Dave and Nola Watase
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October 20, 2015

Suzanne D. Case, Chairperson
State of Hawaii, DLNR
P.O. Box 621
Honolulu, HI 96809

Re: Ala Wai Canal Project
Request to consider using Government owned lands for Flood Mitigation Alternatives instead of using the property located at 2532 Waiomao Road, Honolulu, HI, 96816.

Dear Ms. Case,

As previously stated in my letter dated September 28, 2015, we (my family and I) are totally against your purchasing of our privately owned, residentially zoned property, TMK 34016059, located at 2532 Waiomao Road in Palolo Valley for the construction of the Waiomao Detention Basin which is a part of the $173 million Ala Wai Canal Project.

We are in our mid 50's in age and our children were born and raised in Honolulu, the property was purchased with the intent to develop several homes on the land. It is our desire to be able to provide each of our children a place in town to build a home as an incentive for them to remain in Hawaii as they finish college, get married, and start their own families.

In review of your Draft FS/EIS we found that the majority of the benefits which would be derived by this project would occur mainly along the Ala Wai Canal, while the adopted alternative (Alternative 3) consists largely of structural measures in the upper watershed. This action is not fair to the residents and property owners in the upper portions of the watershed especially when built on privately owned land for the following reasons:

1. Much of the upper portions of the watershed by themselves do not justify the need for major flood mitigation measures for the residential homes and areas. Smaller less costly alternatives can be pursed to protect the residential areas if the need and cost are justified.

2. Several speakers at your September 30, 2015 Public Review meeting were against pushing the problem at the Ala Wai Canal upstream and were against your proposed alternative measures located in the upper watershed. A few speakers specifically were against doing anything in Palolo Valley and a few stated the lack of maintenance and cleaning of the existing streams as the primary reason for localized flooding. They were additional speakers who where against using residentially zone land in an already tight housing market with severe shortage of rentals units and a need for the creation of more housing.

3. The bulk of the hotels in Waikiki were built between the mid 60's to mid 70's and Waikiki has since become a major economic driving force justifying your need for flood protection. However, most of the residential properties in the upper watershed existed long before the Waikiki hotel boom. The residential properties shouldn't be burdened with having to protect Waikiki from flooding with upper watershed alternatives when many residents have been negatively impacted by lost ocean and beach views from high rise hotel developments in Waikiki.

4. We believe there are several alternate measures that could also be incorporated into the lower portion of the Ala Wai Canal Project's watershed instead of constructing detention basins in the upper portion of the watershed that could also protect Waikiki from flooding. A speaker at the September 30, 2015 Public Review meeting mentioned that the condition of the Ala Wai Canal was deteriorating. He felt confident that Waikiki could be protected from flooding using modern engineering and state of the art technology. The speaker made some valid point because the Ala Wai Canal may be deteriorating a lot faster than expected and may not last the approximately 140 year design life. The original designers of the Ala Wai Canal in the 1920's most likely did not envision the heavy development of the Ala Wai Canal watershed and of Waikiki. Inherent problems in the design are sedimentation and maintenance issues and extremely low flow rates. Why waste money building a flood protection wall on an already crumbling infrastructure with several inherent design issues?

5. The State and C&C of Honolulu are owners of thousands of acres of land in the upper portions of the Ala Wai Canal Watershed. It is not fair to propose detention basins on individual privately owned properties when the bulk of the floodwater generated from a 100-year storm are coming from the Governments land. We believe the Government has more than enough land of their own along the routes from the upper most portion of the watershed to the Ala Wai Canal suitable to be used for flood protection. This would include Government owned remnant parcels, schools, parks, and drainage easements lands.

6. Government owns more than 1100 acres of land in the upper extreme portion of the Palolo watershed (Exhibit A, B, C, D, E, F, G, & H). The proposed two detention basins in Palolo Valley involving privately owned land are designed primarily to hold storm water from the Government owned land. It is our opinion that the Government should use their own lands for any storm water protection alternatives. The following TMK are Government owned properties located above the proposed Detention Basins in Palolo Valley:

    a) TMK: 340220010000 - State of Hawaii (691.9 acres)
    b) TMK: 340220060000 - C&C of Honolulu (387 acres)
    c) TMK: 340180030000 - C&C of Honolulu, BWS (10.89 acres)
    d) TMK: 340180020000 - C&C of Honolulu, BWS (9.31 acres)
    e) TMK: 340350240000 - C&C of Honolulu, BWS (1.802 acres)

Designating our privately owned land for your uses without notifying us and allowing us due process is very detrimental to us. Personally, we can't imagine anyone on your Project Delivery Team, the USACE or the DLNR who would be happy to give up their property under the same circumstance. We believe our property cannot simply be replaced because it is one of a kind and basically nonexistent in today's real estate market in town. We don't ever want to sell because we don't think we could ever find a replacement property as beautiful with the same potential.

We believe this hurts our ability, freedom, and right to use of our property. The liquidity of our property has been altered because of your designation. We would have to disclose your designations to any potential buyer, if we faced an emergency and needed to sell our property. We feel threatened and restricted in our options so long as we are under your veil of condemnation. We believe the appreciation in value of our property will stagnate and anything we do on the property may be at risk of being taken away through the Governments power of eminent domain.

We humbly request that you remove our privately owned property TMK: 34016059, located at 2532 Waiomao Road in Palolo Valley as a potential site for the Waiomao Detention Basin.

Very truly yours,

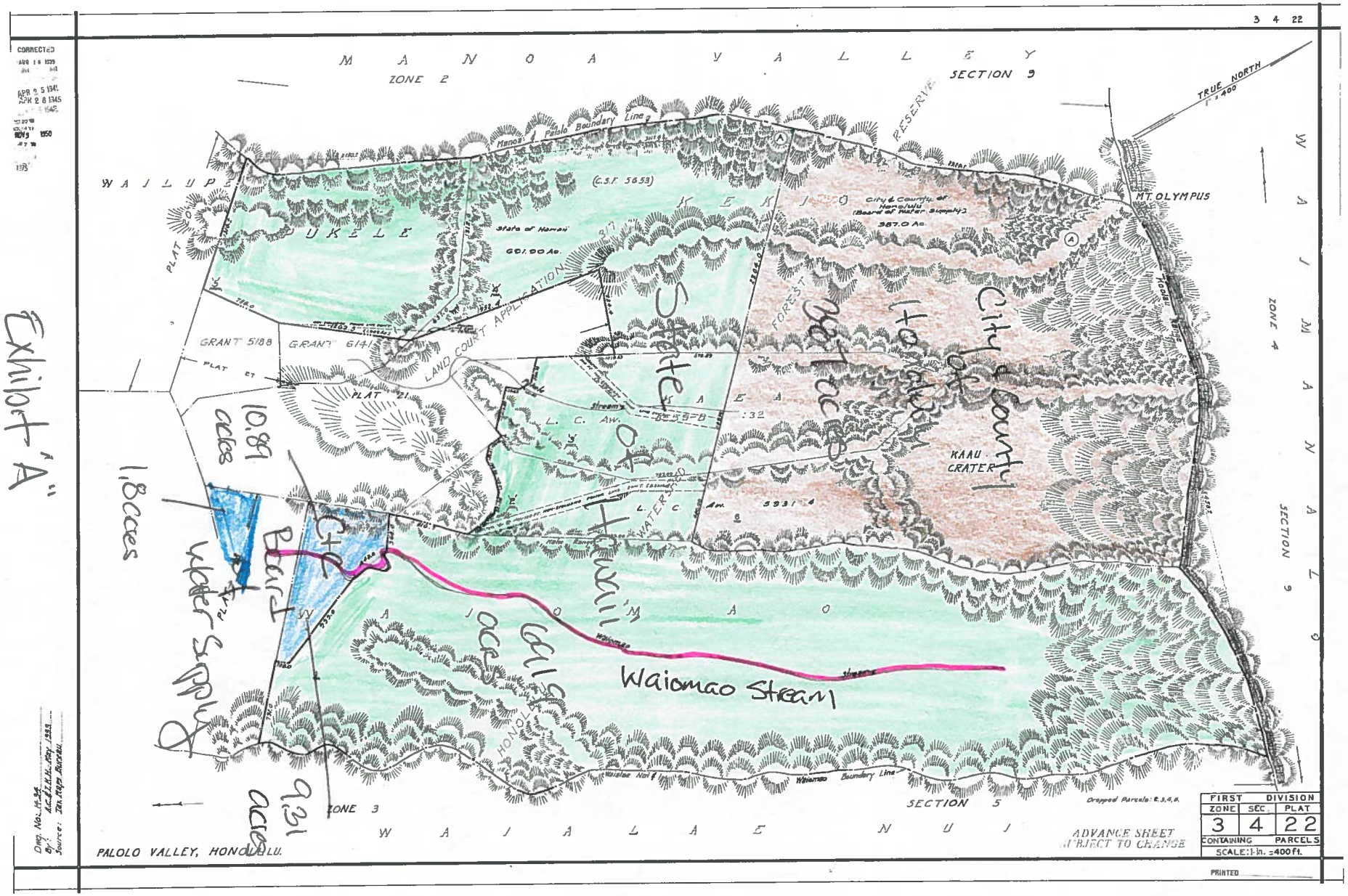
Dave and Nola Watase

Attachments: (Exhibits "A" to "H")

Cc: Gayson Ching, DLNR
Derek Chow, USACE
Ann H. Kobayashi, Honolulu City Council
Calvin Say, State of Hawaii, Representative
Les Ihara, State of Hawaii, Senator

TMK: 3402200100000 - State of Hawaii 691.9 acres

TMK: 3402200600000 - C&C of Honolulu 387. acres

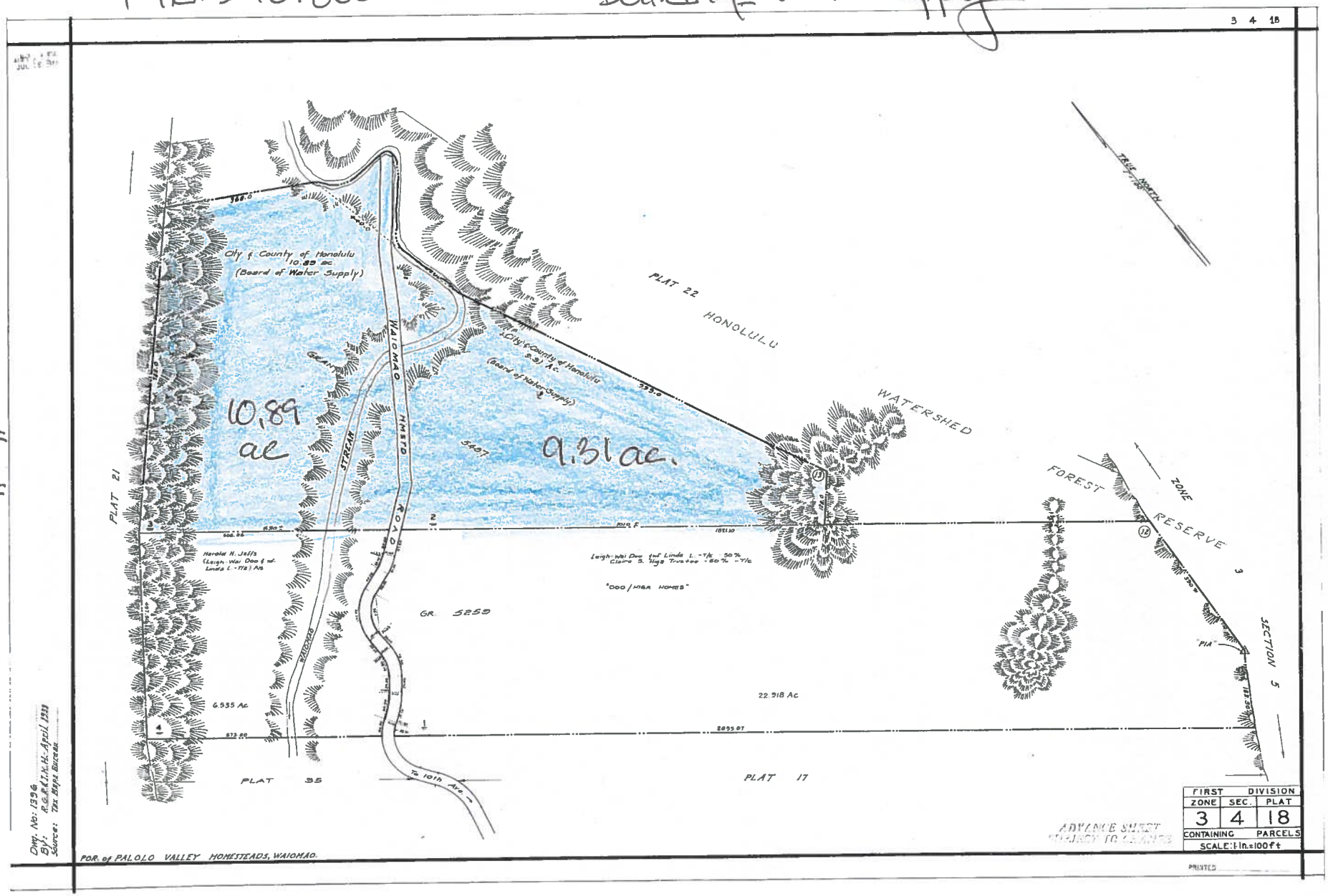


TMK: 3401800300000

TMK: 3401800200000

C+C of Honolulu
Board of Water Supply

Exhibit "B"



