

MINUTES

DEPARTMENT OF WATER SUPPLY
COUNTY OF HAWAI‘I
WATER BOARD MEETING

July 25, 2017

Hilo Operations Conference Room, 889 Leilani Street, Hilo, HI
Site Visits: Pi‘ihonua-Kukuau project site on Haleloke Street, Hilo, Hawai‘i and
Pi‘ihonua Reservoir No. 2 site on Waiānuenue Avenue between Pi‘ikea Street and Ka‘ahumanu Street

MEMBERS PRESENT: Mr. Russell Arikawa, Vice-Chairperson
Mr. Craig Takamine, Chairperson (10:19 a.m.)
Mr. Bryant Balog (10:04 a.m.)
Mr. William Boswell, Jr.
Mr. Nestorio Domingo
Mr. Leningrad Elarionoff
Ms. Brenda Iokepa-Moses
Mr. Eric Scicchitano
Mr. Keith K. Okamoto, Manager-Chief Engineer, Department of Water Supply (ex-officio member)

ABSENT: Ms. Kanoe Wilson, Water Board Member
Director, Planning Department (ex-officio member)
Director, Department of Public Works (ex-officio member)

OTHERS PRESENT: Ms. Jessica Yeh, Deputy Corporation Counsel
Ms. Nancy Cook-Lauer, Hawai‘i Tribune-Herald
Mr. Jeff Zimpher, National Park Service (10:06 a.m.)

Department of Water Supply Staff

Mr. Kawika Uyehara, Deputy
Mr. Kurt Inaba, Engineering Division Head
Mr. Richard Sumada, Waterworks Controller
Mr. Clyde Young, Operations Division
Mr. Eric Takamoto, Operations Division
Mr. Warren Ching, Operations Division
Mr. Mamane Namahoe, Student Hire

- 1) CALL TO ORDER – Vice-Chairperson Arikawa called the meeting to order at 10:00 a.m.
- 2) STATEMENTS FROM THE PUBLIC - None
- 3) APPROVAL OF MINUTES

ACTION: Ms. Iokepa-Moses moved for approval of the Minutes of the June 27, 2017, Water Board Meeting; seconded by Mr. Elarionoff and carried unanimously by voice vote.

4) APPROVAL OF ADDENDUM AND/OR SUPPLEMENTAL AGENDA

ACTION: Ms. Iokepa-Moses moved to amend the agenda for Items 7(B) and 7(C) under North Kona; seconded by Mr. Elarionoff and carried unanimously by voice vote.

5) HĀMĀKUA:

A. CONSTRUCTION RIGHT-OF-ENTRY FOR HELCO POLE ANCHOR ON FUTURE RESERVOIR SITE:

Hawaiian Electric Light Company (HELCO) is installing poles and power lines for a subdivision in Honoka‘a that extends beyond a future reservoir site in Honoka‘a. The pole requires an anchor that is being proposed within a 10-foot by 15-foot easement with the subject reservoir site. Department staff and HELCO worked together to determine the proposed location to minimize any conflicts with the future reservoir site improvements.

The Manager-Chief Engineer recommended that the Water Board approve this Construction Right-of-Entry affecting Tax Map Key (3) 4-5-010:121 for Hawai‘i Electric Light Company and authorize either the Chairperson or Vice-Chairperson to execute the document subject to the review and approval as to form and legality of the Corporation Counsel.

ACTION: Ms. Iokepa-Moses moved for approval of the recommendation; seconded by Mr. Elarionoff and carried unanimously by voice vote.

6) SOUTH KOHALA:

A. JOB NO. 2010-964, WAIMEA WATER TREATMENT PLANT COMPLIANCE UPGRADES PHASE 2 – TIME EXTENSION:

The contractor, Bodell Construction Company, submitted a request for contract time extension of 232 calendar days. This is the third time extension for this project.

Ext. #	From (Date)	To (Date)	Days (Calendar)	Reason
1	03/21/2017	06/11/2017	82	Additional work required to reroute unforeseen underground utilities discovered during earthwork excavation.
2	06/11/2017	08/10/2017	60	DWS’s direction to delay demolition of basins #3 and #4 (36 calendar days), additional work to excavate unsuitable soils from under the building’s footprint (10 calendar days), and additional work caused by inclement weather – Hurricane Madeline (14 calendar days).
3	08/10/2017	02/13/2018	187	DWS’s direction to delay the work requiring a shutdown of the existing

Ext. #	From (Date)	To (Date)	Days (Calendar)	Reason
				water treatment plant (154 calendar days), additional work due to Fire Department's fire protection requirements (30 calendar days), and delays caused by inclement weather (3 calendar days).
Total Days (including this request)			329	

Staff has reviewed the request and is recommending approval of 187 calendar days, per the Department's General Requirements and Covenants.

The Manager-Chief Engineer recommended that the Board grant this contract time extension of 187 calendar days to Bodell Construction Company, for JOB NO. 2010-964, WAIMEA WATER TREATMENT PLANT COMPLIANCE UPGRADES PHASE 2. If approved, the contract completion date will be extended from August 10, 2017, to February 13, 2018.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. Boswell.

(Mr. Balog joined the meeting.)

Mr. Elarionoff asked about the additional work due to Fire Department fire protection and if it was part of the contract.

The Deputy explained that during the County of Hawai'i plan review, it was not identified that fire sprinklers would be required; but during the permit process, it was flagged by the Fire Department because of the type of facility and more difficult access up there; therefore, they required sprinklers.

Mr. Elarionoff asked why ADA access is required.

The Deputy replied that because there is new construction and there is going to be an office at the bottom floor, plus a new restroom, the County requires ADA access from the parking lot into the building. The grading also had to meet ADA slope requirements.

The Manager-Chief Engineer added that even if it is a Department facility that is not typically open to the general public, if it has certain characteristics that might be used by employees for other than strictly certain types of maintenance, these ADA requirements kick in, requiring compliant, accessible facilities such as outlets, switches, door handles, parking stalls, etc.

Ms. Iokepa-Moses asked if it is only for new construction moving forward or if it is a requirement to update everything.

The Manager-Chief Engineer replied it is only for new construction that goes through the plan review.

ACTION: Motion was carried unanimously by voice vote.

7) NORTH KONA:

A. JOB NO. 2017-1062, KALAOA #1 DEEPWELL REPAIR:

This project consists of paying for all labor, materials, tools and equipment necessary for the replacement of the existing deep well submersible pump and motor, power cable and all appurtenant materials, such as cable guards, strapping, etc.; chlorination and testing of the well and pumping assembly; and electrical work; in accordance with the specifications.

Bids for this project were opened on June 15, 2017, at 2:00 p.m., and the following are the bid results:

Bidder	Bid Amount	Adjusted Bid Amount (for purposes of bid award)*
Beylik Drilling & Pump Service, Inc.	\$897,850.00	\$852,957.50
George M. Oye, Inc.	\$898,833.00	

*Bids were adjusted (for the purposes of award) to provide credits for use of Hawai'i Products and participation in the State Apprenticeship Program, in accordance with Hawai'i Administrative Rules.

