Kaweloka Street, along Kaweloka Street from Panee Street to Palamoi Street, along Kalauipo Street from Kaweloka Street to Palamoi Street, along Kalauipo Place from Kalauipo Street to end, along Kalai Place from Kalauipo Street to end, along Maiha Circle from Waimano Home Road to end, along Maiha Place from Maiha Circle to end, along Hooihohoi Street from Hoomoana Street to end, along Hooihohoi Place from Hooihohoi Street to end, along Hoowae Street from Hooihohoi Street to Hoolele Street, along Hoomalolo Street from Hoomoana Street to Hoolaulea Street, along Hoolele Street from Hoolaulea Street to Hoomalolo Street, along Hoomoana Street from Komo Mai Drive to Hookeikei Street, along Komo Mai Drive from Hoolehua Street to Hoolaulea Street and along Hoolehua Street from Komo Mai Drive to end of CI pipe - approx. 16,420 lin. ft.	Const	7,870	0	--	--	--	--	7,870	--	
Install 4-inch mains and appurtenance along Maiki Place from Maiha Circle to end - approx. 125 lin. ft. Install 12-inch mains and appurtenances along Huikahi Street from Hoolehua Street to Hoolaulea Street - approx. 940 lin. ft.										

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	TOTAL	PRIOR	Fiscal Year (FY)						REMARKS
		(\$ 000)	APPNS	(\$ 000)						
		(FY15-20)	(\$ 000)	2015	2016	2017	2018	2019	2020	
27. KEOLU HILLS WATER SYSTEM IMPROVEMENTS, PART II										
Prepare plans and specifications	P&E	380	0	--	380	--	--	--	--	
Install 12-inch mains and appurtenances along Keolu Drive from Akumu Street to Nanialii Street, along Akumu Street from Keolu Drive to Alahaki Street, along Iana Street from Keolu Drive to FH W00766, and along Keolu Drive from Kanapuu Drive to Akalani Loop - approx. 3,580 lin. ft. Install 8-inch mains and appurtenances along Akumu Street from Alahaki Street to Holoholo Street, along Keolu Drive from Akalani Loop to Akahai Street, along Akahai Street from Keolu Drive to Akamai Street, along Akaiki Street from Akahai Street to Akamai Street and along Halula Place from Akumu Street to end - approx. 4,265 lin. ft. Install 4-inch mains and appurtenances along Akumu Place from Akumu Street to end, along Akiu Place from Akumu Street to end and along Akalei Place from Akumu Street to end - approx. 540 lin. ft.	Const	3,770	0	--	--	--	--	3,770	--	
28. LANAKILA WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	320	0	--	320	--	--	--	--	
Install 8-inch mains and appurtenances along Palama Street from Panalaau Street to North School Street, along Alaneo Street from Alaneo Street to Kuakini Street, along Lanakila Avenue from North School Street to Kunawai Lane, along North Judd Street from Kunawai Lane to Apio Lane, and along Kamaka Lane from Lanakila Avenue to Kunawai Lane - approx. 7,100 lin. ft.	Const	3,200	0	--	--	--	--	3,200	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	TOTAL	PRIOR	Fiscal Year (FY)						REMARKS
		(\$ 000)	APPNS	(\$ 000)						
		(FY15-20)	(\$ 000)	2015	2016	2017	2018	2019	2020	
29. MARINER'S RIDGE WATER SYSTEM IMPROVEMENTS, PART II										
Prepare plans and specifications	P&E	550	0	--	550	--	--	--	--	
Install 12-inch mains and appurtenances along Kaluanui Road from Kaahue Street to Kalihiwai Place, along Kaumoku Street from Kaakaanui Street to end and along Kaakaanui Street from Kaluanui Road to Kaumoku Street - approx. 4,425 lin. ft. Install 8-inch and 4-inch mains and appurtenances along Kapa Place, Kanakou Place, Kalahu Place, Kailiu Place, Kaalula Place, Kamookoa Place, Kaupaku Place, Kalihiwai Place and Kaoopulu Place from Kaluanui Road to end, along Kaluaa Place from Kaumoku Street to end and along Kaoopulu Way from Kaoopulu Place to end - approx. 7,940 lin. ft.	Const	5,560	0	--	--	--	--	5,560	--	
30. PAUOA WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	500	0	--	500	--	--	--	--	
Install 8-inch mains and appurtenances along Lusitana Street from Pauoa Road to Concordia Street, along Auwaiolimu Street from Lusitana Street to Tantalus Drive, along Kanealii Avenue from Pauoa Road to Kapalu Street, along Boyd Lane from Lusitana Street to end, along Kapaloala Place from FH M06992 to Pauoa Road and along Ohelo Lane from Lusitana Street to end - approx. 8,100 lin. ft.	Const	3,650	0	--	--	--	--	3,650	--	
31. ALA AOLANI 12-INCH MAIN										
Prepare plans and specifications	P&E	150	0	--	150	--	--	--	--	
Install 12-inch mains and appurtenances along Ala Aolani Street from the 16-inch cross country main to Ala Aoloa Loop - approx. 1,800 lin. ft.	Const	810	0	--	--	--	--	810	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
32. ANOI ROAD WATER SYSTEM IMPROVEMENTS										Replacement of failing mains along major thoroughfare for Kaneohe business district and Windward Mall shopping center (1954, 1958)
Prepare plans and specifications	P&E	0	419	--	--	--	--	--	--	
Install 8-inch main and appurtenances along Anoi Road from above Paleka Road to end; along Keaahala Road from Kamehameha Highway to Keaahala Place; along Kamehameha Highway from Kahuhipa Street to Keole Street and along Luana Place from Paleka Road to end - approx. 5,850 lin. ft.	Const	6,560	0	--	--	6,560	--	--	--	
33. LULUKU ROAD WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	0	138	--	--	--	--	--	--	
Install 12-inch and 6-inch mains and appurtenances along Luluku Road and Kamehameha Highway - approx. 1,800 lin. ft. Transfer service laterals along Apapane Street from Luluku Road to near FH W01009 - approx. 600 lin. ft.	Const	1,100	0	--	--	1,100	--	--	--	
34. PUHAWAI ROAD, KUWALE ROAD AND PUUHULU ROAD WATER SYSTEM IMPROVEMENTS										In-house design