TMK: 3403502400000 C+C of Honolulu
Board of Water Supply

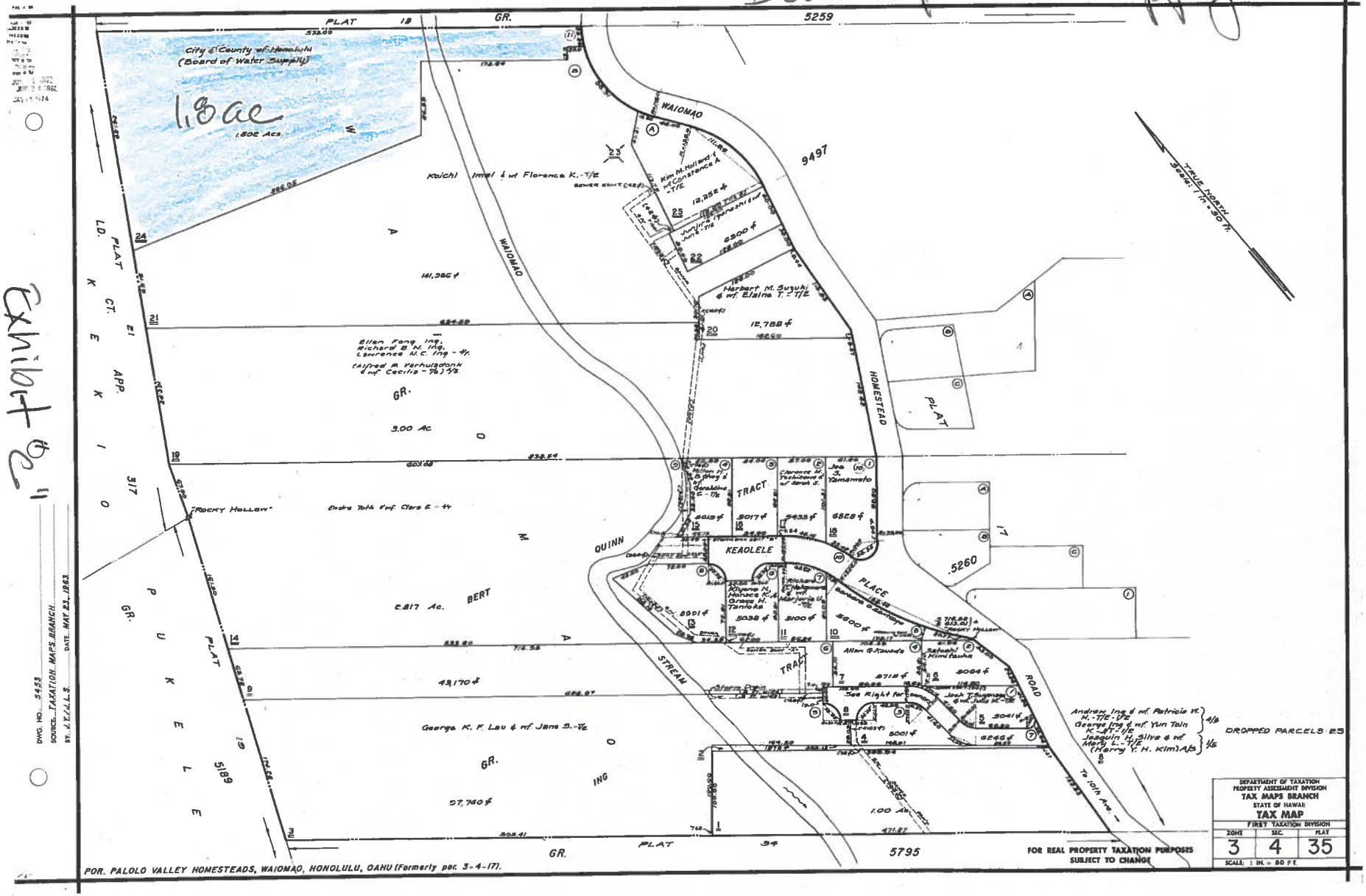
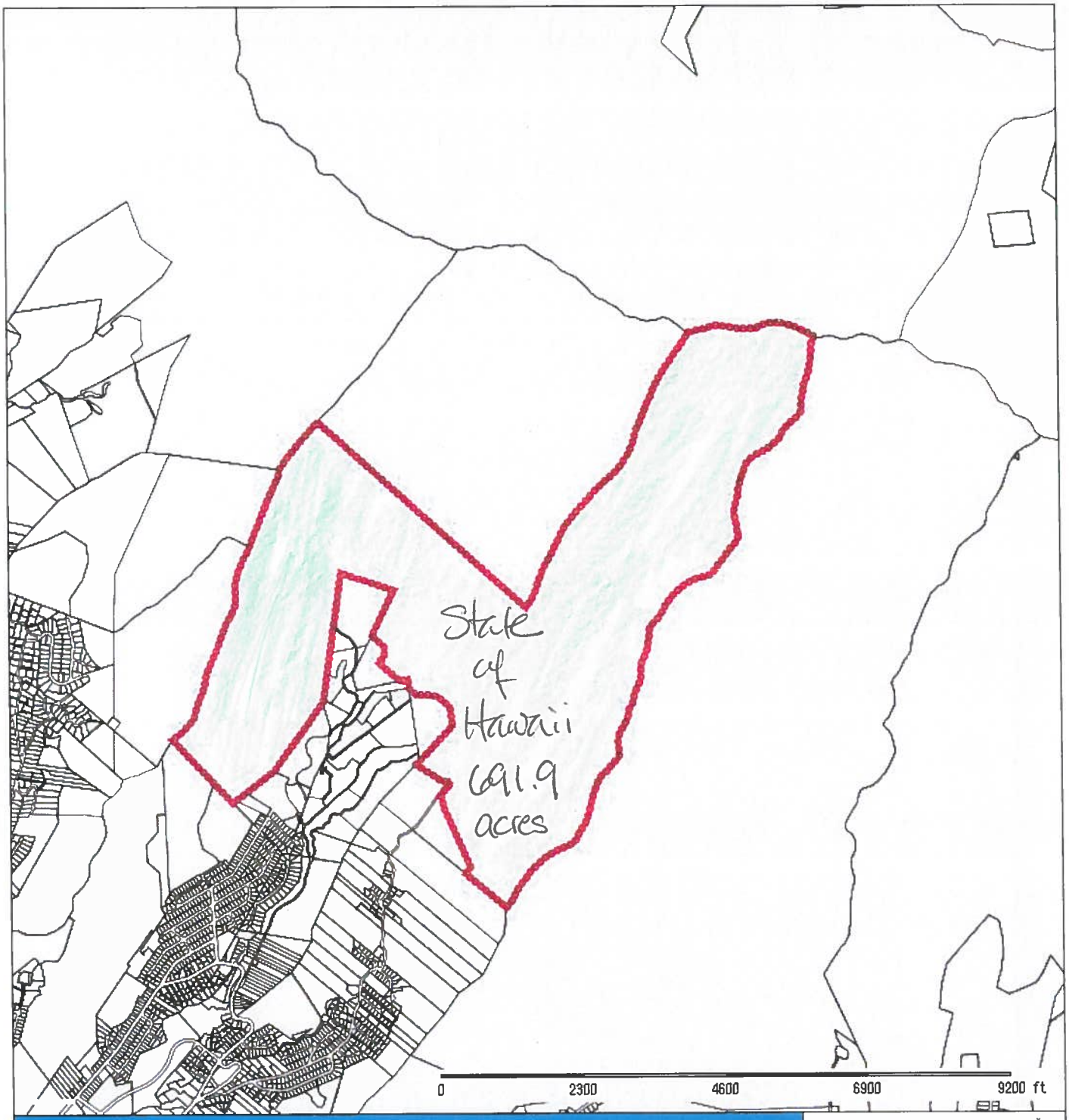
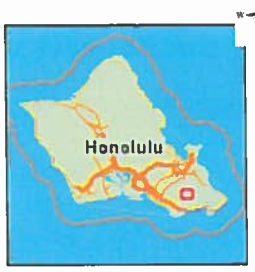


Exhibit #2



Honolulu County Assessor			
Parcel: 340220010000 Acres: 691.9			
Name:	STATE OF HAWAII	Land Value:	1037900
Site:	LA I RD	Building Value:	0
Sale:		Exempt Value:	1037900
Mail:	,	Taxable Value:	0



*Honolulu County makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the last certified taxroll. All data is subject to change before the next certified taxroll. The 'parcels' layer is intended to be used for visual purposes only and should not be used for boundary interpretations or other spatial analysis beyond the limitations of the data. The 'parcels' data layer does not contain metes and bounds described accuracy therefore, please use caution when viewing this data. Overlaying this layer with other data layers that may not have used this layer as a base may not produce precise results. GPS and imagery data will not overlay exactly.

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Exhibit "D"

Honolulu County Assessor

Parcel: 340220060000 Acres: 387

Name:	BOARD OF WATER SUPPLY	Land Value:	580500
Site:	LA I RD	Building Value:	0
Sale:		Exempt Value:	580500
Mail:	630 S BERETANIA ST HONOLULU, HI 96843	Taxable Value:	0

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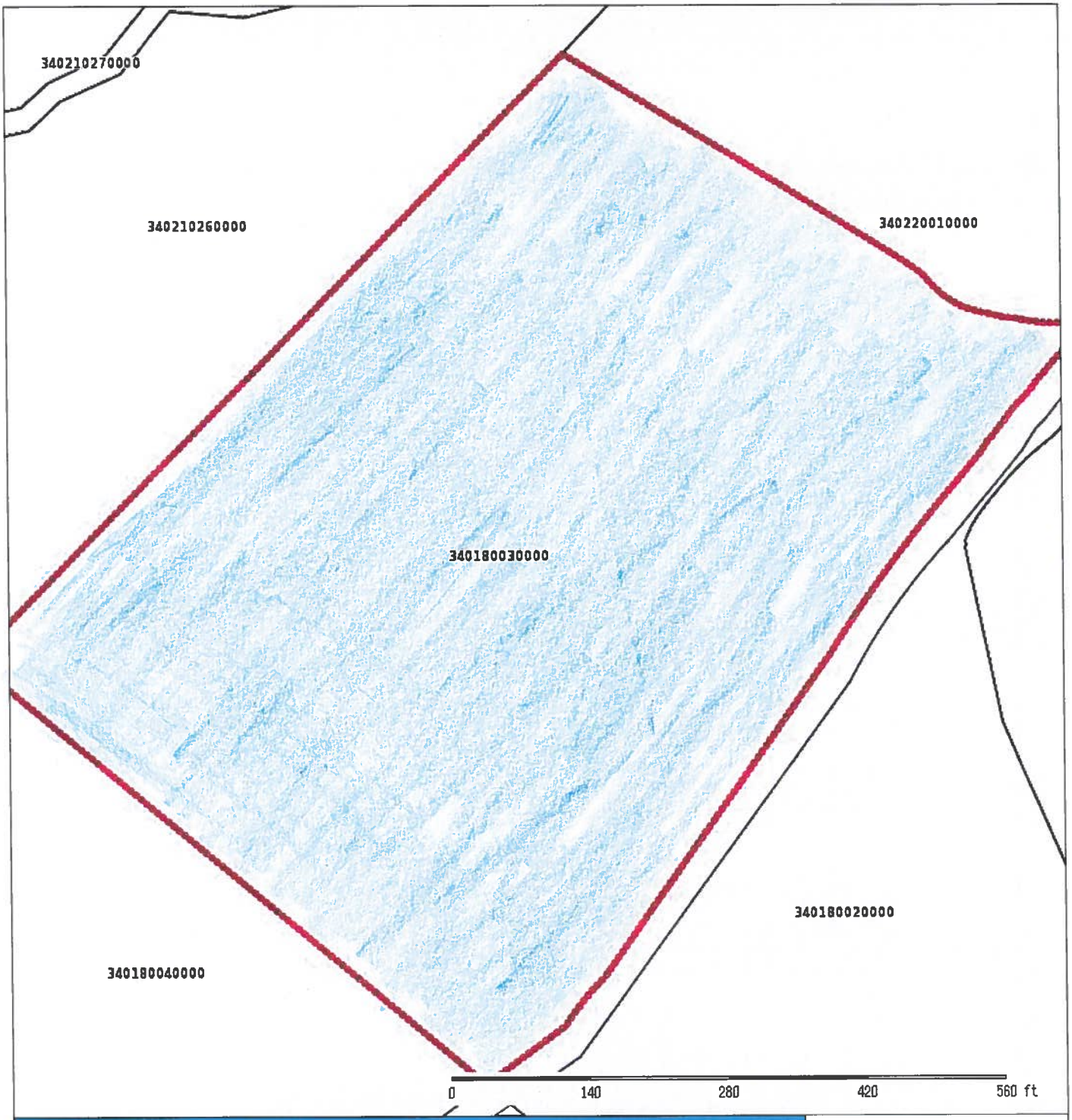

Honolulu County Assessor

Parcel: 340180030000 Acres: 10.89

Name:	BOARD OF WATER SUPPLY	Land Value:	16300
Site:	WAIOMAO RD	Building Value:	0
Sale:		Exempt Value:	16300
Mail:	630 S BERETANIA ST HONOLULU, HI 96843	Taxable Value:	0

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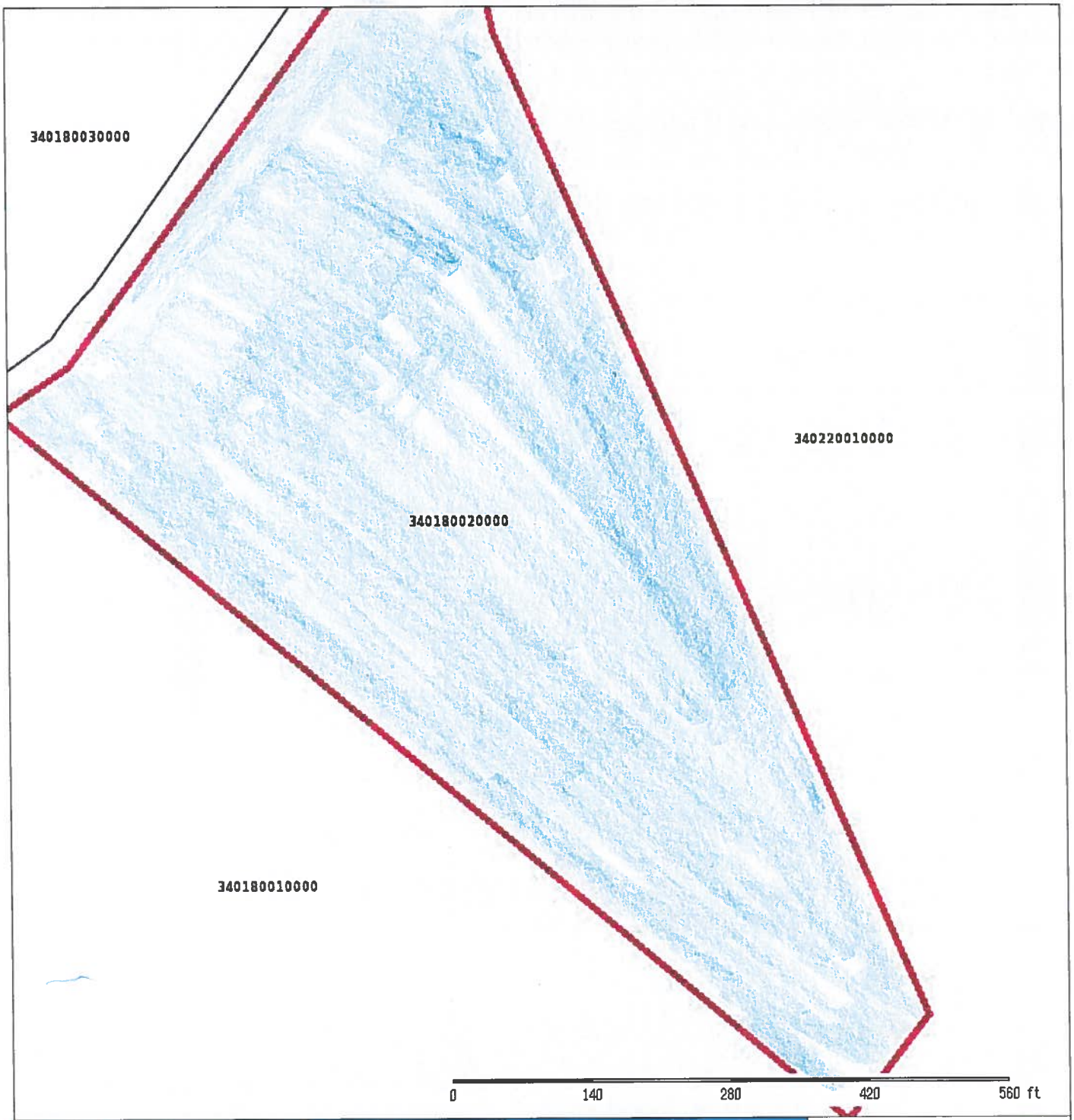

Honolulu County Assessor			
Parcel: 340180020000 Acres: 9.31			
Name:	BOARD OF WATER SUPPLY	Land Value:	20400
Site:	2821 *WAIOMAO RD	Building Value:	20300
Sale:		Exempt Value:	40700
Mail:	630 S BERETANIA ST HONOLULU, HI 96843	Taxable Value:	0

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Exhibit "G"

Honolulu County Assessor			
Parcel: 340350240000 Acres: 1.802			
Name:	BOARD OF WATER SUPPLY	Land Value:	265300
Site:	WAIOMAO RD	Building Value:	0
Sale:		Exempt Value:	265300
Mail:	630 S BERETANIA ST HONOLULU, HI 96843	Taxable Value:	0

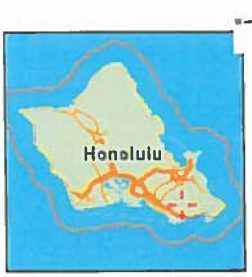

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Exhibit "H"

Dave K. Watase
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Honolulu, HI 96819
Cel. 728-0759
Email: dwatase@hotmail.com

September 30, 2015

Ms. Suzanne D. Case, Chairperson
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Re: Ala Canal Project
Prepared for September 30, 2015 Public Review Meeting

Dear Ms. Case,

I am in receipt of your letter date stamped August 14, 2015 regarding the above project and informing us for the first time that our privately owned property TMK 34016059, located at 2532 Waiomao Road, Honolulu, HI 96816 is a part of the Ala Wai Canal Flood Risk Management Feasibility Study and that the US Army Corps of Engineers are recommending the purchase of our property for the construction of the Waiomao Detention Basin.

Your letter to me states that "The Corps estimates that another major flooding event would result in damages to more than 3,000 structures in the watershed with a total damage of about $723 million."

- How precise and accurate is the claim of damage to 3,000 structures?
- How precise and accurate is your claim of the $723 million dollar damage figure? Most of the references on your website use a $314 million figure based on 2013 prices. Seems to be ballooning like the cost of the Honolulu Rail Project which started out at $2.7 billion in 2008 and now less than halfway completed at $6 billion.

Your letter to me states that "The canal has overtopped and previously flooded Waikiki during the November 1965 and December 1967 storms and the passage of Huriicane Iniki in 1992"as a basis to support the project.

- What percentage ratings were each of these 3 storms?
- What were the dollar damage figures for each of these 3 storms?
- What are the associated flow rates and rain gauge reading tied into determining the storm percentage?

Your letter to me states that "An October 2004 storm flooded Manoa Valley and a March 2005 storm flooded Makiki causing a combined $85 million dollar damages" and the claim is used in support of the project.

- I believe the University of Hawaii and Waikiki are highest valued areas of potential damage and comprise the majority of the claimed damage of a 100-year storm. The storm was estimated to be a 20-year or a 25-year storm. What impact did this storm have on Ala Wai Canal and the flow rates at the mouth of the Canal?
- Should the damage claim and any reference to the October 2004 be stricken because had the Woodlawn bridge been properly maintained and not been half filled with sediment, and had the canal ways been properly cleared of tree branches which clogged the remaining passage way, the Woodlawn bridge would have been able to accommodate the estimated flows from the October 2004 resulting in no damage to the UH.
- Also, isn't the USACE already in the process of improving the Woodlawn bridge to prevent the sedimentation buildup? The inclusion becomes a double request in my view. The current Woodlawn bridge improvements should be designed so that UH never gets flooded even with a 500-year storm. This can be done by adding a box culvert conduit around each side of the bridge as a spillway in case of a 500-year storm. Third level of protection can be accomplished by intercepting any overflows somewhere near Noelani School play area and channel directly to Manoa Stream after the Woodlawn bridge.

In the Executive Summary for your Draft EIS, it is claimed that "The tentatively selected plan is 99.8 percent reliable in protecting portions of Honolulu Hawaii from a flood which has a 1 percent chance of occurrence in any year. The tentatively selected plan would reduce the average annual flood risk and would leave the average annual residual damage estimated at $999,999. ... The benefit-cost ratio is approximately 2.38:1.

Your studies make thousands of assumptions, are one dimensional, use coefficients that may not pertain to Hawaii's geography and tropical forest and uses an average of a handful of different methodologies that are all claimed to be the best but have different results. Throughout your engineering studies they use the word "peaky" as a basis for unpredictability and to justify themselves if the calibrated results don't correlate to the rain gauge readings and flow rates.