Project Costs:

1) Low Bidder (Beylik Drilling & Pump Service, Inc.)	\$ 897,850.00
2) Contingencies (10.0%)	\$ 89,785.00
Total Cost:	<u>\$ 987,635.00</u>

Funding for this project will be from DWS's CIP Budget under Deepwell Pump Replacement. The contractor will have 270 calendar days to complete this project. The Engineering estimate for this project was \$750,000.00.

This agenda item was deferred during the June 27, 2017, Water Board meeting.

The Manager-Chief Engineer recommended that the Board award the contract for JOB NO. 2017-1062, KALAOA #1 DEEPWELL REPAIR, to the lowest responsible bidder, Beylik Drilling & Pump Service, Inc., for their bid amount of \$897,850.00, plus \$89,785.00 for contingencies, for a total contract amount of \$987,635.00. It is further recommended that either the Chairperson or the Vice-Chairperson be authorized to sign the contract, subject to review as to form and legality by Corporation Counsel.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. Boswell.

The Manager-Chief Engineer stated that the protest was cleared and this was ready for the Board's action. This is a deepwell repair at one of the high-level wells in North Kona. This repair will be done in advance of failure.

Mr. Elarionoff asked for an explanation on contingency.

The Manager-Chief Engineer explained that it is common practice on construction and deepwell repair projects. Bidding documents are prepared using the best information available. A lot of times, there are unknowns and things you need to assume when you create the bid documents that may not actually turn out that way once actual work begins. He asked Mr. Young to expand on what some of those contingency funds apply to when talking about deepwell repairs. For other

civil construction contracts, unknowns would be underground issues--example, As-Built plans might have shown an electrical run in one place where it would not impact your project, but it may be in another place and would not be uncovered until excavation begins.

Mr. Young stated that he likes to use the analogy of a car repair. When the car breaks down, you may have an idea something is wrong with the engine, but you really do not know until the mechanic starts pulling things out. Deepwell repairs are relatively similar. Until they get the equipment out and on the ground, you can try to predict all the things that could go wrong and put it into the specifications; but sometimes, you just cannot get everything perfect.

Mr. Elarionoff asked, if that is the case, why sometimes when there is additional work, the contractor comes back to the Board for additional money. He asked what the difference is.

The Manager-Chief Engineer replied that when the Department comes before the Board for this kind of award, the approval the Board is giving is for the base contract, plus the contingency, which is typically 10 percent in the industry. The total contract amount, in this case, is \$987,635.00; and the Board approves that amount. There are times when additional work goes beyond that 10 percent, and that is when the Department needs Board approval to go beyond the established contract amount.

Mr. Elarionoff asked what would happen if the contingency does not meet the \$987,635.00; if the money comes back.

The Manager-Chief Engineer replied that the money is not spent, basically. The Department is not given anything back.

Mr. Boswell asked if the 10 percent is it hit pretty often, leaving only a little bit of monies.

Mr. Young stated that it varies.

Mr. Boswell asked if the fire sprinklers for the [Waimea Water Treatment Plant Compliance] Upgrades exceeded the contingency.

The Manager-Chief Engineer replied they did not. They were within the contingency.

Mr. Boswell asked if that meant the Department would issue a change order that allows it to proceed forward with no additional funding required.

The Manager-Chief Engineer replied that was correct. He added that a contract is based on scope, schedule, and fee. Any time a change is made to the contract, the Department needs to bring it back to the Board. If there is a time extension, that is modifying the contract. The fee is total fee (base) plus contingency. As long as the contract proceeds within the contingency amount, change orders can be processed administratively. Once it goes beyond the contingency amount, then it is beyond the contract terms and needs Board approval.

Mr. Domingo stated that during his experience in the Navy, he learned you do not mix money and asked how it is in this Department; if CIP and maintenance and repair money can be mixed.

The Manager-Chief Engineer replied that if you look at the 5-year CIP that was approved as part of the budget, because these well repairs are so large, they are not like repairing the air conditioning in an office building. For example, this last well repair cost \$987,000.00. That is

over and beyond the typical operations and maintenance budget. Deepwell repairs are included in the CIP budget for major cost items. Even though it is a repair, it is budgeted for under CIP.

Vice-Chairperson Arikawa noted that was a good question and added that when the Department comes out with its 5-year CIP list, it puts a lot of funds into this. They project when they will need to maintain or replace pipes and things like that.

ACTION: Motion was carried unanimously by voice vote.

B. JOB NO. 2017-1067, HOLUALOA #2 BOOSTER A REPAIR:

This project consists of furnishing all labor, materials, tools and equipment necessary to remove the existing booster pump assembly; install new booster pump assembly, and all appurtenant materials; chlorinate the suction can and pumping assembly; and complete an efficiency test; in accordance with the specifications.

Bids for this project were opened on July 13, 2017, at 2:00 p.m., and the following are the bid results:

Bidder	Bid Amount
Derrick's Well Drilling & Pump Services, LLC	Non-Responsive
Beylik Drilling & Pump Service, Inc.	Non-Responsive

Funding for this project will be from DWS's CIP Budget under Deepwell Pump Replacement. The contractor will have 120 calendar days to complete this project. The Engineering estimate for this project was \$48,000.00.

AMENDED RECOMMENDATION: No responsive, responsible bids were received. Staff will seek alternate methods of procurement per Hawai'i Administrative Rules (HAR) Section 3-122-35 (b), in accordance with procurement rules.

MOTION: Ms. Iokepa-Moses moved for approval of the amended recommendation; seconded by Mr. Boswell.

The Manager-Chief Engineer stated that this project had an original agenda item containing a different recommendation, and this is an amendment to that recommendation. He explained that what the Department tried to do in the past did not work out well. The Department would ask for submittals such as pump curves and other specific data sheets for pumps. When the request was made to have those supplied at bid opening, it was found that the opportunity would be lost for a competitive process if a bidder forgot to submit a single piece of paper, therefore becoming non-responsive. That was adjusted to allow bidders to submit required documents a few days after bid opening. In this particular case, after both bidders submitted their documentation, it was found that they did not meet the bid specifications. Therefore, they both became non-responsive, even though the original agenda listed two amounts for them. This was discussed with Corporation Counsel, and the agenda was amended. He added there is no perfect procurement process. The Department tries to get the best information available ahead of time but still maintain the intent of procurement which is to have a competitive process in order to receive multiple bids. Mr. Young and his staff will now work on firming up some performance specification language within the bid documents and not have these submittal requirements

during or after bid opening. There is a need to make sure, in the bidding documents, that it is stated what kind of end product is needed.

In response to Vice-Chairperson Arikawa's question of the status of the Holualoa #2 Boosters, the Manager-Chief Engineer and Mr. Takamoto replied that Boosters B and C are operable. Booster A is under repair.

Mr. Scicchitano asked if the bidders were notified that they did not meet specifications.

The Manager-Chief Engineer replied they were.

In response to Mr. Boswell's question if they were both the same manufacturer, Mr. Young replied they were.

Mr. Boswell asked, since there are limited manufacturers and there is a finite set of pumps, if some manufacturers could be prequalified.

Mr. Young replied that there are some pre-qualified manufacturers. Anyone outside of that must submit a substitution request. It seems like every time the Department specifies a pump, the manufacturer comes back and says they cannot meet it, but this is coming from their own catalog information. The Department is not just arbitrarily choosing numbers.