Install 8-inch mains and appurtenances along Puhawai Road from Puuhulu Road to Paheehee Road, along Wikolia Place from Puhawai Road to end, along Puuhulu Road from Puhawai Road to Kuwale Road, along Kuwale Road from Puuhulu Road to Paheehee Road, along Haama Place from Puuhulu Road to end, along Puululu Place from Puuhulu Road to end, and along the side street from Kuwale Road to end – approx. 10,780 lin. ft.	Const	4,200	0	--	--	4,200	--	--	--	
35. POOLA STREET 8-INCH MAIN										In-house design
Install 8-inch mains and appurtenances along Poola Street from 165 feet south of FH M06045 to Panalea Place and along Palaole Place from Poola Street to end - approx. 2325 lin. ft. Install 4-inch mains and appurtenances along Panalea Place from Poola Street to end - approx. 160 lin. ft.	Const	950	0	--	--	950	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
36. KAIMUKI WATER SYSTEM IMPROVEMENTS, PART I										In-house design
Install 8-inch mains and appurtenances along Maunaloa Avenue from 16th Avenue to 20th Avenue; along Kaimuki Avenue from 16th Avenue to 21st Avenue; along Pahoa Avenue from 18th Avenue to 150 feet beyond FH M03591; along 17th Avenue from Kilauea Avenue to Kaimuki Avenue and along 18th Avenue from Kaimuki Avenue to Pahoa Avenue; along 19th and 20th Avenue from Maunaloa Avenue to Pahoa Avenue - approx. 9,850 lin. ft.	Const	2,930	0	--	--	2,930	--	--	--	
37. MONSARRAT AVENUE WATER SYSTEM IMPROVEMENTS										In-house design
Install 16-inch and 8-inch mains and appurtenances along Monsarrat Avenue from Paki Avenue to Campbell Avenue - approx. 3,200 lin. ft.	Const	1,670	0	--	--	1,670	--	--	--	
38. WAHIAWA WATER SYSTEM IMPROVEMENTS, PART I										Fire protection upgrade and replacement of failing mains within residential Wahiawa (1959, 1960)
Prepare plans and specifications	P&E	0	1,246	--	--	--	--	--	--	
Install 12-inch mains and appurtenances along California Avenue from Maalo Street to Mahele Street - approx. 2,100 lin. ft. Install 8-inch mains and appurtenances along California Avenue from Maalo Street to Auhili Place, Kaalalo Place, Lei Awapuhi Place, Lei Aloalo Place, Longley Place, Kukui Street, Olive Street from Kamehameha Highway to Cypress Avenue, Ohai Street, Ohai Place, Milikana Place, Koele Way, Kilani Avenue from Lehua Street to Holoku Place, Kamehameha Highway from California Avenue to Avocado Street, and along Niihawai Place and Hiwi Place - approx. 15,950 lin. ft.	Const	7,060	0	--	--	7,060	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
39. WILHELMINA RISE WATER SYSTEM IMPROVEMENTS, PART V										
Prepare plans and specifications	P&E	0	280	--	--	--	--	--	--	
Install 12-inch mains and appurtenances along Wilhelmina Rise from Sierra Drive to Sierra Drive, along Sierra Drive from 110 feet west of FH M04010 to Maunalani Circle, along Maunalani Circle from Sierra Drive to Sierra Drive, and within the Wilhelmina Rise 811 and 1100 Reservoir sites - approx. 4,610 lin. ft. Install 8-inch mains and appurtenances along Halehoola Place from Sierra Drive to end and along Mana Place from Maunalani Circle to end - approx. 965 lin. ft.	Const	2,500	0	--	--	2,500	--	--	--	
40. PACIFIC HEIGHTS WATER SYSTEM IMPROVEMENTS, PART II										
Redesign plans and specifications	P&E	0	494	--	--	--	--	--	--	Replacement of mains along major thoroughfare for area residents. Eliminates cross-country mains that are difficult to maintain (1930's)
Install 12-inch main and appurtenances along Pacific Heights Road from Haili Road to Ahekololo Street, along Ahekololo Street from Pacific Heights Road to Booth Road, along Booth Road from Ahekololo Street to Kekuanoni Street - approx. 4,800 lin. ft. Install 8-inch main and appurtenances along Laniloa Road from Pacific Heights Road to end, along Pacific Heights Place from Pacific Heights Road to end, along Hiolani Street from Booth Road to end and along various side streets - approx. 2,055 lin. ft.	Const	2,540	0	--	--	2,540	--	--	--	
41. NIUMALU LOOP AND KUKII STREET 8-INCH MAIN										
Prepare plans and specifications	P&E	0	140	--	--	--	--	--	--	
Install 8-inch mains and appurtenances along Niumalu Loop from Kamilo Street to Kamilo Street and along Kukii Street from Kamilo Street to Niumalu Loop - approx. 2,755 lin. ft.	Const	1,300	0	--	--	1,300	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
42. KAHUAILANI STREET WATER SYSTEM IMPROVEMENTS										In-house design
Install 12-inch mains and appurtenances along Mokuola Street from Waipahu Street to 70 feet beyond Nalii Street - approx. 500 lin. ft. Install 8-inch mains and appurtenances along Kahuailani Street from Hikimoe Street to end, along Puamano Place from Waipahu Street to end, along Kahiki Place from Puamano Place to end and along Hikimoe Street from Waipahu Depot Street to FH L04002 - approx. 4,020 lin. ft. Install 4-inch mains and appurtenances along the side street from Hikimoe Street to end - approx. 115 lin. ft.	Const	1,810	0	--	--	1,810	--	--	--	
43. WAHIAWA WATER SYSTEM IMPROVEMENTS, PART III										In-house design
Install 8-inch mains and appurtenances along Uluwehi Street from California Avenue to Walea Street, along Uluwehi Place from Walea Street to end, along Hoolulu Road from Uluwehi Street to Hoomaha Street, along Walea Street from Uluwehi Street to Walea Uka Place, along Hoomaha Street from California Avenue to Walea Street and along Walea Uka Place from Walea Street to end - approx. 4,720 lin. ft. Install 4-inch mains and appurtenances along the side street from Hoomaha Street to end - approx. 135 lin. ft.	Const	2,100	0	--	--	2,100	--	--	--	
44. HUI ULILI STREET: 12-INCH, 8-INCH AND 4-INCH MAINS										In-house design. Replacement of mains installed in highly corrosive soils (1969)
Install 12-inch, 8-inch and 4-inch mains and appurtenances along Hui Ulili Street from Hui Kelu Street to Hui Oi Street - approx. 2,825 lin. ft.	Const	1,400	0	--	--	1,400	--	--	--	