- How can you substantiate such a high claim of protection and certainty?
- Is the average residual damage estimated to be $999,999 accurate to one dollar?
- How much of the benefit-cost ratio be adjusted if you took UH out of the picture?
- If you just focused on saving Waikiki and used improvements only on public lands, how would that lower the benefit-cost ratio?
- I believe the ES-1 USACE computer generated rendering showing the 100-year storm affected area is a "SCARE tactic" , misleading, and not be accurately portrayed with the lack of information and data.
- I'm also against using the 2006 storm and the flooding on H-1 as a means to justify this project. If I recall correctly, the flooding had nothing to do with the intensity of the storm but more of a breakdown of a pump at the Punahou overpass bridge.

I question the reliability of all the methodologies being use because they are only as good as the data that you feed into them.

- There are only about a dozen of rain gauge stations and some are automatically read and some are manually read.
- For the size of the watershed and vast different in topography and one that has over 30 subbasins. Isn't there a severe lack of rain gauge stations and a lack of data?
- There are over 30 subbasins most of which contain rain gauges. Isn't it common knowledge that what is going on in one subbasin may be totally different in another?, How can you reasonably interpolate data from one rain gauge and apply it to several subbasins?
- Rain gauges in adjacent watersheds because a lack of data collection within the Ala Wai Watershed. Doesn't this reduce accuracy?
- Not a single rain gauge up St. Louis Heights and the ridge to the other side of the Koolaus?
- Data is used from a rain gauge located on Wilhelmina that is not included in the Ala Wai watershed. Again a lack of data collection and it should result in a lack of accuracy.
- How can a few rain gauges on the lower extremes of backside of Manoa accurately reflect what is going on at the top of the mountain?
- You use rain gauge collections on the Windward side of the island to support your claim of the severity of a storm. Doesn't this clear identify the lack of measurement facilities? A lack of accuracy and precision/
- Your modelings and diagrams are generated on data that has been interpolated over and over again and computed on shaky data.
- There is a lack of flow rate data at each subbasin and each fork of the streams and each bridge passings. There is no reason to interpolate or guess when you can easily install data collection equipment to improve your accuracy?
- Are the rain gauges and stream flow equipment calibrated and certified?
- What is the accuracy of the equipment and error tolerances?
- Are the reading bulletproof or can they be affected by the environment to give incorrect results? For example, a bird, branch, or insect plugging the intake of a rain gauge and debris blocking the stream giving a false height of the flow?
- Data stretches back for almost a century. How reliable is it to use this old data to compute the storm frequencies?
- Isn't it important to have accurate data? How valuable is it to have real ocean level measurements at the mouth of the Ala Wai Canal? Again, I don't think you can accurately interpolate data from Honolulu Harbor which is several miles away?
- Isn't it possible to have a rain gauge reading signaling a 500-year storm and have flow readings of maybe a 2-year storm?
- Isn't it possible to have a rain gauge reading signaling only a 10-year storm and have flow reading of a 100-year storm?
- The New Year's Flood of 1987 in Hahaione Valley was said to be a 500-year storm? Can data from that area be interpolated with accuracy to the Ala Wai Canal Watershed or or vice versa?

In a rather rushed review of the Ala Wai Canal Project, I have generated some questions, alternative thoughts and suggestions as follows:

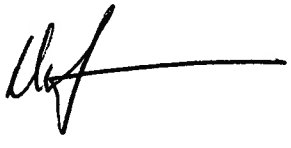
- What percentage of the rain runoff and storm drainage system dumps into the Ala Wai?
- Will there be backflow as the level of the Ala Wai exceeds the ground elevation of Waikiki?
- Why not install pumps to force main the rain runoff from Waikiki straight into the ocean?
- Why not use Kapiolani park as an emergency spillway?
- Why not use Fort DeRussy as an emergency spillway?
- Does the Upper Kaimuki subbasin dump into the Ala Wai?
- Why not install high capacity pumps similar to what is used in New Orleans and force main the Ala Wai Canal overflow straight off offshore into the ocean in the event of a 100-year storm?
- When is the intended design life of the Ala Wai Canal coming to an end in 2076 or 61 years from now? Why are we pouring all this improvements into the perimeter of the canal. Isn't it a waste of taxpayers money? Maybe the whole canal should be redesigned and improved with the latest engineering technologies to accommodate the 100-year storm.
- Alternate 1, a large detention basin designed to hold 11.5 million cubic feet or a series of smaller less visible detention basins on public land would be more viable? The larger landowners like the Catholic Church are in a better position to exchange land and work something out in the preliminary stages. They are better equipped to afford professional consultants to ensure fairness and are less likely to be personally affected by use of their lands.
- The the amount of water retained can be increased for the Ala Wai golf ?
- Channels next to Kaimuki High School and all the way up to Woodlawn can be expanded and used as Channel Full retention channel with adequate overflow capacities.
- Kanewai field should be reversed so that the school doesn't have a berm to cross over to use. Rather than a berm a concrete retaining wall similar to the Ala Wai Canal wall should be built and lined with moss rock along the residential side and replacing the corroded chainlink fence. Any use of the public parks or schools should be done in a way to enhance the area and improve the parks and schools uses to the benefit of the public. Why build something that is ugly or an eyesore with the sole intent of only solving the problem? Let's use Federal money to the maximum benefit of the public? Hey may be a portion of the maintenance of the park can paid for by the Feds to maintain the joint park and detention basin.
- Manoa Park and Palolo Park should also be looked at as suitable locations for detention basins. Storm water can be captured up stream at higher elevations through a spillway and channeled downstream to the public parks detention basins which will only function in times of the most severe storms and will naturally drain over a short period of time to reduce the time of concentrations. Much like how the taro patches of old Hawaii worked.
- Other alternative to handle the storm water from Palolo would be to use State Lands or other public lands. The State School properties throughout the watershed can be used and maybe even improved through the use of the public lands.
- Kaimuki High School Field is a large area?

- The volume capacity behind Dole Street bride next to the UH is huge.
- The volume capacity behind the St. Louis Drive bridge next to City Mill is huge.
- Several locations can be detained and have enough elevation and depth to develop head pressure. Storm water can be force main at a much higher velocity and a larger volume of storm water can be move down stream in a shorter amount of time through the Ala Wai Canal to a point where overflow risk is minimal? The Ala Wai Canal and the channel next to Kaimuki School is relatively flat with little slope. The velocities are very low and the Ala Wai Canal is like a slow moving reservoir with zero slope. High capacity pumps can assist. Pumps don't need the head so they can even be position anywhere within the Ala Wai Canal.
- What do the pumps at the end of Ala Wai Canal do? Low volume pumps into the ground? That doesn't make any sense. High capacity emergency pumps should be put in place to pump to a spillway through Kapiolani Park or directly off shore to the ocean.
- The same concept can be used adjacent to Fort DeRussey. Pump to an emergency spillway or out to the ocean. Other locations to consider would be adjacent to the major watershed intakes alone the Ala Wai Canal.
- Is the only alternative for several detention basins in the upper areas of Tantalus, Manoa, and Palolo absolutely necessary?
- Are there better site locations or alternatives that would comparable retention of storm water?
- It seems as though the use of public lands first was too quickly passed over and the small private landowners did not have a representative in the Project Delivery Team or have access to the Technical Advisory Team which placed the private landowners at a severe disadvantage compared to other stakeholders who were invited at the onset of the project.
- Your guidelines specifically states that you should get early feedback from the private landowner stakeholder in Section 2.1. The private landowner stakeholders were supposed to be invited to the "Open House Meetings" and the EIS process should be deemed not in compliance with HRS Chapter 343 and NEPA.
- It should not be assumed that a Neighborhood Board, a Condo Association, a Community Association will properly represent the individual property owners who are directly affected by the Ala Wai Canal Project. Many of these other Stakeholders are government agencies with paid staff members to lookout for only their personal agencies interest. Most will not even read or take the time to study the technical data, results, and designs. The Catfish had better representation than the private landowners.
- Developable residential properties are very scarce in town and even more so in Manoa Valley and Palolo Valley. Why reduce the development potential of providing much needed housing to these areas? Let alone condemn properties with homes on it and directly affect the housing inventory.
- Private land and values can substantially change in value and use from now to the time the project receives all the necessary approvals and funding? This can be a major setback in the projects schedule or budgeting.
- Property values in many areas of Oahu have more than doubled in 10 years. Your economic assessment is outdated and several year old and based on property tax assessment which in many cases could be way low from an appraisal or best use of the land or income valuation based on rental income potential.

- Basically, the Ala Wai Canal Project has less control of what a private landowner does until you secure the property unless an agreement is reached prior to condemnation whereas very little will change on government and public lands.
- Considering that the composition of the project could change, or different alternatives selected, or the project not receive funding for several years. It is detrimental, highly restrictive, ads risk, and limits a private landowner's rights and free uses of their land. For example, upon your designating the use on an individual's property the appreciation in value will come to a halt. The property becomes less valuable and unsellable. The property is less liquid and if for some reason the owner needed to sell, he would have to disclose the situation, and who on earth would want to buy a property that is in limbo.
- A better solutions would be to look for a site further up the watershed or stream. Some of these areas have hiking trails that are difficult to access and have very limited parking. Access to public lands for public recreational uses have a very high value and are popular if done the right way. Detention basins don't have to be a large earthen dam. The can be thinner concrete walls with moss rock facing. They can be integrated into a trail that meanders through a winding stream. Leave the natural stream and don't excavate for increased volume. It destroys the natural beauty of the streams so what if you have to put a series of smaller detention basins, if done right it can be a thing of beauty and would provide access to areas otherwise unaccessable. Other options would be to incorporate the detention area in to a parking lot but disguised in such a way that no one can tell. Access is important to our public lands and better access also permits better maintenance and upkeep with trash receptacles to keep the place clean.
- A lot of our playground areas and public park spaces are unusable because of the grading. These unusable spaces have been like that for all my life and will never change. But this can be an opportunity to improve and expand a public playground or park facility again if done correctly.

In short, I believe there is a need for improved storm protection for the Ala Wai Canal Project. I favor eliminating the use of all private properties unless the current ownership is will to partner with the project. The PDT should work with owners of potential sites at the very earliest stages. I favor coordinating this project and integrating it with not only flood protection but use it as an avenue for better access to public lands and hiking trails, improvement to public parks, public district parks, and school lands. I'm in favor of eliminating all controversial and unpopular designs and focus on less impacted parties. For example, focus on the Ala Wai Canal wall and the Ala Wai Golf Course and other flood protections at the lower extreme of the watershed. Stay within the Ala Wai Channel area. Ala Wai District Park, Kaimuki High School field. Fort DeRussy, Kapiolani Park. Fix Woodland bridge and East Manoa bridge to make sure UH is protected from a 100-year plus storm. I think the project the way it stands is too complicated and has too many elements that will only slow down the project and/or kill it. Good for job security for a bunch of people and consultants but does little to help solve the problem and highest economical risk to Waikiki and UH. I hope to add and expand to my comments and concerns. This letter was put together on short notice and rush so my be incomplete and in some cases unverified. Thank you for your time and consideration. Should you have any questions, you can reach me on my cel at 728-0759 or email me at dwatase@hotmail.com.

Aloha, Dave Watase



Dave and Nola Watase
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September 28, 2015

Suzanne D. Case, Chairperson
State of Hawaii, DLNR
P.O. Box 621
Honolulu, HI 96809

Re: Ala Wai Canal Project

Dear Ms. Case,

We are in receipt of your letter date stamped August 14, 2015 regarding the above project and informing us for the first time that our privately owned property TMK 34016059, located at 2532 Waiomao Road, Honolulu, HI 96816 is a part of the Ala Wai Canal Flood Risk Management Feasibility Study and that the US Army Corps of Engineers are recommending the purchase of our property for the construction of the Waiomao Detention Basin.

We received your certified letter in the week of September 14, 2015 only a few weeks prior to your September 30, 2015 public review meeting which gives us very little time to digest the thousands of pages of technical documents surrounding this massive $200 million project. It is very stressful and disturbing to us personally to see our privately owned property targeted as a site for a detention basin and included in several voluminous reports with schematic drawings and feasibility studies.

Your letter states that you look forward to partnering with us but in reality your letter is not good news for any private landowner. The fact that you would even consider using someone else's property without even giving them advance notice and an opportunity to express their position and concerns prior to site selections demonstrates a lack of respect for our individual rights and is flat out distasteful. The cutoff date for public input of October 7, 2015 is relatively short considering your experts have taken years to put this approximately $200 million project together up until this point.

My wife and I are AGAINST your plan to purchase our property and use it for a detention basin. This property was purchased with the intent to CPR it for our children so that they each could build a beautiful home overlooking the tranquil Waiomao stream untouched with its natural beauty and a 1000' lush green mountain in preservation as the backdrop. Two of our 3 children will be graduating from college and graduate school next year. Our children are well aware of the beauty and development potential of our property. It is our lifetime investment and dream to be able to provide our children with an incentive to stay in Hawaii, to stay close to family, and to be able to afford a home with a peaceful country atmosphere in Palolo Valley in town.

Very truly yours,

Dave and Nola Watase

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Dave and Nola Watase
1537 Ala Aoloa Loop
Honolulu, Hawaii 96819

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding public outreach
- Alternative Plan Selection
- Uncertainties related to the technical analysis

Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. A public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders, neighborhood commissions and property owners directly affected by the recommended plan. No further public meetings are planned during the feasibility phase of the FEIS.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints. Criteria considered is provided in Table 2 which includes the availability of land, the degree to which people or existing uses would be displaced and the consistency with applicable laws and regulations. Siting of

detention basins in particular is generally focused on stream reaches where natural stream beds and banks exist to maximize the effectiveness and efficiency of the structures.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature, including any necessary amendments for public safety. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

The process of acquiring property for a project is highly regulated. The Fifth Amendment of the Constitution states that private property shall not be taken for public use without just compensation. To address what constitutes just compensation, Congress passed the Uniform Relocation Assistance and

Real Property Acquisition Policies Act of 1970 (“Uniform Act”). The non-federal sponsors will be required to follow the Uniform Act in acquiring any lands. USACE will work with the non-Federal sponsors to ensure the correct process and procedures are adhered to throughout the process.

Generally speaking the value of land acquired is the fair market value of the property. The fair market value includes many aspects of the property in question. Earning potential is one of those aspects to be addressed in developing a fair market value. Regardless of the value determined, Public Law 91-646 outlines the requirements that must be followed to ensure a homeowner/landowner is compensated justly.

Part of the process will be an appraisal, which determines the fair market value of the property. Fair market value is an estimate of the market value of a property based upon what a knowledgeable, willing, and unpressured buyer would pay. The appraisal will attempt to take all objective property features into account when determining fair market value. The fair market value is determined without consideration for the effect the project has had on the value of the land. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

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CONSERVATION AND RESOURCES ENFORCEMENT
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STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Dave and Ms. Nola Watase
1537 Ala Aoloa Loop
Honolulu, Hawaii 96819

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). Subsequently, pursuant to a memorandum of agreement between the City and County of Honolulu signed September 19, 2019, the State designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

We understand that you and your organization "Stop Ala Wai" have been very active in the recent community outreach and engagements. For that reason, you may have already received some of this information, however, we are encouraged by your participation and hope that it continues.

This letter will provide additional information on the following:

A. Specific Concerns raised in your letter dated November 9, 2015 to Chair, DLNR
B. Specific Concerns raised in your letter dated November 2, 2015 to Chair, DLNR
C. Specific Concerns raised in your letter dated October 30, 2015 to Chair, DLNR
D. Specific Concerns raised in your letter dated October 22, 2015 to Chair, DLNR
E. Specific Concerns raised in your letter dated October 20, 2015 to Chair, DLNR
F. Specific Concerns raised in your letter dated September 30, 2015 to Chair, DLNR
G. Specific Concerns raised in your letter dated September 28, 2015 to Chair, DLNR

A. Specific Concerns raised in your letter dated November 9, 2015 to Chair, DLNR:

1. *We have written several letters over the past few weeks stating our objection to the process in which our privately-owned property located at 2532 Waiomao Road, Honolulu, Hawaii 96816, TMK 34016059 was selected and incorporated into the Ala Wai Canal Project's Draft FS/EIS.*

RESPONSE: Thank you for your interest in this project and participation in the process. This process does not end with the feasibility study; it will continue during the design and construction phase and we encourage your continued feedback and participation. Community engagement is a critical part of making this a successful project.

2. *We believe the short cutoff date given for our feedback including your extension to November 9, 2015 is unfair and is a severe handicap to us. It is not commensurate to the volume of documents that you are asking us and the general public to review and provide comment.*

RESPONSE: We recognize the volume of documents and complexity of information contained in the DFEIS. To address this, we extended the statutory 45-day review period for an additional 33 days, starting on August 23, 2015 and ending on November 9, 2015 from the original deadline of October 7, 2015.

We will continue to evaluate alternative designs and there will be ongoing opportunities for public input. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at the time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

3. *We also believe that your methods of notices to inform the general public and stakeholders throughout the process was inadequate and/or selective and done with prejudice and neglected those stakeholders most greatly affected by the Ala Wai Canal Project. Included in those who we believe should have been notified were all adjacent properties, private landowners, stakeholders, and those downstream of any detention basin which could overtop in the event of a storm greater than the designed capacity of the detention basin and would put at risk the lives of those downstream of your planned alternatives.*

RESPONSE: As shared with you in our 2017 response letter, "Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. A public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders, neighborhood commissions and property owners directly affected by the recommended plan. No further public meetings are planned during the feasibility phase of the FEIS."