The Manager-Chief Engineer added that it is baffling why they cannot supply something that is from their catalog. Sometimes staff even knocks the number down a point or two. For example, if they say they can meet 77 or 78 percent pump efficiency on their catalog, the Department will spec out 75 or 76 percent. Even with that, when it comes time for bid opening, apparently, they are not able to be manufacture it. That is another challenge that the Department is dealing with.

ACTION: Motion was carried unanimously by voice vote.

C. JOB NO. 2017-1068, KAUMALUMALU BOOSTERS A & B REPAIR:

This project consists of furnishing all labor, materials, tools and equipment necessary to remove the existing pumps, motors, and column assemblies; install two (2) vertical turbine pumps, vertical hollow shaft motors, discharge heads, and all appurtenant materials; chlorinate the suction cans and pumping assemblies; and complete an efficiency test; in accordance with the specifications.

Bids for this project were opened on July 13, 2017, at 2:30 p.m., and the following are the bid results:

Bidder	Bid Amount
Derrick's Well Drilling and Pump Services, LLC	Non-Responsive
Beylik Drilling & Pump Service, Inc.	\$112,200.00

Project Costs:

1) Low Bidder (Beylik Drilling & Pump Service, Inc.)	\$ 112,200.00
2) Contingencies (10.0%)	<u>\$ 11,200.00</u>
Total Cost:	<u>\$ 123,400.00</u>

Funding for this project will be from DWS's CIP Budget under Deepwell Pump Replacement. The contractor will have 150 calendar days to complete this project. The Engineering estimate for this project was \$101,000.00.

The Manager-Chief Engineer recommended that the Board award the contract for JOB NO. 2017-1068, KAUMALUMALU BOOSTERS A & B REPAIR, to the lowest responsible bidder, Beylik Drilling & Pump Service, Inc., for their bid amount of \$112,200.00, plus \$11,200.00 for contingencies, for a total contract amount of \$123,400.00. It is further recommended that either the Chairperson or the Vice-Chairperson be authorized to sign the contract, subject to review as to form and legality by Corporation Counsel.

MOTION: Ms. Iokepa-Moses moved for approval of the recommendation; seconded by Mr. Boswell.

(Chairperson Takamine joined the meeting at 10:19 a.m.)

The Manager-Chief Engineer explained that this agenda item is also an amendment, similar to the previous agenda item. The same process was followed; and after the bid opening, a submittal came in that indicated one of the bidders was non-responsive, thereby making this a revised recommendation.

ACTION: Motion was carried unanimously by voice vote.

8) MISCELLANEOUS:

A. DEDICATION(S):

The Department received the following document for action by the Water Board. The water system has been constructed in accordance with the Department's standards and is in acceptable condition for dedication.

1. AMENDMENT TO GRANT OF EASEMENT
Mohouli Senior Phase 2 Project
Grantor: County of Hawai'i
Affects Tax Map Key: (3) 2-4-001: 177 (portion) Lot 3-B1
Waiakea, South Hilo, Island of Hawai'i, Hawai'i

The Manager-Chief Engineer recommended that the Water Board accept this document subject to the approval of the Corporation Counsel and that either the Chairperson or the Vice-Chairperson be authorized to sign the document.

ACTION: Mr. Takamine moved for approval of the recommendation; seconded by Mr. Scicchitano and carried unanimously by voice vote.

B. MATERIAL BID NO. 2017-01, FURNISHING AND DELIVERING PIPES, FITTINGS, WATER METERS, FIRE HYDRANTS, BRASS GOODS, VALVES, ELECTRICAL SUPPLIES, ELECTRICAL EQUIPMENT, SCADA, WATER QUALITY EQUIPMENT, CHLORINATORS, MOTORS AND MISCELLANEOUS ITEMS FOR THE DEPARTMENT OF WATER SUPPLY STOCK:

At the Water Board meeting on June 27, 2017, the Water Board deferred the award for Parts 14 and 15 to Badger Meter, Inc. dba National Meter & Automation pending tax clearance from Hawaii Compliance Express (“HCE”). Since that time, Badger Meter, Inc. dba National Meter & Automation has demonstrated compliance through HCE. Their bid for Parts 14 and 15 are as follows:

Part 14 – Badger Recordall Series Meter Parts	\$4,264.60
Part 15 – 1” – 2” Water Meters	\$22,010.75

The contract period for Parts 14 and 15 is one year, from July 1, 2017, to June 30, 2018. The Parts are established price agreements for materials on an “As-Needed Basis.”

The Manager-Chief Engineer recommended that the Board award the contract for Parts 14 and 15 to Badger Meter, Inc. dba National Meter & Automation for MATERIAL BID NO. 2017-01, FURNISHING AND DELIVERING PIPES, FITTINGS, WATER METERS, FIRE HYDRANTS, BRASS GOODS, VALVES, ELECTRICAL SUPPLIES, ELECTRICAL EQUIPMENT, SCADA, WATER QUALITY EQUIPMENT, CHLORINATORS, MOTORS AND MISCELLANEOUS ITEMS FOR THE DEPARTMENT OF WATER SUPPLY STOCK, on an as-needed basis, as listed above, and that either the Chairperson or the Vice-Chairperson be authorized to sign the contract, subject to review as to form and legality of the contract by Corporation Counsel. The contract period shall be from July 1, 2017, to June 30, 2018.

ACTION: Ms. Iokepa-Moses moved for approval of the recommendation; seconded by Mr. Boswell and carried unanimously by voice vote.

C. MATERIAL BID NO. 2017-08, FURNISHING AND DELIVERING SPARE DEEPWELL PUMP AND MOTOR SETS FOR HONOKŌHAU DEEPWELL AND HAWAIIAN OCEAN VIEW ESTATES DEEPWELL, AND REFURBISHING SPARE PUMP AND MOTOR SET FOR HALEKI‘I DEEPWELL FOR THE DEPARTMENT OF WATER SUPPLY:

Bids were received and opened on July 13, 2017, at 1:30 p.m., and the following are the bid results.

SECTION	DESCRIPTION	Beylik Drilling and Pump Service, Inc.	Derrick’s Well Drilling and Pump Services, LLC
1	HONOKŌHAU DEEPWELL	Non-Responsive	Non-Responsive
2	HAWAIIAN OCEAN VIEW ESTATES DEEPWELL	\$77,000.00	Non-Responsive
3	HALEKI‘I DEEPWELL	\$75,000.00	\$74,921.44

The estimated cost for the various pump and motor sets were as follows:

- Honokōhau Deepwell: \$215,000
- Hawaiian Ocean View Estates Deepwell: \$72,000
- Haleki‘i Deepwell: \$80,000

The Manager-Chief Engineer recommended that the Board award the contract for MATERIAL BID NO. 2017-08, FURNISHING AND DELIVERING SPARE DEEPWELL PUMP AND MOTOR SETS FOR HONOKŌHAU DEEPWELL, AND HAWAIIAN OCEAN VIEW ESTATES DEEPWELL AND REFURBISHING SPARE PUMP AND MOTOR SET FOR HALEKI‘I DEEPWELL FOR THE DEPARTMENT OF WATER SUPPLY, by Sections to the following bidders for the amounts shown above, and that either the Chairperson of the Vice-Chairperson be authorized to sign the contract(s), subject to review as to form and legality of the contract(s) by Corporation Counsel.