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PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
45. SEASIDE AND KAIULANI AVENUE 12-INCH MAINS										
Prepare plans and specifications	P&E	110	0	--	--	110	--	--	--	
Install 12-inch mains and appurtenances along Kaiulani Avenue from Kuhio Avenue to Ala Wai Boulevard and along Seaside Avenue from Kalakaua Avenue to Kuhio Avenue - approx. 1,560 lin. ft.	Const	860	0	--	--	--	--	860	--	
46. DIAMOND HEAD WATER SYSTEM IMPROVEMENTS, PART III										
Prepare plans and specifications	P&E	110	0	--	--	110	--	--	--	
Install 12-inch mains and appurtenances along Puu Panini Avenue from 22nd Avenue to Palekaua Street, and along Palekaua Street from Puu Panini Avenue to Hakaka Street - approx. 1,100 lin. ft.	Const	500	0	--	--	--	--	500	--	
47. BARBERS POINT 215 WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	P&E	150	0	--	--	150	--	--	--	
Install 30-Inch main and appurtenances along the Barbers Point 215 facility from Old Farrington Highway to Reservoir No. 1 - approx. 300 lin. ft. Install new drainline along the flowage easement to facilitate the draining of the reservoirs	Const	500	0	--	--	--	--	500	--	
48. APIO LANE 8-INCH MAIN										
Prepare plans and specifications	P&E	75	0	--	--	75	--	--	--	
Install 8-inch mains and appurtenances along Apio Lane from Kekau Place to end - approx. 520 lin. ft.	Const	210	0	--	--	--	--	210	--	

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PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
49. KAILUA ROAD 8-INCH MAIN										
Prepare plans and specifications	P&E	90	0	--	--	90	--	--	--	
Install 8-inch and 2-inch mains and appurtenances along 1005 Kailua Road from Kailua Road to end - approx. 720 lin. ft.	Const	290	0	--	--	--	--	290	--	
50. MAILILI ROAD 20-INCH MAIN										
Prepare plans and specifications	P&E	195	0	--	--	195	--	--	--	
Install 20-Inch mains and appurtenances along Mailiili Road from Paakea Road to FH L05823 - approx. 2,230 lin. ft.	Const	1,340	0	--	--	--	--	1,340	--	Replace concrete cylinder main leaking into Mailiili Stream
51. KALAMA VALLEY WATER SYSTEM IMPROVEMENTS, PART II										
Prepare plans and specifications	P&E	390	0	--	--	390	--	--	--	
Install 12-inch mains and appurtenances along Kealahou Street from 661 Kealahou Street to Papalalo Place - approx. 2,305 lin. ft. Install 8-inch mains and appurtenances along Wawau Street from Honokahua Street to Kaeleku Street, along Honokahua Street from Kaeleku Street to end, along Kealahou Street from Papalalo Place to end, along Nakalele Street from Kealahou Street to Pihana Street, along Pihana Street from approx. 45 feet north of FH M06514 to end and along Ipuai Street from Kealahou Street to Honokahua Street - approx. 4,185 lin. ft. Install 8- and 4-inch mains and appurtenance along Kalina Place from Kealahou Street to end, along Maloo Place from Honokahua Street to end, along Ohina Place from Honokahua Street to end, along Honokahua Place from Honokahua Street to end, along Kiaala Place from Kealahou Street to end and along Papalalo Place from Kealahou Street to end - approx. 2,040 lin. ft.	Const	3,840	0	--	--	--	--	--	3,840	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
52. KILI DRIVE 16-INCH MAIN, PART II										
Prepare plans and specifications	P&E	150	0	--	--	150	--	--	--	
Install 16-inch main and appurtenances along Kili Drive from Huiipu Drive to Makaha 242 Access Road - approx. 2,850 lin. ft.	Const	1,570	0	--	--	--	--	--	1,570	
53. WAIPAHU 36-INCH MAIN RELOCATION										
Prepare plans and specifications	P&E	280	0	--	--	280	--	--	--	
Install 36-inch main and appurtenances along Waipahu Street from 280 feet northwest of Awamoi Street to Paiwa Street and along Paiwa Street from Waipahu Street to FH L02966, north of Koaki Street - approx. 5,170 lin. ft.	Const	3,620	0	--	--	--	--	--	3,620	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
54. KAMEHAMEHA HIGHWAY - HALEIWA WATER SYSTEM IMPROVEMENTS, PART I & II										
Prepare plans and specifications	P&E	0	874	--	--	--	--	--	--	Replacement of aging main through a heavily traveled stretch of Kamehameha Highway (1938, 1961)
Part I: Install 8-inch mains and appurtenances along Kamehameha Highway from 625 feet northeast of FH C00049 to 10 feet northeast of FH C00041 and along Pohaku Loa Way from Kamehameha Highway to Kamehameha Highway - approx. 6,600 lin. ft. Install 8-inch and 4-inch mains and appurtenances along a private road (TMK: 6-1-012:040) from Kamehameha Highway to end of road across of FH C00501, along Punalau Place from Kamehameha Highway to end, along Ikuwai Place from Kamehameha Highway to end, along Ikuwai Way from Kamehameha Highway to end, and along various side streets - approx. 2,700 lin. ft. Install 2-inch mains along TMK 6-1-011:010, TMK 6-1-011:001, TMK 6-1-011:002, and TMK 6-1-011:015 - approx. 1,150 lin. ft.	Const	940	0	--	--	--	11,900	--	--	
Part II: Install 12-inch main along Kamehameha Highway from Papailoa Road to approximately 300 feet northwest of Kawaiola Drive - approx. 2,400 lin. ft. Install 8-inch main along Kamehameha Highway from 16-inch main interconnection near FH C00059 to approximately 550 feet northeast of FH C00056 - approx. 4,900 lin. ft.										
R&R PIPELINES P&E SUBTOTAL		P&E	12,340	6,871	4,390	5,600	1,750	200	200	200
R&R PIPELINES Land SUBTOTAL		Land	0	0	0	0	0	0	0	0
R&R PIPELINES Const SUBTOTAL		Const	157,295	3,475	20,850	2,990	42,220	36,445	45,360	9,430
R&R PIPELINES SUBTOTAL			169,635	10,346	25,240	8,590	43,970	36,645	45,560	9,630