Land use and real estate impacts to privately owned properties remains an unresolved issue in this HEPA FFEIS. Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. A more detailed real estate plan will be developed in the Design Plan after the final design of System Features are complete and evaluated for environmental and community impacts. If there are new environmental impacts supplemental documentation will be developed commensurate with the level of impacts. Community outreach and engagement will serve a critical role in the design of a final system of features.

4. *In general, we have many questions regarding the technical side of the Ala Wai Canal Project's FS/EIS but were not given access to question and get answers from the project's consultants, Project Development Team, DLNR and the USACE.*

RESPONSE: The statutory 45-day public review period for this DFEIS occurred between August 23, 2015 and October 7, 2015, and was later extended to end on November 9, 2015. We will continue to evaluate alternative designs and there will be ongoing opportunities for public input. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at the time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be

developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

5. *In all of our letters including this one, we've really only had time to generalize many of our concerns, support, ideas, and suggestions. Our letters were rapidly put together and may have a few words out of place, a question that doesn't quite make sense, typos, and other grammatical mistakes. However, we urge you not to just discount the questions, ideas, or suggestions and we hope that you will contact us for further explanation or correction rather than simply dismissing the area of question.*

RESPONSE: We acknowledge your comments may be generalized, have typos, or other grammatical mistakes.

Regarding alternative suggestions and ideas, we will continue to evaluate alternative designs and community input will play a vital role. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

6. *In your Introduction 1.4 Purpose and Need, it states that the "Ala Wai has the capacity to contain about a 20- to 10-percent annual chance exceedance (ACE) flood before over topping the banks." This is the equivalent to a 5-year and 10-year storm. The question that I have is that I'm 56 years old and if this were the in fact the case and your assessment accurate and correct, I would think that I would have seen a lot more overtopping of the Ala Wai Canal and seen a lot more economical damage done to Waikiki. I would think that I might have even experienced a 50-year flood by now with catastrophic flooding and damage throughout the whole watershed and not just the Waikiki area. But as far as I know it's been relatively nothing with the exception of your mention of the November 1965 and December 1967 storms and the passage of Hurricane Iniki in 1992.*

RESPONSE: As shared with you in our 2017 response letter, “Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the

economic analysis completed for the study is included in Appendix B of the final FEIS. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase."

To further elaborate on the overtopping of the canal, the mountain, or mauka side of the canal is much lower than the ocean, or makai side of the canal. Ala Wai Elementary staff and others in the community have observed overtopping of the canal due to king tide conditions or frequent rains. While it may not be the full length of the canal or on both sides of the canal, more frequent overtopping is occurring.

7. *Section 1.4 references the October 2004 storm that flooded Manoa Valley "estimated to be a 4percent chance of occurring in any single year". This means that the storm was a 25-year storm which is far greater than the "20- to 10-percent" (5-year to 10-year) storm that in the paragraph before you say would overtop Waikiki. So, how bad was the economic damage done by the October 2004 storm due to the Ala Wai Canal overtopping?*

RESPONSE: Section 1.4 in Appendix B of the HEPA FFEIS describes the historical damages of past flood events. Specific to your question about *economic damage done by the October 2004 storm due to the Ala Wai Canal overtopping,* the 3rd bullet point in Section 1.4 states, "The historical flood record here does not include any past floods that would be comparable in magnitude to current estimates of a 0.01 ACE (or larger) flood. Even the catastrophic rain event in the Manoa Valley that resulted in the 2004 flood is believed to have been only a 0.2 ACE event. No flood events of even moderate magnitude have occurred in the Ala Wai subbasin and affected the Waikiki area."

8. *While it doesn't quite make any sense to us, hydraulically speaking, hurricanes and related storms are not considered meteorological event and are not supposed to be considered as a basis for justifying this project in a similar manner if an earthquake generated a tsunami or surge that caused the Ala Wai Canal to overtop and cause economical damage. Yet, your report references this storm and uses it as a basis for support and is gross misrepresentation and use of facts.*

RESPONSE: The project assumes a direct relationship between hurricanes and rainfall intensity, as described in Section 5.2 in Appendix A-3 of the HEPA FFEIS describes hurricanes and its associated impacts to rainfall, "Because hurricanes are rare in Hawaii, the current hydrological and hydraulic studies for the Ala Wai Watershed project assume no coincidence between hurricanes and the high rainfall intensity flood producing storm systems which are more common. This assumption will also be part of the future without-project condition…. Hurricanes have increased the high tides recorded at tide gages so with sea-level rise, the potential exists that the canal can overtop and cause flooding from hurricanes near Oahu."

9. *Section 1.4 refers to the loss of life claim "including two known deaths (associated with flooding in December 1918 and December 1950)." We question to what extent theses deaths are truly flood related and would like for you to provide the supporting documentation and details of these deaths including the names of the deceased, any autopsy reports and other witness statements to back up the claim.*

RESPONSE: It is not in the scope of this HEPA FFEIS to provide autopsy reports for deaths that occurred in 1918 and 1950. Additional reference to the two drowning deaths can be found in FEMA Flood Insurance Study Number 15003CV001C.

10. *Section 1.4 states that "multiple past flood events have been documented within the watershed over the course of the past century". We believe you should include a summary and list of every major storm related event over the past century and documented rainfall, storm rating, stream flow rates, the height elevation of the Ala Wai Canal, and the outflow rate at the Ala Wai Harbor, and the amount of economic or financial damage sustained within the watershed from each storm.*

RESPONSE: Economic damages followed U.S. Army Corp of Engineers' policies which are detailed in Appendix B; hydrology and hydraulics analysis detailed in Appendix A of this HEPA FFEIS.

11. *Section 2.1.1 references the March 2006 storm in which 40 days of consistent rainfall feel within the watershed. It states that "although none of the storm events were very large, the consistent rain resulted in flooding in the Makiki and Moilili neighborhoods." We believe this statement is a clear example of the invalidity of the hydraulic modeling because the collected data does not predict, compute, or correlate to the flood and damage done to the Makiki and Moilili neighborhoods. The reason is that the modeling formulas do not take into account the level of rainfall ground saturation and probability factors for multiple sequential storms and no measurements are taken for the variable of ground saturation which will affect the ground absorption and runoff rates. This places an unknown variable in all of your storms used to calibrate your modeling rendering all of the results deficient.*

RESPONSE: Sections 3.7 and 4.4 in Appendix A of the HEPA FFEIS describes the methodology behind using the March 2006 storm for calibrating the HEC-HMS model.

12. *Section 2.1.1 states that the "stream capacities are diminished due to debris and sedimentation." We would like to know to what degree this diminishes the capacity of the Ala Wai Canal from the rated 5-year to 10-year storm capacity. If this was truly the case as you are referencing and as we know sedimentation and debris is in the Ala Wai Canal shouldn't the canal be overtopping more often or every 5-years or less?*

RESPONSE: Section 3.1 of Appendix A-2 details Manning's n-values (roughness coefficients) to account for sediment and debris buildup in the streams.

Section 4.3 of Appendix A-2 describes canal capacity based on the model results. Specific to your comment on overtopping of the canal, the mountain, or mauka side of the canal is much lower than the ocean, or makai side of the canal. Ala Wai Elementary staff and others in the community have observed overtopping of the canal due to king tide conditions or frequent rains. While it may not be the full length of the canal or on both sides of the canal, more frequent overtopping is occurring.

13. *Section 2.2.1 states that the "flooding may be exacerbated by climate change and associated projected increases in sea level rise." We believe this statement is hearsay and in the long course of time unproven. Just recently on the internet stated that NASA believes ice is being added in the Antarctic. You can Google it.*

RESPONSE: Please refer to Appendix A3, Hydrologic and Hydraulic Climate Change Scenarios within the proposed HEPA FFEIS for an evaluation of climate change and flooding scenarios within the proposed action. The amount of ice in the Antarctic is outside the scope of this HEPA FFEIS.

14. *Section 2.2.1 states "Hurricanes are not the same as the meteorological events that can bring intense flood-producing rainfall, which usually occur during the wet season (October to April). Similarly, tsunamis are not expected to be coincident with a major storm resulting in riverine flooding. Given the low probability of these events occurring at the same time, it was decided that potential storm surge would not be included as part of the hydraulic modeling." This statement based on a false premise and the selected course of action should be rendered incomplete. We can surmise that this course of action was selected because of the USACE policy to handle only riverine flooding but as we all know especially in Hawaii and unlike many parts on the mainland, Hawaii is subjected to a lot of storms that are associated Hurricanes. We do not believe you can separate the data and yet consider your modeling complete and accurate.*

RESPONSE: The HEPA FFEIS considers rainfall associated with a hurricane and rainfall associated with the typical wet season low pressure system in the hydraulic and hydrology models. What the study does not consider is the coincidence that a hurricane or tsunami would occur in conjunction with a low pressure system rainfall event like those that occur commonly between October to April. Additionally, the underlined quote in your comment leaves out the information that can be found in Appendix A3, Section 5.2. A description of Ala Wai Yacht Harbor and its associated breakwaters and revetments will attenuate storm surge. However, also in that section reference is made to a Bretschneider and others study that can be used for planning purposes outside of this proposed HEPA FFEIS.

15. *We have a lot of questions and issues with your Final Hydrology Report dated June 2, 2015. We do not believe that it is proper for you to use a total of five different methods which use different methodologies to estimate the peak flow discharges throughout the Ala Wai Canal because they are inconsistent and missing data.*

RESPONSE: The project modeling underwent several reviews and checks and balances within each phase. Specific to the proposed action in this HEPA FFEIS, the modeling was developed by the Honolulu District, reviewed by the Pacific Ocean Division, reviewed by the US Army Corps of Engineers Enterprise, as well as an independent external review from experts not associated with the Corps of Engineers.

During the design phase, updated modeling, engineering data, and community input will be used to refine or change the system features. That data and modeling will then go through a similar review exercise to certify the model for use in design and construction.

If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

16. *We don't believe that it is proper to use methodologies in this report without a clear description, application, and showing all supporting data and computations for each methodology.*

RESPONSE: There is a detailed explanation of the modeling inputs and methodologies in the Proposed HEPA FFEIS Appendix A-1, Executive Summary and Chapter 1. The methodologies used were reviewed as described in response 15 above and deemed to be in accordance with USACE Engineering Regulation 110-2-1619 (1996) which is the standard for USACE to follow.

17. *Additionally, it the variance between methodologies should be explained and reason given for use.*

RESPONSE: Chapter 5 of Appendix A-1 of this Proposed HEPA FFEIS provides a detailed explanation of hydrologic modeling results. Those results were reviewed and determined to be in accordance with the USACE Engineering Regulation 110-2-1619.

18. *We don't think that it is proper to just average several methodologies together to come out with a more universal numbers or results. In some cases, all 5 methodologies are averaged together and in other cases only a single methodology is used. Different methodologies may use different sets of data collected, may not use the same data sites, and may selectively apply the data. This can lead to an off balance in data collection where certain sites may be counted several times thus receiving more strength in a weighted average. The differences between methodologies have variances as high as 76% for the same flows.*

RESPONSE: The modeling was reviewed as described in response 15 above and determined to be in accordance with the USACE Engineering Regulation 110-2-1619.

19. *We believe the Thiessen Polygons diagrams are inaccurate because around the perimeter of the Ala Wai Watershed because no rain gauges are located outside of the watershed.*

RESPONSE: The project modeling underwent several reviews and checks and balances within each phase. Specific to the proposed action in this HEPA FFEIS, the modeling was developed by the Honolulu District, reviewed by the Pacific Ocean Division, reviewed by the US Army Corps of Engineers Enterprise, as well as an independent external review from experts not associated with the Corps of Engineers.

During the design phase, updated modeling, engineering data, and community input will be used to refine or change the system features. That data and modeling will then go through a similar review exercise to certify the model for use in design and construction.

If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

20. *We believe the description, layout, maps, pictures, of each rainfall gauge and stream flow gauge should be shown. The equipment make, model, year, accuracy, calibration and certification dates listed for each rainfall gauge and stream flow gauge.*

RESPONSE: The description and location of each gauge used can be found in Chapter 3, Sections 3.1-3.3 of Appendix A1, in this proposed HEPA FFEIS. The information was provided by the USGS, National Climatic Data Center and Honolulu Board of Water Supply, as credited in section 1.4 of Appendix A1 of this proposed HEPA FFEIS.

21. *Are there any protections in place to insure that the data is accurate. There are instances where you toss out flow reading because they don't add up. This should be an indicator that the stream flow gauge may be inaccurate or malfunctioning or be calibrated incorrectly as stated in Section 4.12*

"At USGS Gaging Station 16247000, there are 32 effective annual peaks available to perform the statistical frequency analysis. The continuous recorded annual peaks are from 1953 to 1979 and from 2003 to 2007, but no data is available between 1980 and 2002. The recorded annual peaks from 2003 to 2007 seem incorrect for the following two reasons.
(]) On October 30, 2004, the recorded peak at this gage was 776 cfs. The tributary stream gage upstream (Pukele) recorded a 753 cfs peak, and another tributary (Waiomao Stream) received the same rain as Pukele Stream received. At USGS gage 16247100 downstream, the recorded peak was 9380 cfs and the Manoa Stream at Kanewai gage recorded a peak at 5860 cfs. Thus, the peak flow at the Palaia gage should be in a range of] 500 to 3000 cfs rather than the 776 recorded because it received similar rainfall as Manoa.
(2) The peak for March 31. 2006 storm at Palolo Stream Gage was 1390 cfs. at downstream gage USGS 16247100, the recorded peak was 9320 cfs, the rainfall was uniformly distributed into the study area, the Palaia valley should have generated a range 2000 to 3000 c(s peak flow. Since there was possible channel conditions changed during the last 50 years, the data in this gage may be lower than actual stream flows, as a result, the HEC-SSP and FEMA analysis (used 25-year annual peaks) got lower peak discharges."

RESPONSE: Yes, during the review process, several hydraulic engineers review the documents outside of the Honolulu District. Those include experts as assigned by the Flood Risk Management Center of Expertise, as well as hydraulic engineers outside of the Corps of Engineers during an independent external peer review. These two particular statements were reviewed specifically, and determined to be appropriate to leave in the HEPA FFEIS.

22. *[diagram: Figure 1. Floodplain Outlines for the 20-and 0.2-Percent Chance]*
The diagram above is an example of many that we question that pertain to the flood coverage. The area shaded in pink signifies a 5-year storm. I don't recall ever seeing that kind of flooding in the past 50 years. Apparently, it should be happening every 5-years or so.

RESPONSE: We understand your recollection may be different than modeling results. The idea of associating a return "year" is inaccurate as the return interval should be considered a probability not a "year". The accurate representation of the data is a 5% annual chance of exceedance or an exceedance probability. 5% out of 100% of the time there is a probability of this size an event occurring.

23. *We sense that all the storm ratings and coverages are overrated and exaggerated. Should you have any questions, please don't hesitate to contact us via email or call us on our cel. listed above.*

RESPONSE: We understand that you disagree with the scientific data provided in this proposed HEPA FFEIS. It was reviewed by experts at several levels within the Corps of Engineers, the State of Hawaii, as well as independent experts outside the government.

B. Specific Concerns raised in your letter dated November 2, 2015 to Chair, DLNR

1. *As previously stated in my letter dated September 28, 2015, we are totally against your purchasing of our privately owned, residentially zoned property, TMK 34016059, located at 2532 Waiomao Road in Palolo Valley for the construction of the Waiomao Detention Basin which is a part of the $173 million Ala Wai Canal Project.*

RESPONSE: Residential property and land use impact remains an unresolved issue in the HEPA FFEIS document. As was mentioned in the previous response sent in 2017, property acquisition is the responsibility of the non-Federal Sponsor and must be done following all federal and state laws. During the design phase of the project a final real estate acquisition plan will be developed based on a more advanced design. In addition, any changes to the design will be evaluated for environmental impacts to include residential property owners and addressed at the appropriate level in accordance with federal and state laws.

2. *The Draft FS/EIS Appendix G-Public Involvement V.04 provides guidelines to gain public feedback on the proposed alternatives in order to satisfy the requirements of HRS Chapter 343 and NEPA. These guidelines were designed to provide opportunities to raise issues and receive early*

feedback from as early as June 2013. The document specifically mentions as participants in "Section 2 Public Involvement", "2.1 Individual Interviews and Small Group Meetings" for the purpose of getting early feedback on specific flood reduction measures, Participants to be included are "Landowners and community leaders". We believe that we fit this category and in addition are qualified "primary stakeholders" in the Ala Wai Canal Project who were omitted from the process.

RESPONSE: You are a stakeholder identified in Appendix G1 as a landowner. You were not intentionally omitted from the process, you purchased your property in October 2013 and received a notification of the public meeting and DFEIS once you were identified as a landowner in the project area.

3. *The Draft FS/EIS study was authorized by Section 209 of the Federal Flood Control Act of 1962. We don't believe Section 209 authorizes implementation of the proposed Ala Wai Canal Project.*

RESPONSE: We concur. Section 209 authorizes the study of the Ala Wai Canal project. A separate congressional authorization will be required to implement the project as was proposed in the NEPA FFEIS.