Section 2 – Hawaiian Ocean View Estates Deepwell to Beylik Drilling and Pump Service, Inc.

Section 3 – Haleki‘i Deepwell to Derrick’s Well Drilling & Pump Services, LLC.

For Section 1 – Honokōhau Deepwell, no responsive, responsible bids were received. Staff will seek alternate methods of procurement per HAR 3-122-35 (b), in accordance with procurement rules.

MOTION: Mr. Boswell moved for approval of the recommendation; seconded by Ms. Iokepa-Moses and carried unanimously by voice vote.

The Manager-Chief Engineer noted that the Department will utilize alternate methods for Section 1, Honokōhau Deepwell. This is one of the deepwells in North Kona. For the other two, Haleki‘i is in the South Kona water system and Hawaiian Ocean View Estates is in Ka‘ū.

In response to Mr. Boswell’s question if they were non-responsive for the same reason as the two agenda items just taken up, the Manager-Chief Engineer replied that was correct. They did not meet performance specifications.

Mr. Young added that Centrilift was specified in this case, and staff went with the manufacturer’s catalog. They then came back saying they could not meet that efficiency. This is a different manufacturer from the other one discussed, which was Goulds.

Mr. Boswell asked if it had anything to do with the power supply.

Mr. Young replied that was not the case. It was all on their side.

The Manager-Chief Engineer added that the Department does not typically put something out to bid that cannot be built.

Mr. Balog asked if there was a way it can be broadened; for example, taking out some of the efficiency requirements and putting in there how much the Department has to pump per hour and that requirement has to be met. Maybe it would allow other brands.

Mr. Young explained that it is a little tricky. The first goal when the Department specifies a pump is efficiency because it comes down to power cost, or the operating cost of the well. A good portion of the operating cost of a well is the electrical cost. The Department tries to keep efficiency tight but tries to keep it on the upper end. Understanding that for manufacturers to be competitive, the Department puts a bit of cushion in there to allow other manufacturers to bid and not just ask for the highest efficiency and exclude all other manufacturers. He asked Mr. Takamoto if the specifications allowed for other than Centrilift for the Honokōhau

Deepwell, and Mr. Takamoto replied there was a limitation on the motor size because it was also going to be a spare for Waimea. Mr. Young continued that there were sizing limitations, therefore it was specified for one particular manufacturer on that one. But in this case, they could have submitted an alternate manufacturer. It was not exclusive to Centrillift.

Chairperson Takamine asked where these pumps and motors are stored once they arrive and warranty and performance are affected if stored too long.

Mr. Young replied that warranty is affected, if stored too long. The contractor gave a two-year storage warranty. That is actually beyond the manufacturer's warranty. It is usually the contractor who gives the additional warranty; manufacturers will not give beyond a year. As far as storage, it can only be stored horizontally. Some of these pumps and motors are 20 to 30 feet in length, and to store it vertically would require a pretty large structure with overhead cranes. Storage is one of the issues but is only because of the sheer size of the equipment. If you let it sit there for a long period of time, you have a long pump or motor shaft where you might get some bowing effect after time. It would then need to be sent back to the mainland to have it refurbished. They would need to straighten the shafts, and they might have to pull the impellers off the pump. That is the downside of having spares. In answer to Chairperson Takamine's question of what they come in, Mr. Young replied they come in a crate and are stored in a covered area. In answer to the question of where they are stored, Mr. Takamoto replied they are being centralized at Pana'ewa.

The Manager-Chief Engineer added that they are subject to their own weight, so it is not ideal.

Mr. Young also noted there are rubber parts that dry out over time so that needs to be kept in mind. They are prioritized as to where they are going to be placed, yet you do want to have too many on hand because of the inventory cost and their shelf life.

The Manager-Chief Engineer noted that the Department will be managing its spare inventory and coordinating it with repairs. If it were timed right, the spares could be ordered, stored for less than two years, and then a repair would be initiated before a well goes down.

Mr. Domingo asked if the Department is following the five- to seven-year life of the system or waiting for it to break down and then replacing it with spare pumps on hand.

The Manager-Chief Engineer replied that although the Department is trying to manage its spare inventory and coordinate with repairs, unfortunately, the expectations of a five- to seven-year life span do not always work out. The effort is not to have a breakdown occur before repair. He explained that most of the Department's systems are not single source. For example, in Kona, there are thirteen sources. That is a fairly robust system with adequate redundancy because of the number of sources and number of boosters. The Department's personnel have been working very hard during this recent event to move water via boosters, inlet control valve stations, etc., so even with five of thirteen wells down, everybody still had water. That tells you how redundant and robust the system is. There was also a great amount of cooperation from the community, which helped. If you look at a system with only one pump, there is no redundancy; and you need to look at that spare pump and motor and the replacement schedule a little differently than a system that has thirteen deepwells. Not every system is the same, which is part of the challenge.

Mr. Scicchitano mentioned that he is a little familiar with electronic monitoring of pumps and asked if there is capability to do that and do visual aids and pump diagrams on a computer in

order to monitor pump performance key indicators that would help determine needed maintenance.

Mr. Young stated that question was asked at the West Hawai'i Community Forum from a resident in Kona who was an electrical engineer. He was wondering if the Department looked at the wave form of the AC power coming into the pump station. The Department is actually in the beginning stages of putting power monitors on its systems. It is not really to prevent wells from failing but more to learn what is happening or get an idea of something failing in the future. There is also something called current signature wave form capture, which one of the Department's Electronics Technicians is looking into.

The Manager-Chief Engineer added that the hard part with submersible pumps is that they are not visible. What is available topside can monitor pump flow output. That is the signature of a pump's performance. The flows are constantly monitored. If there are indications of flow dropping off, they would know something is happening and start initiating the repair. Other things that Mr. Young was talking about such as electronic monitoring might be a better indicator of what is happening with the motor or what could potentially harm the motor. Other topside things that are monitored, as Mr. Young confirmed, are vibration, noises, flow, and power required to run the pump.

ACTION: Motion was carried unanimously by voice vote.

D. RIGHT-OF-ENTRY AGREEMENT FOR PURPOSE OF CONDUCTING RESEARCH AND STUDIES ON GROUNDWATER IN AREAS INCLUDING DWS FACILITIES IN SOUTH KOHALA, NORTH KONA, AND SOUTH KONA:

The University of Hawai'i, on behalf of the National Science Foundation (NSF), Experimental Program to Support Competitive Research (EPSCoR), is requesting access to DWS facilities to temporarily place recording instruments on DWS facilities in order to gather important data regarding the research and modeling of groundwater to address the issue of water sustainability. The 'Ike Wai project is being funded by a NSF grant and this is an excellent opportunity for the Department to partner with the project to gain much desired information regarding the sustainability of our resource.

The Manager-Chief Engineer recommended that the Water Board approve this Construction Right-of-Entry affecting various DWS owned and/or operated parcels to the University of Hawai'i and authorize either the Chairperson or Vice-Chairperson to execute the document subject to the review and approval of the Corporation Counsel.

MOTION: Ms. Iokepa-Moses moved for approval of the recommendation; seconded by Mr. Boswell.