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	(\$ 000)						
				2015	2016	2017	2018	2019	2020	
<u>D. TREATMENT - R&R</u>										
No Project Scheduled				--	--	--	--	--	--	
R&R TREATMENT P&E SUBTOTAL		P&E	0	0	0	0	0	0	0	
R&R TREATMENT Land SUBTOTAL		Land	0	0	0	0	0	0	0	
R&R TREATMENT Const SUBTOTAL		Const	0	0	0	0	0	0	0	
R&R TREATMENT SUBTOTAL			0	0	0	0	0	0	0	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
E. FACILITIES - R&R										
1. SLOPE STABILIZATION AT VARIOUS FACILITIES										Projects to mitigate potential for rockfall from BWS lands that may impact BWS facilities and neighboring properties
Prepare plans and specifications	P&E	0	200	--	--	--	--	--	--	
Slope stabilization at Keanu Tunnel, Waialae 180 and Waialae Iki 180 Reservoirs	Const	3,200	2,700	3,200	--	--	--	--	--	
2. NUUANU RESERVOIR NO. 4 DAM IMPROVEMENTS										
Prepare plans and specifications for improvements to Nuuanu Reservoir No. 4 (TMK: 2-2-054:001)	P&E	0	350	--	--	--	--	--	--	
Topographic survey, subdivision mapping, geotechnical exploration and analysis and supplemental engineering design reports	P&E	0	600	--	--	--	--	--	--	
Rehabilitate dam face, intake and outlet works, suspension bridge and access road; and install seepage measurement weirs on downstream face of dam	Const	1,500	0	1,500	--	--	--	--	--	
3. FACILITY RENEWAL AND RENOVATION										
Prepare plans and specifications	P&E	2,500	3,050	500	400	400	400	400	400	
Renewal, renovation, reroofing, fencing and repainting of select BWS facilities	Const	18,000	20,500	3,000	3,000	3,000	3,000	3,000	3,000	
4. 2-WAY RADIO UPGRADES										
Convert analog to digital for security and extended coverage	Const	1,500	0	750	750	--	--	--	--	
5. MICROBIOLOGICAL LABORATORY AIR CONDITIONING UPGRADE										
Prepare plans and specifications for microbiological lab air conditioning improvements	P&E	0	100	--	--	--	--	--	--	
Install microbiological lab air conditioning improvements	Const	740	0	740	--	--	--	--	--	No relocation of staff required at this time

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
6. RTU UPGRADES										
Project planning, design and management services	P&E	1,400	0	200	1,200	--	--	--	--	
Replace obsolete RTUs. Existing RTUs do not support wireless system communications	Const	14,100	0	1,500	2,700	2,100	3,200	2,200	2,400	Replacement at approximately 150 facilities
7. STORM WATER MANAGEMENT PLAN IMPROVEMENTS										Improvements needed at corporation yards to ensure compliance with Stormwater Management Plan and NPDES regulations for stormwater discharge
Prepare plans and specifications	P&E	0	470	--	--	--	--	--	--	
Install improvements to eliminate pollutant runoff from BWS corporation yards	Const	1,100	0	600	500	--	--	--	--	
8. KAILUA IWI KUPUNA REINTERMENT										
Construct site improvements for reinterment	Const	100	0	100	--	--	--	--	--	
9. SECURITY FENCING AT VARIOUS LOCATIONS										
Project planning, design and management services	P&E	1,100	100	200	100	200	200	200	200	
Install expanded metal fencing at selected BWS facilities	Const	9,300	1,200	600	600	600	2,500	2,500	2,500	
10. RENOVATE / REPLACE RESERVOIR ALTITUDE VALVE ASSEMBLIES - MAKIKI & WAIALAE IKI 180 RESERVOIRS										
Prepare plans and specifications	P&E	100	0	100	--	--	--	--	--	
Install improvements at Makiki 180 and Waialae Iki 180 Reservoir sites	Const	750	0	--	--	750	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
11. NUUANU RESERVOIR NO. 1 DAM IMPROVEMENTS										State DLNR declared Nuuanu Reservoir No. 1 a regulated dam and is requiring various improvements in the Phase I Dam Inspection Report dated June 2014
Prepare Preliminary Engineering Study for proposed improvements to Nuuanu Reservoir No. 1 Dam (TMK 1-9-001:001)	P&E	500	0	500	--	--	--	--	--	
Perform geotechnical exploration and analysis, prepare plans and specifications for proposed improvements to Nuuanu Reservoir No. 1 Dam; and acquire necessary permits	P&E	900	0	--	900	--	--	--	--	
Rehabilitate dam, spillway and outlet works; install remote water level monitoring equipment; prepare Emergency Action Plan and Operations & Management manual	Const	2,000	0	--	--	--	2,000	--	--	
12. WEBSITE REDESIGN										
Redesign internal and external website for additional features and functions and to leverage mainstream development tools to ensure future supportability	P&E	755	0	455	--	--	300	--	--	
13. CUSTOMER INFORMATION SYSTEM										Phased implementation of CC&B features, services and enhancements
Customer Information System phased implementation	P&E	6,000	5,209	3,000	1,000	--	2,000	--	--	
14. COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM										Upgrade Maximo/CMMS from current version (5.2) which is no longer supported by the vendor to a recent supportable version (7.5)
Upgrade computerized maintenance management system software version and implement features to improve system performance and adhere to operational best practices	P&E	5,350	3,540	2,375	2,375	--	600	--	--	
15. IT PROJECT MANAGEMENT										
Project management services for IT applications	P&E	1,400	2,200	1,400	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	(\$ 000)						
				2015	2016	2017	2018	2019	2020	
16. PROFESSIONAL SERVICES FOR BWS PROJECTS										
Obtain services of archaeologists, botanists, environmental engineers, water quality labs, planners, government agencies and others	P&E	1,710	2,315	300	210	300	300	300	300	
17. KRONOS UPGRADE										Existing software no longer supported
Upgrade Kronos Time and Attendance system software to improve system performance and adhere to operational best practices	P&E	1,622	0	857	--	--	765	--	--	
18. SHAREPOINT SERVICES AND SUPPORT										
Implement document management systems to improve record management storage and adhere to operational best practices	P&E	800	0	800	--	--	--	--	--	
19. BERETANIA COMPLEX MODERNIZATION										
Evaluate space requirements, handicap requirements, lighting, electrical/mechanical systems, hazmat abatement and security assessment	P&E	1,000	0	1,000	--	--	--	--	--	
20. FUTURE METER READING TECHNOLOGY										FY13 Automated Meter Reading Informational Study to determine improvements
Install improvements to meter reading system	Const	1,000	0	--	1,000	--	--	--	--	
21. MAUNA OLU 530' RESERVOIR IMPROVEMENTS										
Install staff gauge, water level transducer and datalogger, telemetry equipment and controls, and appurtenant utilities	Const	50	0	--	50	--	--	--	--	To provide for remote monitoring of water levels in the open reservoir