4. *The Draft FS/EIS study comes up a benefit/cost ratio of 2.38. This benefit/cost ratio was calculated by considering only flood damage reduction and mitigation. We believe that this approach is not comprehensive and is less than satisfactory and ignores the potential costs/benefits associated with the development and implementation of a Total Maximum Daily Load plan for the Ala Wai Canal, as required by Section 303 of the US Clean Water Act of 1972.*

RESPONSE: The benefit to cost ratio was developed by analyzing national economic benefits as defined by Engineering Regulation 1105-2-100, the Corps Planning Guidance Notebook. National Economic Benefits are limited to evaluating certain benefits, although opportunities, regional benefits, and other social effects such as employment opportunities are anecdotally evaluated in Appendix B of this proposed HEPA FFEIS.

Economic evaluation was based off the project objective of the study, which was flood risk management. However, opportunities and ancillary benefits such as reduction of sediment loads can be anecdotally discussed outside the study objectives for economic evaluation. This project is required to comply with the Clean Water Act and while an initial application was submitted during the feasibility phase, final coordination and application will occur at the end of a design phase. The total project cost does include compliance with the Clean Water Act. Therefore, a detailed analysis of benefits would only increase the benefit-to-cost ratio if it were authorized to do so.

5. *At the public hearing held on September 30, 2015 we questioned the late notice given us (a few weeks) and the short cutoff date for public feedback given to us as affected landowners and primary stakeholders in the Ala Wai Canal Project.*

RESPONSE: The public notice was extended to November 9, 2015 to provide additional time for review and public comment. The total response period was from August 23, 2015 to November 9, 2015.

6. *After listening to presentation and testimonies at the September 30, 2015 public hearing at Washington Middle School, we couldn't help but wonder to what degree the DLNR and USACE has really gone out to seek the input and opinions of the landowners adjacent to the proposed alternatives of the Ala Wai Canal Project.*

It seems as though the large landowners like the City and County of Honolulu, and State of Hawaii received special treatment and were invited and participated in these meeting from a very early stage in the process which dates back over two years ago whereas some private landowners whose properties are to be purchased and taken from them in part or in whole where totally excluded from the process and only recently notified and made aware of the website and that their properties are included in the Draft FS/EIS with resources already spent on doing 10% Engineering on their properties, schematics, aerial pictures, value assessments and other studies performed and incorporated into the report without even a phone call, a letter, an email, or a knock on the door.

RESPONSE: In addition to the letters sent directly to landowners, public notices and press releases; several engagements were held with neighborhood boards and elected officials to discuss the project. These engagements and attendees are identified in the Appendix G of this proposed HEPA FFEIS.

7. *The small private landowners were not invited to your "Open House Meetings" which states "All stakeholders would be invited to attend".*

RESPONSE: This is not accurate. A DLNR Press Release from us on May 8, 2014 announced the two Open House Meetings that the public was invited to attend and learn about the project.

8. *"Section 2.6 Project Website" was developed "to provide the larger public with background information and materials to keep them apprised of the project progress, next steps, and how they can provide input" but again, we were not notified or aware of this website until a few weeks ago which is unfair.*

RESPONSE: The website information was also made available on the Open House Flier. We apologize that you were not made aware of the website until later, however, we are pleased to know that you were able to find the website.

9. *"Section 2.7 Email Updates" was designed "to an alert key stakeholders and interested parties of the project milestones" but again we were excluded from these updates and processes.*

RESPONSE: You were not intentionally excluded, this project was announced in several media outlets, as well as through our public information office and finally, through the mail when you were identified of the draft study and public meeting.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features. You will be added to the project mailing list and email distribution, informing you of community outreach and engagement opportunities.

10. *In reviewing hundreds of pages of minutes, testimonies, and summaries of several of these public hearing and open house meetings we couldn't find anyone who represented, spoke on our behalf our feeling, concerns, issues, and interests from the viewpoint of the small private landowners (key stakeholders) who are at risk of losing their privately owned property to this project.*

RESPONSE: We apologize for your feeling of being left out, however, we met several times with elected officials at both the State and the City levels in addition to Neighborhood Boards. These engagements are listed in the Appendix G of this HEPA FFEIS.

11. *We also don't believe that the DLNR and USACE have faithfully and earnestly gone out to make contact with those landowners who are adjacent to the proposed alternative flood mitigation measures. We believe it is a short cut to assume that the community associations and neighborhood board members will represent us or our interests and concerns unless they have each walked house to house and made an attempt to individually hear every affected property owner's concerns and agreed to represent their interests and to forward the affected property owners concerns to the PDT, DLNR, and USACE.*

RESPONSE: Your property on Waiomao Road is a vacant lot, had a neighborhood board member gone to your property they would not have been able to speak with you. We, as well as the Corps went to great efforts as outlined in the Public Involvement Appendix to make contact with the community through 44 engagements between 2012 and 2017.

12. *It is vitally important not only with providing an opportunity for feedback but equally important that you invite and hear voices from the right people. For example, we wouldn't be surprised if you walk along the perimeter of the Kanewai Detention Basin that none of the adjacent homeowners even have a clue about the Ala Wai Canal project and what you are proposing next to their backyards. How many teachers, students, and parent at Hokulani School are aware of your*

project and of the Kanewai Detention Basin alternative? My guess is zero. Recently, we went down to Hokulani School to see if they were aware of the detention basin proposed for Kanewai Park. None of the staff members were aware of the Ala Wai Canal Project and while they agreed it would affect their access to the park area used for their playground, none of them were interested in taking any action and said that it was the DOE's responsibility to respond to concerns like these.

RESPONSE: The Hawaii Department of Education was part of the project and provided comments to which we responded. The Community engagement, outreach, and education is not finished with this HEPA FFEIS. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

13. *Other schools such as Iolani School and the Ala Wai Elementary School are also affected by the Ala Wai Canal Project and we question to what extent they were given the opportunity to participate and provide feedback.*

RESPONSE: Iolani School was given an opportunity to provide comments and concerns on the project. They also provided comments to the DFEIS and those responses will be available for reading in the HEPA FFEIS once posted to OEQC.

14. *We believe it is the DLNR and USACE obligation to find or at least make a strong attempt to find people who care enough so that you can get honest and accurate opinions and not just wash everything over by simply going through the motions and procedures. It is not enough just to print a miniature notice buried in some obscure comer of the paper amongst hundreds of ads in the newspaper which no one subscribed to anymore and say we gave proper notice.*

RESPONSE: We concur that it is our responsibility along with USACE to communicate with the community and share this information as part of the HEPA FFEIS and Hawaii EPA process. The public involvement strategy, plan, results of execution can be found in detail within Appendix G of this HEPA FFEIS.

15. *As we all know, most of these positions for community association and neighborhood boards are voluntary and do not require any qualifications. Most of these volunteers have their own jobs, their own families that must come first even though they are busy community minded and serving individuals with good intentions. They may only represent the overall good of the whole community and not necessarily care about how a project like this would impact a single property owner. In their mind "Not in My Backyard" may not apply unless the backyard was the whole community. They may not be qualified to understand the technical issues that are presented in the Draft FS/EIS, they may not even read through the thousands of pages of document and may not even give it a second of thought.*

RESPONSE: We concur that many people in the community are not technically qualified to understand the engineering data, modeling, or environmental impacts of both, future with and future without project conditions. We also concur that many individuals who serve on volunteer boards may be concerned with the overall impact on the community and not necessarily individualized impact. We also agree that volunteer board members may not be qualified to understand the technical issues represented by this project. For these reasons the project team used engineering data, historical data, scientific data, environmental data, as well as stakeholder engagements to identify a recommended plan and evaluate the environmental impacts of that plan both overall and with regards to individualized impacts within this HEPA FFEIS.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

16. *Some Neighborhood Board members may have hidden agendas and sole purpose on the Board to push for conservation and environments issues and careless about anything else. The person who wants a bike path, more trees planted along any improvements, doesn't have to spend hours upon hours researching all the FS/EIS documents ... they only care about one thing. We simply can't imagine any Neighborhood Board Member taking enough interest in this project or being able to give us fair representation or be able to express our true feelings and concerns.*

RESPONSE: If we were to place 10 people in a room and ask them for a solution to reduce flood risk, we will likely get several different answers. For these reasons the project team used engineering data, historical data, scientific data, environmental data, as well as stakeholder engagements to identify a recommended plan and evaluate the environmental impacts of that plan within this HEPA FFEIS.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

17. *There are other stakeholders who are paid employees of various agencies, groups, and organizations whose job it is to make sure things like the Oopu (catfish) and opae (shrimp) are properly protected and well taken care of. Many of these organizations were invited to participate at the onset of this project receiving special treatment. It is well documented in the Draft FS/EIS though the display of mitigation measures taken by the DLNR and USACE in response to the concerns raised by these agencies, groups, and organizations.*

RESPONSE: Individual experts, as well as agencies who specialize in environmental impacts, cultural impacts, and archaeological impacts were coordinated with according to federal and state laws, such as the Endangered Species Act, as one example. They were not given special treatment.

18. *The whole idea of condemnation and eminent domain is scary to us. We think we understand the process and reasoning behind it or at least what the good intent supposed to be as by design but we've heard it really doesn't matter and the powers of government can do what they want and need little justification legally as long as there is a public need. Our ignorance might be our greatest fear so we are searching and scrambling to try to put up our best defense and to buy us time to understand.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. A final real estate and land use plan will be developed based on the updated data. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase.

19. *There are several speakers who spoke at the Public Hearing held at Washington Middle School on September 30, 2015 that stick out in our minds whose comments might pertain to our property that we feel are important to expand upon.*

There was a speaker that said to leave Palolo alone and not to push the Ala Wai Canal's problem upstream and to leave the stream as natural as possible. This statement has a lot of merit because Palolo existed way before Waikiki became such a valuable entity justifying a $178 million in cost protection.

RESPONSE: Thank you for expressing your concerns, everyone who commented on the proposed action within this HEPA FFEIS received a response letter similar to this one to address their comments, questions and concerns.

20. *We believe there are better options near the Ala Wai Canal that should be considered first to solve and protect Waikiki before looking upside to the watershed.*

RESPONSE: The plan that is within the Corps of Engineers authority demonstrates economic justification and is environmentally acceptable according to federal and state laws. It may not be the only plan that would reduce risk, however, it is the recommended plan within this HEPA FFEIS.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

21. *We don't believe the detention basins and other Palolo alternatives would be economically justifiable if evaluated as a standalone sub-watershed project.*

RESPONSE: The detention basins are not evaluated as standalone sub-watershed projects; they are evaluated as an interdependent system.

22. *This statement is also supported by your community consultant's statement from Ms. Dwynn Kamai who" recalled about the waterways of Palolo was that they never flooded or caused damage to life and/or property that she knows of" and this was she goes back to when there was a 9-hole golf course in Palolo Valley before World War II.*

RESPONSE: The detention basins are not evaluated as standalone sub-watershed projects; they are evaluated as an interdependent system to reduce flood risk in the entire watershed community.

23. *The dredged area will destroy almost 450 feet of the Waiomao Stream and leave behind a bare rock quarry looking pit in its place. To put this in perspective, we are talking about destroying a length of one and a half football fields of Waiomao Stream.*

RESPONSE: There is no destruction of the stream; the stream will continue to flow and mitigation efforts to ensure this are included in the recommended plan within this HEPA FFEIS.

24. *Prof. Cashman is adamantly opposed to inputting more concrete or combs to mitigate the flooding problems. We believe Prof. Cashman's statements have merit because it is well documented in on the Ala Wai Canal website that the 2004 Flood that did nearly $80 million of damage primarily to the UH Manoa was a result of blockage from debris at the East Manoa and Woodlawn bridges. The Woodlawn bridge opening was halfway full of sediment from its original design and if it had been properly maintained and free of debris that the UH Manoa would not have had any damage at all from the 2004 storm.*

RESPONSE: Stream maintenance is the responsibility of both the City and County, as well as the private homeowners who own the streams on their property. The proposed action within this HEPA FFEIS seeks to improve stream maintenance opportunities.

25. *It is our understanding that improvements to correct the problems with the East Manoa Bridge and Woodlawn Bridge to protect the University of Hawaii from a similar damage that*

resulted from the 2004 storm. We believe it is not accurate to use potential damage figures to the UH Manoa and any damage figures following along that flooding stream path which might include the UH quarry and athletic facilities, the Puck Alley and Moiliili areas in your cost to benefit justifications.

RESPONSE: The modeling used within this proposed HEPA FFEIS includes a cleared Woodlawn Bridge and different scenarios with different levels of blockages. These evaluations can be seen in Appendix A of this HEPA FFEIS. Additionally, we specifically did a project at Woodlawn Bridge that completed in 2019 to improve the conveyance of flows through the Manoa Marketplace area. We turned that information over to the Corps of Engineers and they are incorporating that data in with the other updates to modeling and engineering data. Part of this project was intended to help with the sedimentation issue.

26. *In addition, any reference, to the 2004 flood and damage should not be used because the damage was primarily a result of poor maintenance rather than inadequate channel design sizes and is misleading.*

RESPONSE: The inundation footprint in the future with and without project condition includes a clear Woodlawn Bridge, as well as scenarios with blockage. The economic assessment of the Watershed was done using these inundation footprints and depths.

27. *Damage figures should also be brought to present values as well as current construction estimates and land acquisition pricing.*

RESPONSE: During the design phase of the project damage figures and cost estimates will be updated using updated modeling and engineering data.

28. *Many claimed statements used justify the Draft FS/EIS need to be questioned and not just assumed to be related or true. An example is the reference is made to 2 known deaths being storm related to the December 1918 and December 1950 storm but what is really known about these deaths. Is it really related or could it just have been someone playing in the stream that no matter what would have drowned in a flash flood. People fall of cliff hiking, die from flashfloods, down in the ocean all the time. People die falling of their roof trying to fix a leak when it's raining.*

RESPONSE: It is not in the scope of this HEPA FFEIS to question the cause of deaths that occurred in 1918 and 1950. Additional reference to the two drowning deaths can be found in FEMA Flood Insurance Study Number 15003CV001C. We utilized this referenced information in the HEPA FFEIS.

29. *The Draft FS/EIS states the Ala Wai Canal has overtopped many times but no specifics are mentioned on the storm rating for each time the Ala Wai Canal overtopped and what the dollar amount of damage was each time the Ala Wai Canal overtopped. We would like to see a summary of each overtopping, the storm ratings, dates, flows at all major junctions and Ala Wai Canal outlet,*

duration of storm and time it took to overtop the Ala Wai Canal with corresponding damage figures.

RESPONSE: Overtopping of the canal is not only a storm related event, on the mountain, or mauka side of the canal is much lower than the ocean, or makai side of the canal. Ala Wai Elementary staff and others in the community have observed overtopping of the canal due to king tide conditions or frequent rains. While it may not be the full length of the canal or on both sides of the canal, more frequent overtopping is occurring.

Historical floods in the study area provides minimal assistance in estimating either the hydraulic or economic components of flood risk in the Waikiki area, as explained in the Economics Appendix B, Section 1.4. Further discussion on historical damages may be found in that section.

30. *References are made primarily to the November 1965 and December 1967 storms and during the passage of Hurricane Iniki in 1992 and the overtopping of the canal resulting in the flooding of Waikiki. Yet the summary of information is hard to find or nonexistent on the damage figure done by the flooding of these very major events and we are not clear of USACE storm ratings for these major events.*

RESPONSE: Information on the 1967 storm can be found in Chapter 4, Appendix A of this HEPA FFEIS. Section 1.4 of the HEPA FFEIS describes the impacts of the November 1965 storm and Hurricane Iniki.

31. *We would like to know how long it took the Ala Wai Canal to reach the stage of overtopping (or to fill up to overspill), how deep was the flooding, how much was due to the Waikiki storm drainage infrastructure and how much was damage was due to the Ala Wai Canal overtopping and how long it took to recede or empty out for each of these storms. It would at least help a layperson gauge the validity of your statements and representations.*

RESPONSE: Specific to the 1967 Storm, the HEPA FFEIS, Appendix A, Chapter 4, Section 4.7.1 references a 1968 DLNR Post Flood Report that states the water overtopped the Waikiki side of the Canal at the Manoa Palolo and inundated Ala Wai Boulevard and surrounding streets up to 2' deep.

32. *We humbly request that you remove our privately-owned property TMK: 34016059, located at 2532 Waiomao Road in Palolo Valley as a potential site for the Waiomao Detention Basin.*

RESPONSE: Residential property and land use impact remains an unresolved issue in the HEPA FFEIS document. As was mentioned in the previous response sent in 2017, property acquisition is the responsibility of the non-Federal Sponsor and must be done following all federal and state laws. During the design phase of the project a final real estate acquisition plan will be developed based on a more advanced design. In addition, any changes to the

design will be evaluated for environmental impacts to include residential property owners and addressed at the appropriate level in accordance with federal and state laws.

C. Specific Concerns raised in your letter dated October 30, 2015 to Chair, DLNR

1. *As previously stated in my letter dated September 28, 2015, we are totally against your purchasing of our privately owned, residentially zoned property, TMK 34016059, located at 2532 Waiomao Road in Palolo Valley for the construction of the Waiomao Detention Basin which is a part of the $173 million Ala Wai Canal Project. We also believe other private landowners in the same situation as us will have identical concerns and feelings. While we are focused on Palolo Valley many of our issues, concerns and recommendations can be applied to Manoa Valley, Makiki and Tantalus areas. Thus, we speak out on their behalf as well.*

RESPONSE: Residential property and land use impact remains an unresolved issue in the HEPA FFEIS document. As was mentioned in the previous response sent in 2017, property acquisition is the responsibility of the non-Federal Sponsor and must be done following all federal and state laws. During the design phase of the project a final real estate acquisition plan will be developed based on a more advanced design.