The Manager Chief Engineer stated that the University of Hawai'i was able to secure a \$20-million dollar grant to study the Keauhou aquifer on the Big Island and the Pearl Harbor aquifer on Oahu. This a sizable effort and hopes are for a lot of good information. This Right-of-Entry is to allow them access to the Department's sites so they can carry out their research.

Mr. Domingo asked if this is an addition to the Commission on Water Resource Management study that was already done and whether they are making a double check on data they have collected or whether this would be totally new data that would be made available.

The Manager Chief Engineer replied that the Department is expecting new data. The intent is to get a better understanding of the region.

In response to Mr. Domingo's question if the 38 million gallons per day sustainable yield may or may not change, the Manager Chief Engineer replied he did not think that would be the direct intent of this particular effort.

ACTION: Motion was carried unanimously by voice vote.

E. **MONTHLY PROGRESS REPORT:**

No questions.

F. **REVIEW OF MONTHLY FINANCIAL STATEMENTS:**

Mr. Elarionoff asked about some divisions' budgets that were over 100% and where the money comes from after exceeding it. His concern was that money is not taken from somewhere where it will be needed.

Mr. Sumada explained that a lot of the accounts were not completely expended and the remaining from those go toward the ones that are over. The divisions buy only what is needed but sometimes they might need to spend more than budgeted. The Department is not at the point where all of the accounts are overspent, putting it in a deficit position.

Mr. Elarionoff asked if it changes the budget for the following year, and Mr. Sumada replied that the budgets are based on prior year's expenditures.

Mr. Elarionoff stated that the reason he asked that question is because there are some people who feel like they have to spend every penny in the budget and that is not good.

Mr. Sumada stated that it does not go on in this Department.

Vice-Chairperson Arikawa asked about the Balance Sheet where it mentions trade receivables decreasing due to SRF and asked what that stands for.

Mr. Sumada replied it stands for State Revolving Fund which is a State Department of Health loan program that provides construction funds. This was just the timing issue. The State issued their check in June, and it was not received by the Department until July.

G. **POWER COST CHARGE:**

The Department proposes to increase the Power Cost Charge from \$1.69 to **\$1.73** per thousand gallons, to reflect a/an increase in power costs for the Department's wells and pumps. A Public Hearing will have been held prior to this Board meeting to accept public testimony on this change.

The Manager-Chief Engineer recommended that the Board approve the increase of the Power Cost Charge from \$1.69 to **\$1.73**, effective August 1, 2017.

ACTION: Ms. Iokepa-Moses moved for approval of the recommendation; seconded by Mr. Balog and carried unanimously by voice vote.

H. MANAGER-CHIEF ENGINEER'S REPORT:

The Manager-Chief Engineer provided an update on the following:

1) Matters of interest to the Board

1. North Kona Water Restriction

The Manager-Chief Engineer reported that Department attended the Council Committee on Agriculture, Water & Energy meeting on July 17, 2017. It went very well. The Department shared some information, and the Council asked good questions and hopefully were well informed. Also, on Thursday evening, July 20, the Department attended a West Hawai'i Community Forum and was able to share more information on the Kona water restriction. Two of the Water Board members attended, Mr. Boswell and Mr. Domingo, and he asked if they wished to share their experiences.

Mr. Domingo thought that the Department did a very good job. After the presentations, he went away with a better understanding of the issues.

Mr. Boswell also thought the Department did a very good job. The presentation came across well and the way the Department's team interacted with the moderator turned out very good. The Department answered a lot of his questions. He talked to people on the way out and felt that everybody walked out of there feeling very well informed.

The Manager-Chief Engineer was glad to hear the comments and added that was the Department's intent going in. Although the Department is not through this situation yet, it is looking at it as an opportunity to get better, recognizing that communication is very important. The technical part is straightforward, but how to get the message out there is something the Department will continue to work on. Other efforts will be worked on such as water security, water redundancy, water resiliency in all of the twenty-three water systems, conservation initiatives, etc. At the same time, there is a balance to be maintained, to keep an eye on the resources and not add too much, whether it be equipment, material, studies, personnel, etc., but to find a balance where the Department's mission can be maintained while maintaining reasonable staffing levels and a reasonable operating budget to keep a reasonable rate structure. All of those are in balance, but this situation is really providing a good opportunity for the Department to take a good look at itself.

Mr. Elarionoff asked a series of questions which were answered as follows:

1) Physically, what happened that the wells went down?

Mr. Young: All types of failures.

2) And nothing related?

Mr. Young: No. If it were related, it would be easy to fix. That has been one of the challenges--trying to nail down what is causing these failures.

3) Can it be a coincidence?

Mr. Young: It is a coincidence in a sense that we have several wells down at once; but other than that, the causes are all unrelated.

4) What were some of the causes?

Mr. Young: Overheating, surges, maybe poor splice, seal failures, or a thrust bearing (not saying exactly what happened on these particular ones). Those are more common reasons.

- 5) You say more common ones, but anything particular about this situation that happened?

Mr. Young: They are all pretty much different.

Manager-Chief Engineer: I think that question warrants further clarification that all four wells did not go down at one time. In 2016 toward the end of April, Hualālai Well went down. That has proven to be challenging because the last two repairs only lasted six months. If the Board recalls, additional funds and additional time were asked for at a Water Board meeting. That well started off as a push/pull replace pump and motor project that turned into a replace pump, motor, pipe column, check valve, power cable, transformer, and junction box project. Everything was changed, and it still failed within six months. For the Palani Well, that one was dedicated to this Department.

- 6) You do not know why it failed in six months?

Manager-Chief Engineer: No. If we knew, we would have it fixed. That is the challenge; and we try to learn from every well breakdown. However, even if you make a change to one thing, that might put a different component under a different stress. One of the things staff did is try to include positive seal check valves instead of Lakewood check valves. On Lakewood check valves, water is pumped up through the check valve and allows a slow water seepage past it on the way down. If that back spins a motor as it is coming down, there is an issue with back-spinning motors, bearings, and things like that. But with the positive seal check valve, you eliminate that water coming back down the column; however, it can slam and cause a water hammer and introduce different stresses on different components. Other failures have been motor thrust bearings, or motor burn. Motor burn can be caused from either a binding pump, an issue with power, or an issue with splice.

- 7) What would cause the pump to bind?

Manager-Chief Engineer: Bearing failure. An example would be, on catchment tanks, the pump is going to fail eventually. It does not last forever, and we are talking about a pump that pushes 28 tons of water up 1,600 feet. There is a lot of force involved. Our challenge is there are not many industries that have that situation or that scenario that they have to deal with. Mr. Young had mentioned at the Forum that at the Haleki'i Well, we used oil well pump technology and that one was push/pulled eight times in a couple of years.

Mr. Young: It was oil filled slim line motors that were installed when it first came on line back in the 90's.

Manager-Chief Engineer: It was a great discovery--high level, high quality, but the great discovery also came with great amount of challenges that we have not yet fully figured out.

- 8) Earlier he said that the pump overheats. What causes it to overheat?

Mr. Young: That was the motor. It may have been inadequate cooling past the motor.

- 9) What cools it?

Mr. Young/Manager-Chief Engineer: Colder water in the well.

- 10) So you suck it dry so it overheats?

Mr. Young: No. It is just a matter of getting adequate flow past the motor. The motor is in a column of water and that water will tend to move as you take water

into the pump. Basically, it is just moving water across the motor. If you overload it, you can overheat the motor also.