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
22. WAIMANALO TUNNEL I AND II AND WAIANAE PLANTATION TUNNEL III RENOVATION										
Investigate and assess tunnel conditions and prepare plans and specifications for improvements needed to reactivate tunnels	P&E	300	0	--	300	--	--	--	--	
Construct improvements to stabilize entrance for preparation of the Preliminary Engineering Study (PES)	Const	200	0	--	--	--	200	--	--	
Prepare PES and plans and specifications for Waimanalo Tunnels I & II and Waianae Tunnel III improvements	P&E	200	0	--	--	--	200	--	--	
Waimanalo Tunnels I & II: Install required tunnel improvements	Const	0	0	--	--	--	--	--	--	
Waianae Tunnel III: Install required tunnel improvements	Const	0	0	--	--	--	--	--	--	
23. NALU ENHANCEMENT										
Upgrade financial accounting system software version to address support and compatibility issues	P&E	1,640	1,402	--	1,640	--	--	--	--	Upgrade JD Edwards system (NALU) from current version to 9.1 to address support and compatibility issues
24. DOCUMENT MANAGEMENT SYSTEM										
Provide support services for SharePoint systems to improve system performance and adhere to operational best practices	P&E	500	0	--	500	--	--	--	--	Implement a Document Management system based on Sharepoint, Hyland, or similar technology to increase document management and availability
Implement document management systems to improve record management storage and adhere to operational best practices	Const	2,850	--	--	--	2,850	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
25. DATA CENTER RENOVATION PROJECT										
Assess, design and assist in the development of project specifications for the renovation of the BWS Data Center in the Beretania Pump Station Building	P&E	250	0	--	250	--	--	--	--	
	Const	750	0	--	--	750	--	--	--	
26. SECURITY ENHANCEMENTS FOR ALL BWS CORPORATION YARDS										
Prepare plans and specifications, life cycle cost analysis to install fencing and card access for Kalihi, Manana, Waianae, Wahiawa, Heeia Corporation Yards; Halawa Xeriscape Garden and Beretania Complex	P&E	200	0	--	200	--	--	--	--	
Kalihi Yard	Const	570	0	--	--	--	570	--	--	
Manana Yard	Const	430	0	--	--	--	430	--	--	
Waianae Yard	Const	300	0	--	--	--	--	300	--	
Wahiawa Yard	Const	350	0	--	--	--	--	350	--	
Heeia Yard	Const	300	0	--	--	--	--	300	--	
Halawa Xeriscape	Const	0	0	--	--	--	--	--	--	
Beretania Complex	Const	0	0	--	--	--	--	--	--	
27. WAIPIO ACRES CONTROL VALVE IMPROVEMENTS										
Prepare plans and specifications	P&E	150	0	--	150	--	--	--	--	
Install isolation valves for system operations and emergency pumping connection to allow 808 system to supply 1075 system	Const	0	0	--	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL	APPNS	(\$ 000)						
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020	
28. PALOLO TUNNEL PORTAL IMPROVEMENTS										
Prepare plans and specifications	P&E	0	317	--	--	--	--	--	--	
Install Palolo Tunnel portal improvements, stabilize portal entrance, extend inlet piping 60 feet, install pipe supports and concrete dam, clean lower 6,000 feet of the pipeline to the chlorinator and install temporary booster pump	Const	400	0	--	--	400	--	--	--	
29. PILIUKA PRV REPLACEMENT										
Prepare plans and specifications	P&E	200	0	--	--	200	--	--	--	
Replace and relocate PRVs, along Waianae Valley Road near FH L06812, to above ground within new building. Restore power, communications and supervisory controls	Const	600	0	--	--	--	--	600	--	PRVs in disrepair, relocate to above ground within new building for ease of maintenance
30. KAMAILE PLANTATION WELLS SEALING										Seal adjacent unused wells to prevent potential contamination to Kamaile Wells Station
Seal up to thirteen (13) unused plantation wells around Kamaile Wells Station. Locate wells; clear and prep each well area for sealing; backfill each well with cement grout	P&E	0	70	--	--	--	--	--	--	
	Const	325	0	--	--	--	325	--	--	
31. BUSINESS INTELLIGENCE / DIGITAL DASHBOARD										
Software installation and testing services for new version with enhanced features and performance	Const	1,930	0	--	--	--	--	1,930	--	
32. WAIHEE WELLS CAPPING										
Remove pumping equipment and appurtenances from two (2) wells. Videolog both wells and construct a locking lid for both	Const	130	0	--	--	--	--	130	--	Assess the condition of both wells and the probability of use as monitoring wells

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
33. SCADA REPLACEMENT										Existing system experiencing failures that are difficult to fix
Project planning, design and management services	P&E	500	0	--	--	--	--	--	500	
Install new SCADA system to provide enhanced user interface and additional functionality	Const	0	0	--	--	--	--	--	--	
R&R FACILITIES P&E SUBTOTAL	P&E	29,077	19,923	11,687	9,225	1,100	4,765	900	1,400	
R&R FACILITIES Land SUBTOTAL	Land	0	0	0	0	0	0	0	0	
R&R FACILITIES Const SUBTOTAL	Const	62,475	24,400	11,990	8,600	10,450	12,225	11,310	7,900	
R&R FACILITIES SUBTOTAL		91,552	44,323	23,677	17,825	11,550	16,990	12,210	9,300	
P&E R&R TOTAL	P&E	46,617	31,704	17,477	15,575	3,600	5,865	2,000	2,100	
Land R&R TOTAL	Land	0	0	0	0	0	0	0	0	
Const R&R TOTAL	Const	268,195	33,353	41,340	40,365	58,320	49,170	57,170	21,830	
FY 2015-2020 RENEWAL AND REPLACEMENT (R&R) TOTAL		314,812	65,057	58,817	55,940	61,920	55,035	59,170	23,930	