2. *We believe that there are plenty of flood alternatives that can be designed to utilize government owned lands both above and below the proposed Waiomao Detention Basin. These government owned lands are owned by the C&C of Honolulu, State of Hawaii, Department of Education, Public Housing Authority, and other governmental agencies. The government lands follow the Pukele, Waiomao, Palolo, and Manoa/Palolo Streams and may include remnant lands, leasehold lands, schools, parks, drainage easements, and other public utilities and facilities.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

3. *Listed below are government owned lands that follow the Pukele Stream, Waiomao Stream, Palolo Stream, and Manoa/Palolo Stream down to the Ala Wai Canal:*

Exhibit A-1 : TMK: 340120230000 - Pukele Stream above 10th Ave.
Exhibit A-2: TMK: 340040080000 - Pukele Stream below 10th Ave.
Exhibit A-3: TMK: 340040070000 - Pukele Stream - Anuenue School
Exhibit A-4: TMK: 340040020000 - Pukele Stream - Anuenue School
Exhibit A-5: TMK: 340040060000 - Pukele Stream - Anuenue School
Exhibit A-6: TMK: 340070160000 - Pukele Stream - Public Housing
Exhibit A-7: TMK: 340070180000 - Pukele Stream & Waiomao Stream Public Housing
Exhibit A-8: TMK: 340030100000 - Waiomoa Stream
Exhibit A-9: TMK: 340030090000 - Waiomao Stream
Exhibit A-10: TMK: 340030300000 - Waiomao Stream
Exhibit A-11: TMK: 340020010000 - Waiomao Stream - Palolo Elementary
Exhibit A-12: TMK: 340020020000 - Pukele/Waiomao/Palolo Stream - Palolo Elementary
Exhibit A-13: TMK: 3400701 70000 - Palolo Stream
Exhibit A-14: TMK: 340020440000 - Palolo Stream - concrete channel
Exhibit A-15: TMK: 340040100000 - Palo lo District Park
Exhibit A-16: TMK: 340070140000 - Palo lo District Park
Exhibit A-17: TMK: 340070030000 - Palolo District Park
Exhibit A-18: TMK: 340070130000 - Palolo District Park
Exhibit A-19: TMK: 340070090000 - Jarrett Middle School
Exhibit A-20: TMK: 340011220000 - Palolo Stream concrete channel - next to Jarrett
Exhibit A-21: TMK: 340070010000 - Palolo Stream concrete channel - next to Jarrett
Exhibit A-22: TMK: 330380960000 - Palolo Stream concrete channel - residential
Exhibit A-23: TMK: 330450670000 - Palolo Stream concrete channel
Exhibit A-24: TMK: 330020540000 - Palolo Stream concrete channel - next to St. Louis
Exhibit A-25: TMK: 330010050000 - Palolo Stream concrete channel - next to City Mill
Exhibit A-26: TMK: 280280360000 - Palolo Stream concrete channel - Ewa of St. Louis Drive
Exhibit A-27: TMK: unknown - Government land at the merge of Manoa and Palo lo Stream.
Exhibit A-28: TMK: 270240010000 - Kaimuki High School
Exhibit A-29: TMK: 270240000000 - Manoa Stream next to Kaimuki High School
Exhibit A-30: TMK: 270360010000 - Ala Wai Park

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts. However, at this time, residential property and land use impact remains an unresolved issue in the HEPA FFEIS document.

4. *One should consider that a delay or extension of the project's timeline is very possible given the history of the Ala Wai Canal Project and the fact that public input is still being accepted and evaluated which may lead to further changes in the flood mitigation alternatives. We were told at the September 30, 2015 Public Review Meeting that nothing was certain and if project deadlines are not meet that the project could even be terminated.*

RESPONSE: The project requires congressional authorization for Design and Construction. Once the project is authorized by Congress, it can only be terminated by Congress. There are three requirements for a project in the Corps Civil Works: Authorization from Congress; a funding mechanism either from Congress or the Corps of Engineers Workplan; as well as a non-Federal Partner.

5. *We believe the inherent uncertainty in the future of the Ala Wai Canal Project is the strongest reason that government lands should be targeted for use in the flood mitigation alternatives. Private landowners should not be used as a first choice as land conditions and uses, market values, and ownership may change and the process for condemnation may also pose as additional risks to the project if the land cannot be secured.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. They advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of

proposed features from the feasibility study. The acquisition process is important to understand. Whomever is the non-Federal sponsor, they are responsible to acquire property in accordance with State and Federal laws. It would be pre-decisional to start assessing values, compensation, or other potential acquisition alternatives without a final real estate plan.

6. *We are proposing several alternatives, ideas, or suggestions in lieu of the upstream Waiomao Detention Basin on 2532 and 2550 Waiomao Road. They are as follows:*

1.We favor a series of smaller less obtrusive designs that have smaller footprints and require lower walls or embankments. TMK: 340120230000 (Exhibit B-1) potentially could hold a small detention basin or channel that would be held back by 10th Avenue which would act in place of constructing a new standalone berm or earth dam. The area can also be used a diverter to segregate water from larger storms (spillway) to government lands further downstream through a series of pipes, culverts, open channels etc., similar to an "auwai" feeding a series of taro patches that are playground and unused open areas capable to store or detain flood waters.

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

Furthermore, the Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. They advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. Accordingly, the impacts of land use and private property acquisition are listed as an unresolved issue in this HEPA FFEIS.

7. *2.TMK: 340040080000 (Exhibit B-2) can be used as a channel detention area or an area to selectively direct larger flows to potential detention areas on Anuenue School's playground and open areas. A chain of smaller detention areas each with restricted outflows back to Pukele Stream that would utilize low walls and berms in the range of 2 or 3 feet with overflow spillways to other open areas and parcels on Anuenue School grounds TMK: 340040070000 (Exhibit B3), TMK:*

40040020000 (Exhibit B4), and TMK: 340040060000 (Exhibit B5). The playground and unused open areas on Anuenue School could be used like the "auwai" feeding a series of taro patches which are instead detention basin.

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

8. *3.TMK: 340070160000 (Exhibit B-6) is land used for Public Housing and a very long portion of Puke le Stream follows this property line in the form of an open concrete lined channel. We are not clear if the concrete channel and stream is split between the residential properties and the Public Housing property or if the concrete channel is exclusively in government owned land. An alternative to upstream detention basins would be to store water in areas of the channel where there is excess capacity. Excess capacity can also be created by enlarging the channels by widening or heightening the side wall of the channel. In some cases, heightening the wall of the channel could cause problems to areas adjacent to the channel and could cause backflow if storm drainage is not designed correctly. Backflow preventers are an option and another option is to extend the storm drainage entry further downstream at a lower elevation. Aerial pictures from Google maps and MSN maps show a lot of vegetation growth in the concrete channel and a neglect of proper channel maintenance. The visual impact to this area is minimal since it already consists of a man made concrete lined channel.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase

several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

Furthermore, the Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. They advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. Accordingly, the impacts of land use and private property acquisition are listed as an unresolved issue in this HEPA FFEIS.

9. *4.TMK: 340070180000 (Exhibit B-7) is land used for Public Housing. The property lines follow both Pukele Stream and Waiomao Stream with concrete lined channels. We believe the concrete lined channels can be used to store water wherever there is excess capacity. Excess capacity can also be created by heightening walls or widening channels. TMK: 34002001000 (Exhibit B-11), TMK: 340020020000 (Exhibit B-12), TMK: 340070170000 (Exhibit B-13), TMK: 340020010000 (Exhibit B-11) border the Waiomao Stream and after the merge of the Pukele Stream into the Palo lo Stream. There is a pretty large strip of unusable land that follows the Palo lo Elementary School along the concrete lined channel. The surrounding structures are at a much higher elevation. This area is a good location for increasing the channel capacity or even creating a detention basin area using Kiwila Street as the natural dam. This area can also be used as a segregation or area to divert higher overflows (spillway pipes, culverts, or channels) to larger storage areas such as the Palolo Valley District Park and other government owned lands further downstream. Construction in this area will have a minimal visual impact because the area is already lined with a man made concrete channel and bridge over Kiwila Street.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

Furthermore, the Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. They advised that there is always the possibility that updated

data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. Accordingly, the impacts of land use and private property acquisition are listed as an unresolved issue in this HEPA FFEIS.

10. *5.TMK: 340030300000 (Exhibit B-10) is government owned land that is being leased out to a private entity. The Waiomao Stream flows through a major portion of this property and the location is ideal for a small detention area or an area to be used to segregate flows from different storm levels to larger detention areas downstream like the Palolo Valley District Park and other government owned lands and use pipes, culverts, and separate channels similar to an "auwai" feeding taro patches downstream with gravity flows. The Government owns TMK: 34003009000 (Exhibit B-9) and TMK: 340030100000 (Exhibit B-8) which appear to be leased out to private entities. We don't know the lease agreements or the terms for cancellation. An option might be for the Government to use these lands to exchange for easement rights for the footprint of detention basin in this area for the 100-year flood. This area is a natural low spot following the Waiomao Stream and might be a suitable area for a detention basin.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

Furthermore, the Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. They advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. Accordingly, the impacts of land use and private property acquisition are listed as an unresolved issue in this HEPA FFEIS.

11. *6.Most of the local damage of a 100-year storm in the Palolo area is along the concrete culverts next to the Palolo Valley District Park and below Kiwila St. and extends down to the area adjacent to St. Louis School. So, if the objective is to prevent residential damage from the 100-year flood and if the cost to benefit justifies the flood mitigation measures then something would need to be done to either pass the water more quickly through the area preventing the concrete channel from overflowing or detaining the water in a detention basin. The Ala Wai Canal Project justification*

for the Pukele Detention Basin and Waiomao Detention Basin is dual purpose. It would protect both the Palolo residential areas and would help hold back water from the Ala Wai Canal at the critical time factor. The Government owns the concrete lined channel and adjacent areas for two blocks and near St. Louis School; TMK: 340020440000 (Exhibit B-14), TMK: 340011220000 (Exhibit B-20), TMK: 340070010000 (Exhibit B-21), TMK: 330380960000 (Exhibit B-22), TMK: 33045067000 (Exhibit B23), TMK: 330020540000 (Exhibit B-24). An option would be to increase the height of the concrete channel walls or widen the channel in areas adjacent to government owned lands so that the channel does not overflow into the residential areas. If the channel wall heights are increased, then a study of the backflow for local storm drainage would need to be looked into or the installation of backflow preventers or extending the channel invert further downstream at a lower elevation.

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

12. *7.TMK: 340070100000 (Exhibit 15), TMK: 640070140000 (Exhibit B-16), TMK: 340070030000 (Exhibit 17) of the Palolo District Park which consists primarily of the baseball field can be like the first low level detention basin. What we propose is not building those high embankments that require mechanical gates but rather a smaller berms or walls 2-3 in height. Walls can be designed to blend and enhance the park. Walls could be designed at a seat level similar to how Punahou has a series of small retaining walls along their track and football field that act as bench seating. This first area might be designed to detain flood water from a smaller storm (lets say 50-year) and if a larger storm hits it will overflow into a second detention area.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must

achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

13. *8.TMK: 340070030000 (Exhibit B-18) which is below the Palolo Valley District Park's swimming pool could be used for the second storm water detention area. This grassy area which is shared by Jarrett Middle School is largely unusable because of the slope. However, the area can easily be regraded and cut down to accommodate a second detention area. This area would be beautified by adding a 2-3 ft. perimeter wall and can also be used as a playground for Jarrett Middle School and for a soccer field and football field as a side benefit. This area would be utilized in a time of flood between a 50-year and 100-year storm and overflow would spill-over to a third detention area.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

14. *9.TMK: 340070090000 (Exhibit B-19) which is Jarret Middle School could use their playground area adjacent to the concrete lined channel of Palo lo Stream. This area is sloping down toward Palolo Stream and is relatively unusable for organized sports because of the slope. Cut from the area above near the Palolo Valley District Park's pool area for the second detention area can be used to fill and level off this area. A small perimeter retaining wall for flood detention can beautify the boundary. This area would flood only if a 100-year storm hit. Again, the area would be enhanced for the school and community because this area could be used by organized sports. Maybe a small softball field.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than

others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

15. *10.TMK: 330010050000 (Exhibit B-20) is the concrete lined trapezoidal channel. This area is prime for a detention basin and a dam can be built under the St. Louis Drive bridge. What makes this area prime is the height potential of the dam and the large area behind it to hold water goes all the way back to St. Louis School. Waialae Avenue and most of the adjacent areas that dump storm water into the channel are an estimated 40-50 feet above the channel elevation and backflow issues should not exist.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

16. *11.The problem with the Ala Wai Canal Project concept is mainly detention methods are considered to control the peak flow, peak volume at the critical time at the Ala Wai Canal. Certain areas of certain sub watersheds can be accelerated to beat the critical peak volume at the Ala Wai Canal. The Waikiki subwatershed as an example should totally bypass the Ala Wai Canal in time of flood. Why dump the storm water into the Ala Wai Canal when the threat is of the Ala Wai Canal overflowing. Waikiki is right next to the ocean and that's the ultimate place you want the storm water to end up. Why not pump the storm drainage from Waikiki directly into the ocean and bypass the Ala Wai Canal. It can be pumped,or gravity flowed straight into the ocean off shore. If necessary, it can be pumped through pipes in or under the Ala Wai Canal out into the ocean near*

the Ala Wai Boat Harbor or wherever is far enough so that it doesn't backflow into the Ala Wai Canal. It can be pumped to an emergency spillway through Fort Derussey or Kapiolani Park and have a designated low ground pathway to the ocean similar to a large sheet flow of low velocity to minimize erosion.

RESPONSE: During the Design phase modeling, and engineering data will be revised to determine the final volume of water that requires evacuating through a pump system. The volume of water will determine the type of pump options. Generally, submersible pump systems are only associated with small volumes of flows. Section 5.5 in Appendix A of this HEPA FFEIS indicate peak flow discharges in excess of 15,000 cubic feet per second (cfs) at the junction directly upstream the confluence of the Manoa-Palolo and Ala Wai Canals.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

17. *12.New Orleans is protected by a large number of high capacity pumps. One pump can empty an Olympic swimming pool in 30 seconds. Again, since the Ala Wai Canal is treated like a reservoir the major problem is getting the storm water out of the canal so the best solution is to beat the critical flow, critical volume, and critical time by bypassing the Ala Wai Canal by pumping excess volume through pipes and conduits directly to the ocean. Pipes and conduits could be placed in the Ala Wai Canal similar to how the temporary force sewer main was put in the Ala Wai Canal. The velocity and volume per area of pipe can be extremely higher because it will be pushed or forced out to the ocean rather than relying on gravity flow of the Ala Wai Canal which is almost zero. Pumping storm water straight to the ocean will not be greatly affected by the ocean tide while relying on gravity flow in the Ala Wai Canal can greatly be impacted by the tides height or tidal surge in a hurricane storm.*

RESPONSE: During the Design phase modeling, and engineering data will be revised to determine the final volume of water that requires evacuating through a pump system. The volume of water will determine the type of pump options. Generally, submersible pump systems are only associated with small volumes of flows. Section 5.5 in Appendix A of this HEPA FFEIS indicate peak flow discharges in excess of 15,000 cubic feet per second (cfs) at the junction directly upstream the confluence of the Manoa-Palolo and Ala Wai Canals. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

18. *13.TMK: 330010050000 (Exhibit B-20) the concrete lined trapezoidal channel behind the City Mill. Storm water can be collected or detained at the St. Louis Drive Detention Basin which we think is about 3 0-40 feet above sea level and can be filled much higher to get a head or pressure. Much like a drinking water reservoir the storm water can under normal gravity flow be forced through pipes and conduit bypassing the Ala Wai Canal and straight into the ocean past the Ala Wai Boat Harbor. This would also be a way of moving water in front of the critical time and volume out of the canal. The pipes or conduits can be pump assisted if friction or drag is too great or if higher velocities are required. Screening of debris and safety measures would need to be implemented at the inlets. A similar plan can be used on the Manoa Stream and water can be collected near the University of Hawaii above the East West Center.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

19. *14.TMK: 280280360000 (Exhibit B-26) are concrete lined rectangle channels and (Exhibit B-27) which includes the merger of the Palolo Stream and Manoa Streams and includes the Old Waialae Road Bridge, King Street Bridge, and Kapiolani Bridge. If there is excess flow capacity in the channel it can be used for storage. The area is government owned so if the capacity of the channel can be expanded if necessary. This area under and around the bridges are pretty massive and can hold large volumes of stormwater. They can be expanded if necessary and are high enough to build up head pressure to capture storm water and pipe it under pressure out to the ocean and bypass the Ala Wai Canal.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value

engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

20. *15.TMK: 270240010000 (Exhibit B-28) is Kaimuki High School. The athletic field areas can be used as an added detention area much like the Ala Wai Golf Course is being used. Rather than pushing the detention areas upstream into Palolo Valley on privately owned properties. Large government owned land with areas as like these should be considered first. A more elaborate option for the athletic field area would be to excavate and have underground flood storage detention area with the athletic fields above. Storage could also be above the stream level if overflow waters are captured upstream like the "auwai".*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