Manager-Chief Engineer: Or if the pump binds, it is going to overheat the motor. It is like when something gets stuck in your vacuum cleaner and binds the wheels; if you do not clear that and the motor keeps running, it is going to overheat and burn. That is the same type of thing here. If the pump bearings fail, the shaft drops, the pump impellers are scraping along the bowl, eventually, something is going to wear out and bind or cause enough resistance so that the motor is working way harder than it is supposed to and is going to burn out.

11) So when you monitor for sound, you will be able to hear that?

Mr. Young: Sometimes we hear the noise or there is vibration. Example, Kalaoa Well was one where we were hearing noises and that is why we put the jump on repairing it even though the pump is still online. The process of getting a pump and motor from the mainland takes a long time so we wanted to get it started. However, not all wells give us a nice sound and tell us what is going on.

Manager-Chief Engineer: Moving forward, because we cannot figure it out, we are going to try to employ a different approach and not use the same high horsepower, high capacity pumps in future wells and will limit them to 400 horsepower/700 gpm. We will also try to make sure our casing is at least 16 to 18 inches in diameter to allow adequate space for cooling around the motor.

12) The newspaper said you are going to keep spare parts on hand.

Manager-Chief Engineer: That is the bid you just awarded today.

13) And is that standard?

Manager-Chief Engineer: It is part of our standard.

Mr. Domingo asked if the Department is relying too much on the water pumping system, one leg of the water supply in West Hawai'i area. The second leg to water supply is water catchment; but perhaps the possibility of moving water from East Hawai'i to West Hawai'i would be the third leg. He mentioned a letter in the West Hawai'i Today with a recommendation for moving water from East to West Hawai'i and asked if the Department would want to entertain that idea or do a feasibility study.

The Manager-Chief Engineer replied that was done and it is not feasible.

Mr. Boswell asked if that letter could be distributed. He read it weeks ago and it is straight to the point.

The Manager-Chief Engineer stated that the Department gave it to Mr. Max Dible of West Hawai'i Today.

Mr. Elarionoff stated that the reason he asks all of these questions is because the Water Board is responsible and when people from the public ask what is being done, they have the right to ask. The Board Members volunteer to be on the Board and are responsible to keep the Department accountable. At least when people from the public ask questions, the Board Members can say this is not a rubber stamp Board.

The Manager-Chief Engineer stated that was fair.

Vice-Chairperson Arikawa agreed; however, he did not feel comfortable answering questions about pumps and motors because that is not his expertise.

- 2) Retiree of the Department of Water Supply – Mr. Young reported that Mr. Andrew Higa will retire at the end of this month. He has 17 years’ experience with the Department. A lot of institutional knowledge is going out the door with him. He is a good example of someone that started as a Waterworks Helper and made his way up the chain. He started in Kona as a Waterworks Helper in August of 2000, the following year he became a Pipefitter; and in 2003, he became a Building Maintenance Worker. In 2003, he became the Water Service District Supervisor in Kona, second in command; and in April of 2008, he became second in command in Waimea. He then became the #1 in command at Waimea before his retirement. He worked hard and moved up the chain. He will be missed.
- 3) Site visit for August. As public attendance of the visit to Palani Ranch Deepwell next month would be dangerous or impracticable, it is recommended that the Board approve a limited meeting for the site visit portion of next month’s meeting pursuant to Hawai‘i Revised Statutes § 92-3.1(a)(1).

For consideration by the Board, it is recommended that a limited meeting be held due to possible dangers and impact to have it open to the public. It is an active construction site and not known exactly where they will be in their scope of work on August 22. The other concern with having it open to the public is conflict with Homeland Security and having locations of deepwells or sources available for inspection. Since 9/11, the Department has prepared a Vulnerability Assessment and Emergency Action Plan and even with the State Water Commission, which used to publish a well database report, they do not publish it any longer because of the sensitive information and potential for people with ill intent to cause some serious harm. Because of those two primary reasons, if the Board wishes to have a site visit, it can be done, but the recommendation would be to have it as a limited meeting. That requires discussion and a vote from the Board.

MOTION: Mr. Takamine moved that the Board hold a limited meeting next month, August 22, 2017; seconded by Mr. Scicchitano.

Mr. Elarionoff asked what the benefit is for the Board to do the site visit.

The Manager-Chief Engineer replied that it will be for additional information. Today’s site visit will be to view what a tank construction and a completed tank look like in order for the Board to have a better understanding when they need to approve the budget and what some of these contingency funds could go towards. It also gives a better understanding of the infrastructure. Because of the recent situation with North Kona, an interest was expressed to see a well repair under progress. This is an opportunity to go and see one and see the magnitude of it and why they cost what they do.

Chairperson Takamine stated that he has been asking about doing this for some time. This will be good because it will allow more than three Board Members to attend. He is a visual person and being in construction, he still cannot understand a lot of the things that go on in this type of work. He thinks it will benefit the Board and hoped they can all attend.

Mr. Scicchitano thought that it also demonstrates ownership of the Board’s responsibility and involvement with the Board.

Vice-Chairperson Arikawa asked how many can attend.

The Manager-Chief Engineer replied that when it is agendaized like this, all of the Water Board members can attend because it is part of the meeting, all within the Sunshine Law.

He would encourage limiting discussion amongst each other during the site visit because it still needs to be recorded.

Ms. Yeh added that it would just be closed to anyone other than Board Members and staff.

ACTION: Motion to hold a limited meeting for the site visit portion of next month's meeting pursuant to Hawai'i Revised Statutes § 92-3.1(a)(1) was carried unanimously by voice vote.

I. **CHAIRPERSON'S REPORT:**

Chairperson Takamine thanked staff for working hard on the communication with the Mayor's Office, Council, and the general public. Also, the meeting in West Hawai'i last week went a long way. On social media, there seem to be a lot of people that do not have an understanding of the Department's water system and think the Department can get a pump by simply ordering online. The Department is making a big effort to address those issues and the knowledge given to the public goes a long way. The Department is also going to the point of looking at extra motors for some of the well projects. He also suggested learning from other areas of the world that may be facing the same issues. There may be other island nations that have more funds and can be learned from. In regards to Mr. Elarionoff's comments, it would be advantageous that if any Board Members have questions, they contact the Department and schedule a meeting ahead of time to spend more time going through all of their questions. He agreed with Mr. Elarionoff that the Board needs to have answers for its constituents, but one-on-one meetings might allow more time to be spent and help everyone out.

Vice-Chairperson Arikawa thanked the Department for going out to Kona and keeping everyone calm. According to Mr. Boswell and Mr. Domingo, it went well. He also agreed with Mr. Elarionoff and with Chairperson Takamine about getting together and perhaps having it explained in detail. If he, himself, gets questions about the Kona situation, he gives a brief answer and does not like to go into details because he does not feel comfortable explaining mechanical issues.

9) **ANNOUNCEMENTS:**

1. **Next Meeting:**

The next meeting of the Water Board will be held on August 22, 2017, 10:00 a.m., at the West Hawai'i Civic Center, Community Center (Building G); 74-5044 Ane Keohokalole Highway, Kailua-Kona, Hawai'i

2. **Site visit at 11:30 a.m. today:**

Site visit to Pi'ihonua-Kukuau project site on Haleloke Street, and Pi'ihonua Reservoir No. 2 site to view and discuss the active construction of and completed water tank project for informational and educational purposes.