CATEGORY III

CAPACITY EXPANSION

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BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
III. CAPACITY EXPANSION (CapExp)										
A. PUMPS - CapExp										
1. KAHUKU WELLS UNIT NO. 3										Third well unit provides additional capacity in accordance with BWS standards to accommodate growth, water commitments and system reliability for the stand-alone Kahuku system
Prepare plans and specifications and engineering report	P&E	220	0	220	--	--	--	--	--	
Install one (1) 1.0 MGD pump, connections, emergency generator and pump building improvements at existing Kahuku Wells Station (TMK: 5-6-008:005)	Const	2,500	0	--	--	2,500	--	--	--	
2. WAIALAE WEST WELL										Redesign to update plans and permits. Replaces Waialae Shaft source and provides additional source to Metro 405 water system
Prepare plans and specifications and engineering report	P&E	200	175	200	--	--	--	--	--	
Install one (1) 0.5 MGD pump, control building, pipeline, landscaping, irrigation system, accoustical facilities, electrical equipment, and appurtenances (TMK: 3-3-014:016)	Const	2,500	0	--	--	--	2,500	--	--	
3. KALAELOA DESALINATION FACILITY										To meet Ewa's ultimate water demand and provide drought proof water supply
Post-Treatment and Renewable Energy Study to address potential water quality changes in the distribution system and evaluate renewable energy for the facility (TMK: 9-1-031:028)	P&E	300	0	300	--	--	--	--	--	
Prepare plans and specifications and engineering report	P&E	0	3,730	--	--	--	--	--	--	
Construct desalination facility	Const	0	--	--	--	--	--	--	--	
4. LUALUALEI LINE BOOSTER IMPROVEMENTS										Increased booster pump capacity improves transmission to Waianae Coast
Prepare plans and specifications	P&E	0	237	--	--	--	--	--	--	
Install booster station improvements to increase pumping capacity	Const	3,000	0	--	3,000	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
5. MAAKUA WELL UNIT NO. 2										Second well unit provides standby capacity to single well station
Prepare plans and specifications and engineering report	P&E	200	0	--	200	--	--	--	--	
Install one (1) 1.0 MGD pump, connections and pump building improvements at existing Maakua Wells Station (TMK: 5-4-005:001)	Const	1,200	0	--	--	--	1,200	--	--	
6. MILILANI 994 BOOSTER STATION										Provides supply to upper Mililani 1150 system
Prepare plans and specifications	P&E	350	0	--	350	--	--	--	--	
Install booster station at the Mililani 994 Reservoir to boost to 1150 system	Const	3,500	0	--	--	--	3,500	--	--	
CapExp PUMPS P&E SUBTOTAL	P&E	1,270	4,142	720	550	0	0	0	0	
CapExp PUMPS Land SUBTOTAL	Land	0	0	0	0	0	0	0	0	
CapExp PUMPS Const SUBTOTAL	Const	12,700	0	0	3,000	2,500	7,200	0	0	
CapExp PUMPS SUBTOTAL		13,970	4,142	720	3,550	2,500	7,200	0	0	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS	
		TOTAL	APPNS	(\$ 000)							
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020		
B. RESERVOIRS - CapExp											
1. KALAWAHINE 180 2.0 MG RESERVOIR											
Prepare plans and specifications	P&E	0	1,434	--	--	--	--	--	--		To alleviate storage deficiency in Metro 180 system. Prepare plans and specifications for the new alignment along Pensacola Street.
Install 2.0 MG reservoir and appurtenances (TMK: 2-4-043:082) and 24-inch main along Auwaiolimu Street and Pensacola Street to Kinau Street - approx. 4,700 lin. ft.	Const	8,000	0	--	--	4,000	4,000	--	--		New funding awarded for the re-alignment
2. AINA HAINA 170 0.5 MG RESERVOIR NO. 2											
Prepare Preliminary Engineering Study for second 0.5 MG reservoir, including land requirements at existing Aina Haina 170 Reservoir site	P&E	0	100	--	--	--	--	--	--		New reservoir to meet storage needs in the 170 system from Aina Haina to Kuliouou
Prepare Environmental Assessment	P&E	0	150	--	--	--	--	--	--		
Prepare plans and specifications	P&E	250	0	--	--	250	--	--	--		
Install 0.5 MG reservoir and appurtenances at existing Aina Haina 170 Reservoir site (TMK: 3-6-016:040)	Const	2,500	0	--	--	--	--	2,500	--		
3. WAIALAE 180 3.0 MG RESERVOIR REPLACEMENT											
Prepare Environmental Assessment	P&E	200	0	--	--	200	--	--	--		To alleviate storage deficiency in Metro 180 system. Existing 1.0 MGD reservoir was built in 1935
Prepare plans and specifications	P&E	1,000	0	--	--	--	--	1,000	--		
Land	Land	150	0	--	--	--	--	--	150		
Demolish existing 1.0 MG reservoir and construct 3.0 MG reservoir, influent-effluent main, retaining wall, rock slide barricade, access road improvements, landscaping, irrigation system and appurtenances at existing Waialae 180 Reservoir site (TMK: 3-5-020:011)	Const	0	0	--	--	--	--	--	--		