21. *16.TMK: 270240000000 (Exhibit B-29) this is the Manoa Stream area adjacent to Kaimuki High School. This area can be expanded and used as a detention basin in conjunction to the Kaimuki High School athletic fields. This area is long and very level and is more ideal for a location for a silt collection basin before entering the Ala Wai Canal.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value

engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

22. *17.TMK: 270360010000 (Exhibit B-30) is of the Ala Wai Park and baseball fields. What we don't understand is why the Ala Wai Canal Project includes using only a smaller portion of the Ala Wai Park for the Hausten Detention Ditch. We believe this should be expanded to include the additional two baseball field areas of the park and if done may decrease the need for upstream detention basins in Palolo Valley.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

23. *18.We an option could be an Ala Wai Canal emergency spillway. This could be though high capacity pumps as mentioned in above or could be natural gravity flow through Fort Derussey and Kapiolani Park. If pumped at the far end of the Ala Wai Canal, it could either go straight out to walls or be pumped to Kapiolani Park and exit near the War Memorial Natatorium. If by natural flow, a sheet flow that could possible exit between Queens Surf Beach and the Waikiki Aquarium which is walled and beachless, thereby minimizing the beach sand erosion concern.*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options that include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

24. *19.We believe an option would be to segregate the stormwater generated from the Waikiki sub-watershed (W1,W2,W3) and bypass the Ala Wai Canal and go straight to the ocean.*

RESPONSE: There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, bypassing the Canal with Waikiki storm water will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

25. *We believe an option would be to segregate the stormwater generated from the upper Kaimuki area sub-watersheds (A6, JA1, A6, A7) and bypass the Ala Wai Canal and go straight to the ocean.*

RESPONSE: There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, bypassing the Canal with the mentioned Kaimuki area sub-watershed storm water will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

26. *While our proposed alternatives are not engineered and not thoroughly evaluated for feasibility and cost, we spent a hell of a lot of time going through all of documents on the Ala Wai Canal Project's website to get up to speed on what was going on, what the problems were, and what solutions were being proposed. We drove around the whole Ala Wai Canal Project's watershed looking at the critical areas and most of site locations for the proposed alternatives. We also walked several areas that thought might be suitable for detention basin within the watershed looking for viable alternatives instead of our personally owned property located at 2532 Waiomao Road. So, we hope you will give each one of our proposed ideas, suggestions, and alternatives enough thought and evaluation based on its merit and given application(s) as ligitimate flood mitigation measures.*

RESPONSE: Thank you for your suggestions and attention to this project. We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

27. *Ultimately, we hope a better solution can be found in place of place of the Waiomao Detention Basin. We humbly request that you take out of consideration the use of our privately - owned property located at 2532 Waiomao Road for use as a detention basin.*

RESPONSE: Residential property and land use impact remains an unresolved issue in the HEPA FFEIS document. As was mentioned in the previous response sent in 2017, property acquisition is the responsibility of the non-Federal Sponsor and must be done following all federal and state laws. During the design phase of the project a final real estate acquisition plan will be developed based on a more advanced design. In addition, any changes to the design will be evaluated for environmental impacts to include residential property owners and addressed at the appropriate level in accordance with federal and state laws.

D. Specific Concerns raised in your letter dated October 22, 2015 to Chair, DLNR

1. *Hawaii is a beautiful place. My parents were born in Kohala on the Big Island and in Waimea on Kauai. I grew up on St. Louis Heights and Manoa and Palolo were my stomping grounds. I went to Hokulani School, played Little League Baseball at Kanewai Park, and almost every Saturday from around 1st grade to 4th grade would ride my Schwinn Stingray bike (banana seat and all) down to Kanewai River (Manoa Stream) to catch crayfish, dojos, and guppies with a scoop net. This was before the UH Manoa dorms were built and way before the Hawaiian Studies Center. The taro patch was neglected and didn't resemble anything like what it looks like today. The UH Manoa quarry was a coral gravel parking lot with old telephone poles demarcating the rows of parking with the only visible structures being Klum Gym, track, asphalt basketball court, and a bunch of portables. The tall old wooden stairway leading from campus to the quarry never ceased to amaze me as I would race up and down it with my friends.*

Chico's Pizza and P&P Super Market (now the location of City Mill) and the Phillips 66 gas station at the comer of St. Louis Drive and Waialae Avenue are things of the past. Don't

remember the specifics but gas was like 30 cents a gallon and they would wipe your windows and check under your hood every time you did a fill up and the attendants knew your name. I used to buy my rabbits foot (don't ask me why but I used to have a collection of those things of all different colors) and peas to shoot in my cheap plastic pellet pistol (because the clay pellets where too expensive) that I would buy at Nakamura's Feed Store and we'd shoot each other playing army or Cowboy and Indians (eye protection and liability lawsuits). My foggy recollection only goes back a short 50 years and is really nothing compared to my parent's generation, their stories growing up on the sugar plantations, living through World War II, and Hawaii as a territory. Their struggles and determination to have a better life has always made me appreciate everything I've been blessed with and usually take for granted.
I grew up when things were carefree and much less structured compared to how I've raised my own children. I got to explore my neighborhood and surrounding mountains and streams in a very natural environment. I can remember seeing most of Waikiki Beach and the ocean from my parent's home before the big hotel boom. I believe any flood mitigation measures should blend into the natural surroundings as much as possible with least impact.

RESPONSE: Page 1-2 of the Federal NEPA Document, as well as this HEPA FFEIS proposed action discusses the USACE Environmental Operating Principles (EOP) which requires "mutually supporting economic and environmental sustainable solutions." This occurred in the feasibility despite a 2012 shift in focus to strictly a flood control study; the study team evaluated ways to maintain in-stream habitat and migratory pathways. These same EOP will be applied during the design phase as data is updated and designs are refined.

2. *As we all know, maintenance will most likely be lacking and the site will become full of weeds and overgrowth and silt and ponding will develop on the backside of the detention basin.*

RESPONSE: The non-Federal Sponsor is responsible for maintenance. The Corps of Engineers will conduct routine, periodic, and emergency inspections of the system features and prepare reports for the non-Federal Sponsor to ensure that deficiencies or maintenance requirements are known. Provided the system features are maintained, they will be eligible for federal funding in the event they are damaged or require significant rehabilitation.

3. *We favor placing the detention basin on Government owned land. In the case of Waiomao Detention Basin, the State owns over 450 acres of land which generates most of the storm flows. There is a very popular hiking trail and the area has limited access and limited parking.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must

achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

4. *An idea might be to incorporate a parking area that also acts a detention basin, similar to how Kanewai Park's baseball fields are proposed for use as a detention basin.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as speed bumps and sites by Ahe Street will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

5. *The stream itself should remain untouched in its natural state.*

RESPONSE: The stream itself will be able to flow in its natural state; however, the objective of this project is to reduce the flood risk in the community. Even if smaller detention basins and other alternatives are selected during the design, some construction within the streams will be necessary.

6. *This would provide better access and enjoyment of State lands for the public benefit and provide flood protection. It will improve access both for enjoyment as well as maintenance. Trash receptacles that can be accessed by maintenance personnel will better keep the area litter free.*

RESPONSE: Access to State Lands for public benefit is not an objective of this HEPA FFEIS.

7. *Additional measure to reduce the footprint would be to use reinforced concrete in place of the earth berms. The reinforced concrete walls can be designed to hold back the forces of the floodwaters and can be faced to naturally blend into the environment.*

RESPONSE: Concrete can be evaluated in the design phase, however, concrete may not be an acceptable alternative under the Corps Environmental Operating Principles discussed on page 1-2 of this HEPA FFEIS. It may also not be a preferred alternative to the community as you've alluded to in several of your previous letters.

8. *Kanewai park has a large retaining wall and it is faced to look like moss rock. The USACE at Fort Shafter uses concrete barriers or dividers that are made of concrete but have a stone facing design.*

RESPONSE: We concur. During the design phase, construction methodologies such as facades and materials will be evaluated further.

9. *6.We favor a series of smaller detention basins without the use of excavating large unnatural pits to increase the water retainage volume.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

10. *We feel if designed correctly a series of smaller detention basins could be designed to withhold the same volumes of water. As the bigger the storm the more basins will fill up. Each smaller basins can be designed to spillover as it reaches capacity.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase

several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

11. *The smaller basins can be designed into a meandering trail that also serves as the access for maintenance vehicles. A series of smaller detention basins meandering back and forth over a stream will provide access to hikers to both sides of the stream.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

12. *These smaller detention basins can be designed to look like coble stone bridges (except with stone or stone facing matching the location).*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

13. *If hand railings are placed on the smaller basins they can act as debris screens.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course.

To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

14. *The controlled outlet area for each smaller detention basin won't necessarily need large debris screens (metal poles embedded in concrete) to filter large tree branches and stumps because each smaller detention basin is designed for spillover (have an engineered spillway that won't erode if used).*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

15. *The stream bed will remain natural and regular maintenance should be done to remove any debris blocking the restricted flow vents of the smaller detention basins.*

RESPONSE: Even if smaller detention basins and other alternatives are selected during the design phase, some construction within the streams will be necessary. There will be a requirement for scour protection on small basins, no different than that proposed in the recommended plan in this HEPA FFEIS.

16. *Smaller detention basins made of reinforced concrete, simulating a cobble stone bridge is more applicable to Hawaii as land is more of a commodity whereas on the mainland land is plenty and larger footprint detention basins are more applicable.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as smaller detention basins will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

17. *7.It should be noted that according to the Ala Wai Canal Project FS/EIS there is a rain gauge further up near the property owned by the City and County of Honolulu's Board of Water Supply as well as a tunnel for pumping drinking water. There may already be an access road to some of the areas that potentially could be used to relocate the Waiomao Detention Basin at 2532 & 2550 Waiomao Road. Access roads to Government owned lands can be constructed in coordination with other utility companies that may have a need to access other side further up the valley. What is the BWS has a need to dig another water tunnel to meet the ever-growing water demands of Honolulu?*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives, such as basins in BWS lands will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

18. *We've attached some picture of Waiomao Stream on our property and of our neighbor's property which would be destroyed if the Waiomao Detention Basin is constructed (Exhibit "B-1", "B-2", "B-3", "B-4". As mentioned in our previous letter, we believe our property TMK: 34016059, located at 2532 Waiomao Road in Palolo Valley provides our family one-of-a-kind beauty and surroundings that is irreplaceable.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

19. *We are against using our property for the Waiomao Detention Basin. We are also against any detention basin or flood mitigation measures being with view or close proximity to our property.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

20. *We've attached additional pictures of the following:*

(a)Exhibit "C" -Rock faced Detention Basin on Associated Road in Fullerton California near where our daughter is going to Optometry School. This detention basin is much longer in width but not much higher than the proposed Waiomao Detention Basin which is 120' wide but this detention basin in Fullerton, CA demonstrates the large footprint and ugliness of this man made structure which really does not fit into the natural environment.

(b)Exhibit "D" -This is one of Heco' s electrical transfer stations deep inside Halawa Valley far out of sight from the public demonstrating the slogan "out of sight and out of mind"

(c)Exhibit "E" -This is a detention basin in Moanalua Valley which is next to residential properties and in plain view of dozens of homes above on the hillside. It is unsightly and not something you would want in your backyard instead of a natural stream. Please take note of the silt build up and areas of no vegetation.

(d)Exhibit "F" -This is a detention basin in Niu Valley along Anolani St. which is located and adjacent to a residential home. It is unsightly and has restricted the natural flow of the stream causing ponding. The large detention area is an eye sore and does not blend in with the natural hillside.

(e)Exhibit "G" -This is a detention basin in Niu Valley adjacent to a residential home. What would you rather have behind your home? A naturally flowing stream or a big excavated area the size of a parking lot not well maintained and filled with weeds.

(f)Exhibit "H" -This is a concrete lined detention basin in Hahaione Valley and is adjacent to several homes and looks a gigantic empty swimming pool. This is an example what we do not want in Palolo Valley or something in our backyard or something visible from our homes.

(g)Exhibit "I" -This is an image of a cobble stone bridge found on a Google search. A similar design could be incorporated for a series of small detention basins that leave the stream bed untouched and natural. The opening size would be designed to restrict the flow. This is just a concept of what ultimately could be used further up Palolo Valley on Government land.

(h) Exhibit "J" - This is another image of a cobble stone bridge found on a Google search. Again, just to reinforce the point of how a maintenance road, hiking trail and pathway can be incorporated into a detention basin and naturally fit into the environment. If done correctly it can be an enhancement to the area by providing greater access to the public.

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives and materials, such as smaller detention basins and reinforced concrete will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

21. *We think you will agree after looking Exhibits of what is being proposed with the Waiomao Detention Basin and then look at the Exhibits of the pictures showing the natural beauty of the Waiomao Stream on our property that you will all agree that a better solution can be found further up into the valley on Government owned land.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

22. *We humbly request that you remove our privately-owned property TMK: 34016059, located at 2532 Waiomao Road in Palolo Valley as a potential site for the Waiomao Detention Basin.*

RESPONSE: The Corps advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. If modifications are made to the system they will be evaluated for environmental and community impacts such as real estate. Supplemental documentation will be developed commensurate with the impacts identified during Design.

E. Specific Concerns raised in your letter dated October 20, 2015 to Chair, DLNR

1. *As previously stated in my letter dated September 28, 2015, we (my family and I) are totally against your purchasing of our privately owned, residentially zoned property, TMK 34016059, located at 2532 Waiomao Road in Palolo Valley for the construction of the Waiomao Detention Basin which is a part of the $173 million Ala Wai Canal Project.*

We are in our mid 50's in age and our children were born and raised in Honolulu, the property was purchased with the intent to develop several homes on the land. It is our desire to be able to provide each of our children a place in town to build a home as an incentive for them to remain in Hawaii as they finish college, get married, and start their own families.

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

2. *In review of your Draft FS/EIS we found that the majority of the benefits which would be derived by this project would occur mainly along the Ala Wai Canal, while the adopted alternative (Alternative 3) consists largely of structural measures in the upper watershed. This action is not fair to the residents and property owners in the upper portions of the watershed especially when built on privately owned land for the following reasons:*

RESPONSE: The Moiliili and McCully communities are vulnerable because of not only their geography but the urbanized conditions in the area, where there is not a lot of pervious or green space for the water to percolate. Additionally, all three valleys impact the McCully and Moiliili communities. Regardless of which valley receives rains, the water ends up in these two neighborhoods. Slowing the water down in the upper watershed to reduce the risk in the lower watershed is an objective of the proposed action in this HEPA FFEIS. However, there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. If modifications are made to the system they will be evaluated for environmental and community impacts such as real estate. Supplemental documentation will be developed commensurate with the impacts identified during Design.

3. *Much of the upper portions of the watershed by themselves do not justify the need for major flood mitigation measures for the residential homes and areas. Smaller less costly alternatives can be pursed to protect the residential areas if the need and cost are justified.*

RESPONSE: The detention basins are not evaluated as standalone sub-watershed projects; they are evaluated as an interdependent system. The benefits for the project were incrementally justified and can be found in Appendix B of this HEPA FFEIS.

4. *Several speakers at your September 30, 2015 Public Review meeting were against pushing the problem at the Ala Wai Canal upstream and were against your proposed alternative measures located in the upper watershed.*

RESPONSE: The proposed action stands to benefit the entire community, there is no one community within the greater watershed that is the sole beneficiary of the project. We encourage you to look at the benefits and project performance in the HEPA FFEIS, Appendix B, Chapter 7, Section 7.6.1.

5. *A few speakers specifically were against doing anything in Palolo Valley and a few stated the lack of maintenance and cleaning of the existing streams as the primary reason for localized flooding.*

RESPONSE: Stream maintenance is both the landowner and the City and County responsibility depending on who owns the property. The City and County is responsible as the non-Federal Sponsor for maintenance of the system features. The Corps of Engineers will conduct routine, periodic, and emergency inspections of the system features and prepare

reports for the City and County to ensure that deficiencies or maintenance requirements are known. Provided the system features are maintained, they will be eligible for federal funding in the event they are damaged or require significant rehabilitation. Additionally, stream maintenance both upstream and downstream of these features often fall on the individual landowners who own the stream on their property. The lack of cleaning of the stream on one person's property without maintenance just sends the problem downstream to the next property owner.

6. *They were additional speakers who were against using residentially zone land in an already tight housing market with severe shortage of rentals units and a need for the creation of more housing.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

7. *The bulk of the hotels in Waikiki were built between the mid 60's to mid-70's and Waikiki has since become a major economic driving force justifying your need for flood protection. However, most of the residential properties in the upper watershed existed long before the Waikiki hotel boom. The residential properties shouldn't be burdened with having to protect Waikiki from flooding with upper watershed alternatives when many residents have been negatively impacted by lost ocean and beach views from high rise hotel developments in Waikiki.*

RESPONSE: The entire watershed stands to benefit from the proposed action in this HEPA FFEIS, not just Waikiki. The Moiliili and McCully communities are vulnerable because of not only their geography but the urbanized conditions in the area, where there is not a lot of pervious or green space for the water to percolate. Additionally, all three valleys impact the McCully and Moiliili communities. Regardless of which valley receives rains, the water ends up in these two neighborhoods. Therefore, all residential areas within the scope of the project will see some level of risk reduction in the communities.