RECESS: The Board took a recess at 11:20 a.m. to proceed to the site visit.

RECONVENE: 11:47 a.m. at Pi'ihonua-Kukuau Project Site.

SITE VISIT #1: The Site Visit began at 11:47 a.m. at the Pi'ihonua-Kukuau project site. Present were Board Members: Takamine, Arikawa, Balog, Boswell, Domingo, Elarionoff,

Scicchitano, and Iokepa-Moses; Staff: Keith Okamoto, Kawika Uyehara, Kurt Inaba, Clyde Young, Eric Takamoto, Warren Ching, and Mamane Namahoe; and Deputy Corporation Counsel, Jessica Yeh.

Mr. Inaba explained that this is a reservoir site. There is no well and no booster pump on this site. This reservoir will be taking water from another well source above this site, Pi‘ihonua #1, which also has Well “C.” This reservoir will be used as storage, which is needed in the Hilo area. This is a 2-million-gallon reservoir. The underground piping work has been completed for piping going into and coming from the tank. The contractor and its subcontractor are prepping for half of the floor to be poured tomorrow. Because it is so large, they are doing it in two sections. He added that when the Board travelled in today on Haleloke Street, along there is a 16-inch waterline, which is a part of this project. That has been installed, pressure tested, and the road paved. They are still continuing down through the easement that goes down and reaches the top of Sunrise Estates. That waterline is being constructed simultaneously with this tank construction. On site today are the tank subcontractor, DN Tanks (formerly DYK Incorporated), along with the general contractor, Isemoto Contracting Company, Inc., who are prepping for tomorrow’s concrete pour.

Mr. Domingo asked if this tank is typical of all the water tanks the Department has on this island.

Mr. Inaba replied it is not. This is a more recent design. He explained that as the seismic zone changed for the Big Island from Zone 3 to 4, the Department had to upgrade the design. The Department’s consultants, at that time, went out and looked at different designs that meet Seismic Zone 4 requirements; and this design is the outcome of that research. Nowadays, it is done differently and not called Seismic Zone 4; but basically, they have to meet the most critical seismic event nearest to the area. It basically results in an upgraded seismic requirement for the structure.

Mr. Domingo asked if that meant it has more reinforcement to it.

Mr. Inaba replied that was correct. He pointed out the seismic cables that are coming out of the footing, which allows flexibility but not movement because you do not want the wall to crack.

Mr. Domingo asked if it will absorb shock a little better.

Mr. Inaba replied that was correct. It will flex where it needs to in order to prevent cracking and it will restrain where it needs to.

Mr. Domingo noted that this site does not seem like it is at enough elevation to distribute water. This is fairly level ground. He asked how the water could get to the customers.

Mr. Inaba explained that it is all gravity fed, which is why the effluent pipe is all underground. There is a downhill slope. It will be about 20 feet high (the finished water) and that will get water down. He noted that the services would not start here, but farther down the road, which is at a 100-foot difference in elevation to get pressure at the houses. There is a high-pressure bypass. The inlet with high pressure that is feeding this tank also feeds the service line in here that serves the homes in the area.

(The Board continued down to the actual concrete pad.)

Ms. Iokepa-Moses asked when this project began.

Mr. Inaba replied that it started last year. As mentioned before, a lot of what was done was site work. What the Board is standing on now took a lot of work to get to this point. They had to excavate and do boring tests. They bored down deep to make sure the site is not sitting on any blisters or caves. The circles within the floor base will be the footings for the columns that will support the roof. There is a different convention with this company (the subcontractor). You typically think of a footing being below the surface; but with this company, they figured out that because there is no need for a flat surface for the structure, it is easier and more cost efficient to construct the footings on top of the surface. It spreads the load down to the whole floor. He also showed the footing for the exterior of the tank, which is more of a conventional footing--it is a thicker area. The concrete will come up to the top of this form. About 150 yards of concrete will be poured tomorrow.

Mr. Boswell asked if they would be just pouring on the outside of the column footings and not on the inside.

Mr. Inaba replied that was correct.

Mr. Uyehara asked about the PVC that was lined up.

Mr. Boswell noted it was the screed.

Mr. Domingo noticed that from the center, the floor is sloped out towards the wall.

Mr. Inaba explained that the floor is sloped out towards the wall; and the drain will be there (near the wall). To make sure there is adequate circulation in the tank, the inlet and effluent lines are on opposite sides of the tank. Water comes in on one end so there is no, what we call, short-circuiting where the new water coming in goes right out the effluent, resulting in stagnant water. Instead, it is put on the opposite end which basically takes the sitting water into the effluent line.

Mr. Domingo remarked that it was a smart design.

Mr. Inaba talked about the seismic cables that were added. In the past, in previous designs, the wall was not actually fixed to the floor so it could actually slide. During the 2006 Kiholo earthquake, approximately twenty tanks moved enough to result in damage. The tanks did what they were supposed to do by preventing a catastrophic failure; but after they moved, leakages resulted, and the Department had to go back and retrofit all of them, and they were Zone 3.

Mr. Elarionoff asked why the center was higher and not hollowed in.

Mr. Inaba replied the slope is pretty typical in case there is a need to drain the tank. The silt goes to the edges to help make maintenance easier.

Mr. Domingo asked how much this project cost.

Mr. Inaba replied it is an \$8 million project, which includes the 16-inch waterline that goes down to the top of Sunrise Estates.

Mr. Arikawa asked if Sunrise Estates is the same elevation as this site.

Mr. Inaba replied that Sunrise Estates is below this elevation, and that is adequate to be able to serve that area. They actually tied into a PRV down there so the pressure gets relatively high at that point.

Mr. Domingo asked if the workers here today were local workers.

Mr. Inaba replied that the general contractor is a local company; and the tank company (subcontractor) is from the mainland, although they have hired a lot of local workers. One of their superintendents is from the Big Island, although he is not on site today.

Mr. Domingo stated that creating jobs for local workers is very good.

Mr. Inaba concluded that this is a very specialized construction; not a standard construction. The walls are going to be pre-stressed concrete and wire-wrapped tension. Post tension bars go vertically into the wall. When they pour the concrete wall, they will go inside the wall and squeeze it down and tensioned so there is compression on the wall and then it is wrapped with the machine. The concrete itself is in compression. That is the whole purpose of this design.

The Manager-Chief Engineer asked Mr. Inaba to cover the special inspection that was taking place today.

Mr. Inaba noted that Mr. Jim Walfish, the structural inspector, Mr. Wesley Kamimura, Department of Water Supply inspector, and the principle design engineer on this project, Mr. Melvin Inaba, were on site today. They are required to be present because this type of structure needs to have special inspection. This inspection is being done in preparation for tomorrow's pour.

Mr. Domingo asked if this project is under the CIP budget.

Mr. Inaba replied that was correct. He added some information about the perimeter drain line. That is the cut in the ground elevation; and where he was standing, below that was the drain line. There should be some inspection ports along the way, so that if there is any leak, there is a membrane below there that will catch the water and take it to the drain line. If there is any water in the inspection ports, that may indicate there is a leak in the floor and they can tell what quadrant the leak may be in.