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
4. EAST KAPOLEI 215 3.0 MG RECYCLED WATER RESERVOIR										
Prepare Preliminary Engineering Study and Environmental Assessment	P&E	300	0	--	--	300	--	--	--	Recycled water reservoir next to existing 4.0 MG East Kapolei 215 Reservoir
Prepare plans and specifications	P&E	800	0	--	--	--	--	--	800	
Install 3.0 MG reservoir, landscaping, irrigation system and appurtenances (TMK: 9-1-018:008)	Const	0	0	--	--	--	--	--	--	Connect reservoir to future main on Farrington Highway
CapExp RESERVOIRS P&E SUBTOTAL	P&E	2,550	1,684	0	0	750	0	1,000	800	
CapExp RESERVOIRS Land SUBTOTAL	Land	150	0	0	0	0	0	0	150	
CapExp RESERVOIRS Const SUBTOTAL	Const	10,500	0	0	0	4,000	4,000	2,500	0	
CapExp RESERVOIRS SUBTOTAL		13,200	1,684	0	0	4,750	4,000	3,500	950	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
C. PIPELINES - CapExp										
1. HONOLULU DISTRICT 42-INCH MAINS - LILIHA TO MOILILI										Extends South trunk transmission pipeline for increased capacity and reliability in the Metro Low System
Prepare Route Feasibility Study	P&E	0	140	--	--	--	--	--	--	
Prepare Environmental Assessment for selected transmission main routes and booster station site	P&E	0	88	--	--	--	--	--	--	
Prepare Feasibility Study to determine the appropriate installation method(s) for Phase I and Phase II	P&E	400	0	400	--	--	--	--	--	
Phase I - Install 42-inch main along Beretania Street from Liliha Street to Richard Street, along Richard Street from Beretania Street to King Street, along King Street to Victoria Street, and along Victoria Street to Kinau Street 42-inch main - approx. 11,000 lin. ft.	P&E	2,000	0	--	--	2,000	--	--	--	
	Const	17,000	0	--	--	--	--	--	17,000	
Phase II - Install 42-inch main along King Street from Victoria Street to Isenberg Street - approx. 9,000 lin. ft.	P&E	1,700	0	--	--	--	--	1,700	--	
	Const	0	0	--	--	--	--	--	--	
2. ALA MOANA BOULEVARD 24-INCH MAIN										Replace and upsize 12-inch main along major thoroughfare for visitor traffic from the airport and downtown to Waikiki. Existing main has been failing periodically with last break requiring over 24 hours to repair due to location and deteriorated condition of main (1934). EA is titled Honolulu Water System Improvements Environmental Assessment (along Ala Moana Boulevard from S. Nimitz Highway to Kalakaua Avenue, along Pensacola Street from the future Kalawahine Reservoir to Kinau Street, along Piikoi Street from Kinau Street to King Street) and the EA will include all similar upsizing projects in the area
Prepare Environmental Assessment (EA)	P&E	0	353	--	--	--	--	--	--	
Prepare plans and specifications	P&E	600	265	--	--	600	--	--	--	
Install 24-inch main and appurtenances along Ala Moana Boulevard from Ward Avenue to Atkinson Drive - approx. 6,200 lin. ft.	Const	6,820	0	--	--	--	--	6,820	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS	
		TOTAL	APPNS	(\$ 000)							
		(\$ 000)	(\$ 000)	2015	2016	2017	2018	2019	2020		
3. KUALAKAI PARKWAY 16-INCH RECYCLED WATER MAIN											
Prepare plans and specifications	P&E	300	0	--	--	300	--	--	--		Transmission main to future East Kapolei 215 recycled water reservoir
Install 16-inch transmission main from future East Kapolei 215 recycled water reservoir to Mango Tree Road - approx. 10,750 lin. ft.	Const	3,300	0	--	--	--	--	3,300	--		
4. KALAKAUA AVENUE WATER SYSTEM IMPROVEMENTS											
Prepare Environmental Assessment and Feasibility Study to determine the appropriate installation method(s) for the installation of 16-inch mains and appurtenances along Kalakaua Avenue from Beretania Street to Kapiolani Boulevard, from Ala Wai Bridge to Kaiulani Avenue, and from Monsarrat Avenue to Dillingham fountain - approx. 11,960 lin. ft.; and the installation of 12-inch main and appurtenances along Saratoga Road from Kalakaua Avenue to Kalia Road - approx. 1,200 lin. ft.	P&E	0	200	--	--	--	--	--	--		Kalakaua Avenue main serves the dense grid of the Waikiki resort and business district (1929)
Prepare plans and specifications (Phase II, III & IV)	P&E	1,000	1,500	--	--	1,000	--	--	--		
Phase III: Install 16-inch main and appurtenances along Kalakaua Avenue from Beretania Street to Kapiolani Boulevard - approx. 3,200 lin. ft.	Const	3,600	0	--	--	--	--	--	3,600		
Phase II: Install 12-inch main and appurtenances along Kalakaua Avenue from Monsarrat Avenue to Dillingham fountain - approx. 3,500 lin. ft. Phase IV: Install 16-inch main and appurtenances along Kalakaua Avenue from Ala Wai Bridge to Kaiulani Avenue - approx. 5,260 lin. ft. Install 12-inch main along entire length of Saratoga Road - approx. 1,200 lin. ft.	Const	14,000	0	--	--	--	--	--	14,000		Major traffic impacts would result from breaks within the project limits. Kalakaua Avenue main serves heavily-gridded Waikiki resort and business district (1925)

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
5. ALA MOANA WATER SYSTEM IMPROVEMENTS										
Prepare plans & specifications	P&E	800	191	--	--	800	--	--	--	Project prepared as part of the Honolulu Water System Improvements EA
Install 24-inch mains and appurtenances along Ala Moana Boulevard from Ala Wai Boulevard to Kalakaua Avenue - approx. 2,780 lin. ft. Install 8-inch mains and appurtenances along Ala Moana Boulevard from the Ala Wai Canal to Kalia Road, along Ena Road from Kalakaua Avenue to Ala Moana Boulevard, and along Kalia Road from Ala Moana Boulevard to 65 feet before FH M01026 - approx. 4,110 lin. ft.	Const	5,900	0	--	--	--	--	--	5,900	Replacement of corroded, failing main within resort area (1930's, 1940's)
6. ALA MOANA WATER SYSTEM IMPROVEMENTS, PART II										
Prepare plans & specifications	P&E	600	0	--	--	600	--	--	--	EA prepared as part of the Honolulu Water System Improvements
Install 24-inch mains and appurtenances along Aloha Tower Drive from Richards Street to S. Nimitz Highway and along Ala Moana Boulevard from S. Nimitz Highway to Keawe Street - approx. 2,500 lin. ft. Install 8-inch mains and appurtenances along Keawe Street and Koula Street from Ala Moana Boulevard to Ilalo Street - approx. 810 lin. ft.	Const	2,000	0	--	--	--	--	--	2,000	
7. NIMITZ HIGHWAY 16-INCH MAIN										
Prepare plans and specifications	P&E	1,000	651	--	--	1,000	--	--	--	Main replacement along major arterial street (1942)
Install 16-inch mains and appurtenances along Nimitz Highway from Waiakamilo Road to Sumner Street and along Waiakamilo Road from Nimitz Highway to Hart Street - approx. 6,200 lin. ft.	Const	0	0	--	--	--	--	--	--	Project prepared as part of the Honolulu Water System Improvements EA