Mr. Takamine asked if it was like perforated pipe.

Mr. Inaba replied that it used to be perforated but did not think this one is. It is actually catching water and taking it to the seepage pit.

Ms. Iokepa-Moses asked if the developer in this area had any cost contribution.

Mr. Inaba replied that back in the late 80's or early 90's, there was a \$100,000.00 contribution for storage that was applied for this project. Obviously, it is a small amount, but it was for this area, also known as Hilo Hillside. They do not get use of the water until this project is complete.

(This concluded the first site visit today at 12:05 p.m. The Board recessed and travelled to the second site visit.)

RECESS: This first site visit concluded at 12:05 p.m. at which point the Board recessed to travel to the second site visit.

RECONVENE: 12:16 p.m. at Pi'ihonua #2 Reservoir

SITE VISIT #2: Pi'ihonua #2 Reservoir site was visited at 12:16 p.m. Joining the group: Judith Hayducsko, Operations Division.

Mr. Inaba explained that is also a 2-million-gallon reservoir. Construction began in 2010. This site replaced an 800,000-gallon inground reservoir, built just after 1900. In the past, you could just see the roof of that structure in the lower portion to the side of this site. This current site for the new reservoir was obtained through an Executive Order from the State of Hawai'i. This whole system up to Pi'ihonua #1, coming down Waiānuenu Avenue was all built in the early 1900's. For this site, this has a booster pump station, which the site just visited will not. The booster pump station is similar to having a line shaft deepwell. The can sits beneath that and holds what the water goes into. The bowls are down below, and the motor is on top. The reason there are boosters at this site are to pump up to #1, even though there is a well up there. There are also two wells down at the site near Carvalho Park, which are 1-million-gallon storage and two deepwells. Besides just pumping to Reservoir #3, Reservoir #3 has wells A & B and Reservoir #1 has Well C. He asked Mr. Takamoto if those wells pump directly to Reservoir #2.

Mr. Takamoto replied they do not. The boosters run up there.

Mr. Inaba continued that with the booster pump on site comes the requirement for a control building. The other site just visited will not have that. He pointed out the inlet control station and noted that is what will be at the other site. That is called the inlet control station. When operations are such that we are taking from the upper reservoir, water is going to be coming into this tank from that inlet control station. We will pump up from #3 or Wells A and B into this tank and utilize as much of that water as we can. We do not use that system or even boost up that much, but it is there to provide flexibility if a well goes down or a well is under repair on the lower side or on the upper side. The system can be run either way. The tank being constructed will not look like this one. This was an attempt to address the mildew issues because of weather conditions. It will have a shotcrete finish. This was an attempt to see if it was possible to get a smooth finish. The effort and reliability of this smooth finish surface was not thought to be worth the effort. Maintenance will need to be done to remove the mildew.

Mr. Arikawa asked what kind of finish is on the Kawaiilani tank.

Mr. Inaba replied that the Kawaiilani tank is this type of finish but not the same type of tank. That was a different attempt at meeting a Seismic Zone 4 requirement, so it is a different design. Part of the reason this design is preferable, and in the Department's opinion is superior, is that there were a couple of these tanks on the west side of the island during the 2006 earthquake, and they were not damaged. The Department has confidence in this design. He noted that on top of the tank here, the design was changed in that this one has a railing along the entire perimeter and a lot of older tanks will not have that. The new design comes with stairs instead of ladders. This is to keep up with OSHA (Occupational Safety and Health Administration) requirements. This takes the safety of the Department's personnel into account, who need to do maintenance at the top of the tank. They either have to strap equipment to themselves or climb the ladder and throw a rope down to pull the equipment up. Even with that, they are at the edge with a rail so it was decided it was best to invest in stairs as well as the railing and it took care of a lot of OSHA requirements. With every project, the Department keeps up with current code.

Mr. Scicchitano asked if the power goes out, if there would be a backup and what would happen to the customer's service.

Mr. Inaba replied that if the power goes out at this site, to use the booster pumps would require backup generators. There are backup generators at certain well site locations but not this one. There is one at Reservoir No. 3 that would be able to bring some water up to this site. If there was a larger outage, the Department would be asking for customers to save water.

The Manager-Chief Engineer turned the Board's attention to the pumps and asked Mr. Ching to explain the components.

Mr. Ching reviewed the booster pump station. The discharge head is what the motor sits on. The discharge pipe is separate from the booster itself, and it is what holds the pump.

The Manager-Chief Engineer noted the time extension which the Board decided on at a previous meeting for Beylik Construction had to do with this component when the discharge head was not aligned correctly.

Mr. Ching continued that the pump is below the discharge head. There is basically a can, or cylinder, that is cut at the top. The inlet comes in one way and goes out another way. There is nothing getting drawn from below. It [the booster] is just a means to create a pressure difference to push water up. The discharge head is the key component. The Beylik Drilling issue was that the component did not match up as far as the bolt circles. When they put it on, they could not fit the bolts in.

The Manager-Chief Engineer noted the flange, which is manufactured to withstand a certain amount of pressure classification. That is why the thickness and the bolt spacing and the number of bolts need to be correct. The flange itself does not have that much meat on it and is not something you want to machine to make it fit. It is all custom made. He asked Mr. Ching to explain the shaft.

Mr. Ching showed where the valves were closed. This is where the motor connects to the pump down in the can and is connected by the shaft. The Motor spins the shaft which spins the pump which creates that pressure difference to push water up. To go over this entire station, there are isolation valves, so if you are doing work, in this case, to the control valve, you can isolate the system. He pointed out the electromagnetic flow meter and the flow switch, which tells the controls if it senses flow. If it turns on and does not sense flow, it shuts off as a safety precaution. That means there may be something stuck on that side so the pump is pumping but there is no flow, which basically tells us to shut it off if it does not see flow in a certain amount of time.

Mr. Domingo asked if the pump is inverted.

Mr. Ching replied it was. This is the seal that basically keeps water flowing and not coming out this way [where the shaft enters the discharge head]. The water comes down into the can and the pump is pumping it up out of this discharge. The pump control valve, which opens and closes based on when the pump is running, when the controls say go, this opens up and the pump turns on almost simultaneously. That is just to keep the pressure. Without it, water could be flowing backwards and undoing what we just did. It keeps water pressure contained on the high-pressure side.

In response to Mr. Domingo's question of how many pumps were in there, Mr. Ching replied just one pump.

The Manager-Chief Engineer noted that these boosters are not as challenging as the ones in Kona because these are more standardized. The motors are easily accessible.

In response to Mr. Domingo's question of where the output would go, Mr. Ching replied it [water] comes from the tank, it comes in [the booster] and goes up to the higher tank. Water is coming from the tank into the booster.

(The site visit concluded at 12:35 p.m.)

- 10) Recess and Reconvene at DWS Hilo Operations Center Conference Room: Vice-Chairperson Arikawa noted that since everyone was here, after conferring with Corporation Counsel, the meeting could be adjourned without going back to the Hilo Operations Center Conference Room.

- 11) ADJOURNMENT

ACTION: Ms. Iokepa-Moses moved to adjourn the meeting; seconded by Mr. Takamine and carried unanimously by voice vote.

(Meeting adjourned at 12:41 p.m.)

Recording Secretary