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
8. SALT LAKE BOULEVARD 36-INCH MAIN - FOSTER VILLAGE TO ALIAMANU										
Prepare Environmental Assessment and plans and specifications	P&E	0	185	--	--	--	--	--	--	Coordinated with City Department of Design and Construction's Salt Lake Boulevard Improvements. Addresses a bottleneck in the Metro-West transmission system into Honolulu
Re-design	P&E	0	340	--	--	--	--	--	--	
Install 36-inch main along Salt Lake Boulevard (525 feet south of Maluna Street to Ala Liliiko Street) - approx. 4,275 lin. ft.	Const	4,300	0	--	--	--	4,300	--	--	
CapExp PIPELINES P&E SUBTOTAL	P&E	8,400	3,913	400	0	6,300	0	1,700	0	
CapExp PIPELINES Land SUBTOTAL	Land	0	0	0	0	0	0	0	0	
CapExp PIPELINES Const SUBTOTAL	Const	56,920	0	0	0	0	4,300	10,120	42,500	
CapExp PIPELINES SUBTOTAL		65,320	3,913	400	0	6,300	4,300	11,820	42,500	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS	
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020		
<u>D. TREATMENT - CapExp</u>											
1.	GAC FACILITY IMPROVEMENTS										
	Prepare plans and specifications	P&E	500	150	--	100	100	100	100	100	
	Install improvements at select GAC facilities to extend use of existing systems	Const	2,500	0	--	500	500	500	500	500	Annual design and construction improvements for select GAC facilities
2.	GAC TREATMENT FOR WAIPIO HEIGHTS WELLS AND WAIPIO HEIGHTS WELLS I										
	Prepare plans and specifications	P&E	0	388	--	--	--	--	--	--	Treatment to meet water quality standards by removing TCP
	Part A - Install 16-inch mains and appurtenances along Lumihoahu Street from Waipio Heights Wells and Wells I to Lumiaina Street, along Lumiaina Street from Lumihoahu Street to Kamehameha Highway, along Kamehameha Highway from Lumiaina Street to Waipahu Wells III - approx. 4,000 lin. ft.	Const	5,300	0	--	--	5,300	--	--	--	
CapExp TREATMENT P&E SUBTOTAL		P&E	500	538	0	100	100	100	100	100	
CapExp TREATMENT Land SUBTOTAL		Land	0	0	0	0	0	0	0	0	
CapExp TREATMENT Const SUBTOTAL		Const	7,800	0	0	500	500	5,800	500	500	
CapExp TREATMENT SUBTOTAL			8,300	538	0	600	600	5,900	600	600	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
E. FACILITIES - CapExp										
1.	SECURITY CAMERA SYSTEMS									
	Install computer network-based security camera systems (camera, lights, speakers and motion detectors) at critical pump stations and reservoirs	Const	2,908	1,400	403	375	375	585	585	585
2.	PROJECT MANAGEMENT INFORMATION SYSTEM									Improve project information available throughout the department. Improve efficiency of construction inspection, and provide timely dissemination of project information for better management decision-making
	Formulate, install and implement a project information management system	P&E	0	443	--	--	--	--	--	--
	Administer and operate project management program and training	Const	500	--	500	--	--	--	--	--
3.	WIRELESS & SECURITY CAMERA SYSTEM UPGRADES									
	Replace existing wireless and security camera systems	Const	1,100	0	200	700	--	200	--	--
4.	BACKUP POWER SYSTEMS FOR WIRELESS SYSTEMS									
	Provide backup power for wireless, RTU and security camera systems at BWS facilities	Const	5,900	0	--	2,400	3,500	--	--	--
5.	HONOLIULI WATER RECYCLING FACILITY									Install a new UV system and concrete channel that will reduce energy demand by 60%. This new UV system will also meet the new DOH 2012 Reuse Guidelines. The new disk filter system will replace the sand filter pre-treatment system. Improvements will increase treatment capacity
	Install new disk filter and UV system to improve operational efficiency and increase treatment capacity	Const	7,000	0	--	7,000	--	--	--	--
6.	SECURITY CAMERA MANAGEMENT SYSTEM									
	Replace existing security camera management system. This system provides security video monitoring, alarming, recording, search and playback software	P&E	500	0	--	500	--	--	--	--

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20)	PRIOR	Fiscal Year (FY)						REMARKS
		TOTAL (\$ 000)	APPNS (\$ 000)	2015	2016	2017	2018	2019	2020	
7. EMERGENCY GENERATOR INSTALLATION										Alternate Project Delivery Pilot for P&E
Prepare plans and specifications	P&E	1,350	0	--	150	300	450	450	--	
Install permanent emergency generators at critical pump stations	Const	2,255	5,745	--	--	2,255	--	--	--	To be installed at Kunia Wells I, Kalihi Yard & Halawa Shaft
CapExp FACILITIES P&E SUBTOTAL	P&E	1,850	443	0	650	300	450	450	0	
CapExp FACILITIES Land SUBTOTAL	Land	0	0	0	0	0	0	0	0	
CapExp FACILITIES Const SUBTOTAL	Const	19,663	7,145	1,103	10,475	6,130	785	585	585	
CapExp FACILITIES SUBTOTAL		21,513	7,588	1,103	11,125	6,430	1,235	1,035	585	
P&E CAPACITY EXPANSION TOTAL	P&E	14,570	10,720	1,120	1,300	7,450	550	3,250	900	
Land CAPACITY EXPANSION TOTAL	Land	150	0	0	0	0	0	0	150	
Const CAPACITY EXPANSION TOTAL	Const	107,583	7,145	1,103	13,975	13,130	22,085	13,705	43,585	
FY 2015-2020 CAPACITY EXPANSION (CapExp) TOTAL		122,303	17,865	2,223	15,275	20,580	22,635	16,955	44,635	
P&E TOTAL	P&E	63,267	43,224	19,477	17,875	11,250	6,415	5,250	3,000	
Land TOTAL	Land	150	0	0	0	0	0	0	150	
Const TOTAL	Const	385,228	42,098	43,943	56,240	74,500	72,255	71,875	66,415	
FY 2015-2020 TOTAL		448,645	85,322	63,420	74,115	85,750	78,670	77,125	69,565	
Construction Cost Index Adjustment				4,406	5,624	7,450	7,226	7,188	6,642	
Contract Adjustment Account				5,193	4,845	5,579	5,022	3,525	3,500	
FY 2015-2020 TOTALS (with Adjustments)		514,844		73,019	84,584	98,779	90,918	87,838	79,707	

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