8. *We believe there are several alternate measures that could also be incorporated into the lower portion of the Ala Wai Canal Project's watershed instead of constructing detention basins in the upper portion of the watershed that could also protect Waikiki from flooding.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives and materials, such as smaller detention basins and features in the lower watershed will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

9. *A speaker at the September 30, 2015 Public Review meeting mentioned that the condition of the Ala Wai Canal was deteriorating. He felt confident that Waikiki could be protected from flooding using modern engineering and state of the art technology. The speaker made some valid point because the Ala Wai Canal may be deteriorating a lot faster than expected and may not last the approximately 140-year design life. The original designers of the Ala Wai Canal in the 1920's most likely did not envision the heavy development of the Ala Wai Canal watershed and of Waikiki. Inherent problems in the design are sedimentation and maintenance issues and extremely low flow rates. Why waste money building a flood protection wall on an already crumbling infrastructure with several inherent design issues?*

RESPONSE: The current condition of the Ala Wai Canal from an operations, maintenance, and rehabilitation perspective is not within the scope for the proposed HEPA FFEIS. The Corps used the assumption that we, the State of Hawaii, will maintain the Canal as we are the responsible agency for the Ala Wai Canal. This was sufficient for this HEPA FFEIS.

10. *The State and C&C of Honolulu are owners of thousands of acres of land in the upper portions of the Ala Wai Canal Watershed. It is not fair to propose detention basins on individual privately-owned properties when the bulk of the floodwater generated from a 100-year storm are coming from the Governments land. We believe the Government has more than enough land of their own along the routes from the upper most portion of the watershed to the Ala Wai Canal suitable to be used for flood protection. This would include Government owned remnant parcels, schools, parks, and drainage easements lands.*

RESPONSE: Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. While there may be opportunities to further reduce the impacts to private properties, it is

unlikely that all private property impacts will be removed due to the fact that landowners own the stream. There may be a need to purchase flowage easements with homeowners and potentially property adjustments for access easements to allow for the City and County of Honolulu to perform maintenance. These impacts on private property are much less intrusive on the property owner, but are still considered an impact. A more detailed real estate plan will be developed in the Design Plan after the final design of System Features are complete and evaluated for environmental and community impacts. If there are new environmental impacts supplemental documentation will be developed commensurate with the level of impacts.

11. *6.Government owns more than 1100 acres of land in the upper extreme portion of the Palolo watershed (Exhibit A, B, C, D, E, F, G, & H). The proposed two detention basins in Palolo Valley involving privately owned land are designed primarily to hold storm water from the Government owned land. It is our opinion that the Government should use their own lands for any storm water protection alternatives. The following TMK are Government owned properties located above the proposed Detention Basins in Palolo Valley:*

a)TMK: 340220010000 - State of Hawaii (691.9 acres)
b)TMK: 340220060000 - C&C of Honolulu (387 acres)
c)TMK: 340180030000 - C&C of Honolulu, BWS (10.89 acres)
d)TMK: 340180020000 - C&C of Honolulu, BWS (9.31 acres)
e)TMK: 340350240000 - C&C of Honolulu, BWS (1.802 acres)

RESPONSE: Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. While there may be opportunities to further reduce the impacts to private properties, it is unlikely that all private property impacts will be removed due to the fact that landowners own the stream. There may be a need to purchase flowage easements with homeowners and potentially property adjustments for access easements to allow for the City and County of Honolulu to perform maintenance. These impacts on private property are much less intrusive on the property owner, but are still considered an impact. A more detailed real estate plan will be developed in the Design Plan after the final design of System Features are complete and evaluated for environmental and community impacts. If there are new environmental impacts supplemental documentation will be developed commensurate with the level of impacts.

12. *Designating our privately-owned land for your uses without notifying us and allowing us due process is very detrimental to us.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. A final real estate and land use plan will be developed based on the updated data.

The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. The integrated study for Feasibility and Environmental analysis review period was extended specifically for the reason you suggest. We recognize the amount of information and complexity of the information and to address this, we extended the statutory 45-day review period for an additional 33 days, starting on August 23, 2015 and ending on November 9, 2015 from the original deadline of October 7, 2015.

13. *Personally, we can't imagine anyone on your Project Delivery Team, the USACE or the DLNR who would be happy to give up their property under the same circumstance. We believe our property cannot simply be replaced because it is one of a kind and basically nonexistent in today's real estate market in town. We don't ever want to sell because we don't think we could ever find a replacement property as beautiful with the same potential.*

RESPONSE: We understand your concern that there is not enough compensation for the property you own to relocate to comparable areas on Oahu. In addition to the response above regarding private property impacts, the acquisition process is also important to understand. Whomever is the non-Federal sponsor, whether it is us or the City and County, they are responsible to acquire property in accordance with State and Federal laws. It would be pre-decisional to start assessing values, compensation, or other potential acquisition alternatives without a final real estate plan. We were advised by the Corps not to acquire any property until the Design phase is further along.

14. *We believe this hurts our ability, freedom, and right to use of our property. The liquidity of our property has been altered because of your designation. We would have to disclose your designations to any potential buyer, if we faced an emergency and needed to sell our property. We feel threatened and restricted in our options so long as we are under your veil of condemnation. We believe the appreciation in value of our property will stagnate and anything we do on the property may be at risk of being taken away through the Governments power of eminent domain.*

RESPONSE: We understand your concern that there is an adverse impact on your property's value from the proposed action within this HEPA FFEIS. We understand that if you choose to try and sell your property, you will have to let the potential buyer know about the impacts described in this HEPA FFEIS. In addition to the response above regarding private property impacts, the acquisition process is also important to understand. Whomever is the non-Federal sponsor, whether it is us or the City and County, they are responsible to acquire property in accordance with State and Federal laws. It would be pre-decisional to start assessing values, compensation, or other potential acquisition alternatives without a final real estate plan. We were advised by the Corps not to acquire any property until the Design phase is further along.

15. *We humbly request that you remove our privately-owned property TMK: 34016059, located at 2532 Waiomao Road in Palolo Valley as a potential site for the Waiomao Detention Basin.*

RESPONSE: The Corps advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. If modifications are made to the system they will be evaluated for environmental and community impacts such as real estate. Supplemental documentation will be developed commensurate with the impacts identified during Design.

F. Specific Concerns raised in your letter dated September 30, 2015 to Chair, DLNR

1. *I am in receipt of your letter date stamped August 14, 2015 regarding the above project and informing us for the first time that our privately owned property TMK 34016059, located at 2532 Waiomao Road, Honolulu, HI 96816 is a part of the Ala Wai Canal Flood Risk Management Feasibility Study and that the US Army Corps of Engineers are recommending the purchase of our property for the construction of the Waiomao Detention Basin.*

RESPONSE: From the perspective of land use and property impacts, please understand that it is currently listed as an unresolved issue in this HEPA FFEIS to be further addressed in the Design Phase. During the design phase, updated modeling engineering data, and community input will be used to refine or change the system features to provide the level of risk reduction authorized by Congress. Community engagement, outreach and education are all critical to better informing the next phase of the project. Health and safety for the community both in the Palolo and throughout the watershed is of the utmost importance; there is an opportunity within this project to improve health and safety for the community both in the Palolo Valley and throughout the watershed.

2. *Your letter to me states that "The Corps estimates that another major flooding event would result in damages to more than 3,000 structures in the watershed with a total damage of about $723 million."*

•How precise and accurate is the claim of damage to 3,000 structures?

RESPONSE: Please refer to the proposed action in this HEPA FFEIS, Appendix B, Chapter 1, which describes the economic model, methodologies, and different reaches within the watershed.

3. *•How precise and accurate is your claim of the $723 million dollar damage figure? Most of the references on your website use a $314 million figure based on 2013 prices.*

RESPONSE: Please refer to the proposed action in this HEPA FFEIS, Appendix B, Chapter 3, section 3.3.5, Model Calibration which describes the model development, inputs, and accuracy.

4. *Seems to be ballooning like the cost of the Honolulu Rail Project which started out at $2.7 billion in 2008 and now less than halfway completed at $6 billion.*

RESPONSE: The Corps will update the cost again at the time of Congressional authorization prior to entering into an agreement with a non-Federal Sponsor, either us or the City and County of Honolulu. The cost update is necessary in order to identify changes based on inflation, years since last update, change in conditions, and other factors. The cost in this HEPA FFEIS is necessary for proposing the project to Congress for authorization and to demonstrate economic justification.

5. *Your letter to me states that "The canal has overtopped and previously flooded Waikiki during the November 1965 and December 1967 storms and the passage of Huriicane Iniki in 1992"as a basis to support the project.*

•What percentage ratings were each of these 3 storms?

RESPONSE: The 1967 storm was a 25-year event according to the DLNR Post Flood Report in 1968. The Hurricane Iniki event was a 50 year or a 2% annual exceedance probability.

6. *•What were the dollar damage figures for each of these 3 storms?*

RESPONSE: Please refer to Appendix B, section 1.4 of this HEPA FFEIS for an account of historical damages.

7. *•What are the associated flow rates and rain gauge reading tied into determining the storm percentage?*

RESPONSE: Refer to Chapter 3 of Appendix A-1 of this HEPA FFEIS for a detailed explanation of the rain gauges, stream gauges, as well as stage gauges.

8. *Your letter to me states that "An October 2004 storm flooded Manoa Valley and a March 2005 storm flooded Makiki causing a combined $85 million dollar damages" and the claim is used in support of the project.*

•I believe the University of Hawaii and Waikiki are highest valued areas of potential damage and comprise the majority of the claimed damage of a 100-year storm.

RESPONSE: Regarding your comment about *Protecting Waikiki and University of Hawaii at Manoa*, we agree that protecting those two areas are important. However, reducing the risk in the rest of the community is equally as important.

9. *The storm was estimated to be a 20-year or a 25-year storm. What impact did this storm have on Ala Wai Canal and the flow rates at the mouth of the Canal?*

RESPONSE: See Appendix A-1, Chapter 4, Figure 4-21 for the October 30, 2004 gauge data and model data in the Ala Wai Canal.

10. •*Should the damage claim and any reference to the October 2004 be stricken because had the Woodlawn bridge been properly maintained and not been half filled with sediment, and had the canal ways been properly cleared of tree branches which clogged the remaining passageway, the Woodlawn Bridge would have been able to accommodate the estimated flows from the October 2004 resulting in no damage to the UH.*

RESPONSE: No, they should not be stricken. The modeling used within this proposed HEPA FFEIS includes a cleared Woodlawn Bridge and different scenarios with different levels of blockages. These evaluations can be seen in Appendix A of this HEPA FFEIS.

11. •*Also, isn't the USACE already in the process of improving the Woodlawn bridge to prevent the sedimentation buildup? The inclusion becomes a double request in my view.*

RESPONSE: We, the State, specifically did the project at Woodlawn Bridge that completed in 2019 to improve the conveyance of flows through the Manoa Marketplace area. We turned that information over to the Corps of Engineers and they are incorporating that data in with the other updates to modeling and engineering data. Part of this project was intended to help with the sedimentation issue.

12. *The current Woodlawn bridge improvements should be designed so that UH never gets flooded even with a 500-year storm. This can be done by adding a box culvert conduit around each side of the bridge as a spillway in case of a 500-year storm.*

RESPONSE: The modeling in Appendix A of this HEPA FFEIS demonstrates that the Woodlawn Bridge is not the constriction.
Furthermore, updated modeling engineering data and community input will be used during the design phase to refine or change the system features to provide the level of risk reduction authorized by Congress.

13. *Third level of protection can be accomplished by intercepting any overflows somewhere near Noelani School play area and channel directly to Manoa Stream after the Woodlawn bridge.*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed, the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value

engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction authorized by Congress. As part of the design phase several alternatives and materials, such as a bypass feature near Noelani School will be evaluated. Any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

14. *In the Executive Summary for your Draft EIS, it is claimed that "The tentatively selected plan is 99.8 percent reliable in protecting portions of Honolulu Hawaii from a flood which has a 1 percent chance of occurrence in any year. The tentatively selected plan would reduce the average annual flood risk and would leave the average annual residual damage estimated at $999,999 .... The benefit-cost ratio is approximately 2.38:1.*

Your studies make thousands of assumptions, are one dimensional, use coefficients that may not pertain to Hawaii's geography and tropical forest and uses an average of a handful of different methodologies that are all claimed to be the best but have different results.

RESPONSE: It is important to recognize that the plan is being developed based on engineering data and modeling that undergoes several reviews and checks and balances within each phase. Specific to the proposed action in this HEPA FFEIS, the modeling was developed by the Honolulu District, reviewed by the Pacific Ocean Division, reviewed by the US Army Corps of Engineers Enterprise, as well as an independent external review from experts not associated with the Corps of Engineers.

During the design phase, updated modeling, engineering data, and community input will be used to refine or change the system features. That data and modeling will then go through a similar review exercise to ensure that we are not increasing or inducing flood risk on the community.

15. *How can you substantiate such a high claim of protection and certainty?*

RESPONSE: It is important to recognize that the plan is being developed based on engineering data and modeling that undergoes several reviews and checks and balances within each phase. Specific to the proposed action in this HEPA FFEIS, the modeling was developed by the Honolulu District, reviewed by the Pacific Ocean Division, reviewed by the US Army Corps of Engineers Enterprise, as well as an independent external review from experts not associated with the Corps of Engineers.

During the design phase, updated modeling, engineering data, and community input will be used to refine or change the system features. That data and modeling will then go through a similar review exercise to ensure that we are not increasing or inducing flood risk on the community.

The Corps of Engineers has a process that is proven around the Nation and in Hawaii. The Corps of Engineer's projects have been functioning as designed throughout the State and has provided a balance of both natural beauty and flood protection for decades. Two specific examples of successful partnerships on Oahu can be seen in Hoomaluhia and Kawai Nui Marsh on the windward side of Oahu.

16. *Is the average residual damage estimated to be $999,999 accurate to one dollar?*

RESPONSE: The statement itself is an average, it also states that it is estimated, therefore it may not be accurate to one dollar.

17. *How much of the benefit-cost ratio be adjusted if you took UH out of the picture?*

RESPONSE: There is no reason to take UH out of the picture, it would be outside of the scope for this HEPA FFEIS to do so.

18. *If you just focused on saving Waikiki and used improvements only on public lands, how would that lower the benefit-cost ratio?*

RESPONSE: There is an incremental benefit to cost ratio analysis available in chapter 6, section 6.3.1, of Appendix B in this HEPA FFEIS. Increment 0 evaluated the economic benefit of flood protection measures along the Ala Wai Canal alone (only "saving Waikiki"), without additional features throughout the watershed. It was determined that Increment 0 by itself had a benefit-to-cost ratio of 0.87 and therefore not economically justified. To achieve the level of protection similar to the Recommended Plan, floodwalls would need to be higher and pump stations larger, increasing the costs to a point where that solution by itself cannot be economically justified.

19. *I believe the ES-1 USACE computer generated rendering showing the 100-year storm affected area is a "SCARE tactic," misleading, and not be accurately portrayed with the lack of information and data.*

RESPONSE: The Corps of engineers utilizes modeling, and engineering data that goes through a review process at several levels. The Corps of Engineers does not use "SCARE tactic".

20. *•I'm also against using the 2006 storm and the flooding on H-1 as a means to justify this project. If I recall correctly, the flooding had nothing to do with the intensity of the storm but more of a breakdown of a pump at the Punahou overpass bridge.*

RESPONSE: Appendix A-1, Chapter 3, Section 3.7.3, March 2006 Storm clearly describes the event and how it was used in the Model calibration.

21. *I question the reliability of all the methodologies being use because they are only as good as the data that you feed into them.*

RESPONSE: We concur, that is why there are several levels of review by different agencies in the Corps planning process. Additionally, models and engineering data will be updated and refined in the design phase. This proposed action in the HEPA FFEIS is a feasibility level effort. The objectives of a feasibility level effort is to determine whether the project is feasible, economically justified, and environmentally acceptable as required by federal and state laws.

22. *There are only about a dozen of rain gauge stations and some are automatically read and some are manually read.*

RESPONSE: Appendix A-1, Chapter 3, Sections 3.1-3.3 provide a detailed explanation of all rain gauges used in the development of the proposed action in this HEPA FFEIS.

23. *For the size of the watershed and vast different in topography and one that has over 30 sub-basins. Isn't there a severe lack of rain gauge stations and a lack of data?*

RESPONSE: This HEPA FFEIS is based on information evaluated and assessed during the 17-year feasibility study conducted by the Corps of Engineers. During the feasibility study there was a process done for alternative plan formulation, and selection which was shared with you in 2017. The proposed action from feasibility study recommended in the HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

24. *There are over 30 sub-basins most of which contain rain gauges. Isn't it common knowledge that what is going on in one sub basin may be totally different in another? How can you reasonably interpolate data from one rain gauge and apply it to several sub basins?*

RESPONSE: There is a very in-depth explanation of how the model was developed, calibrated, executed and interpolated in chapter 3 and 4 of Appendix A-1 in this HEPA FFEIS. The explanation is provided in figures, curves, and narratives for the different types of potential readers who comprehend information differently.

25. *Rain gauges in adjacent watersheds because a lack of data collection within the Ala Wai Watershed. Doesn't this reduce accuracy?*

RESPONSE: By itself, it may seem to reduce accuracy, however, when the data is then calibrated on three different rainfall events as outlined in Chapter 3, section 3.7, of Appendix A-1 and subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

26. *Not a single rain gauge up St. Louis Heights and the ridge to the other side of the Koolaus?*

RESPONSE: Please see maps, figures, and information available in Appendix A-1, Chapter 3, Section 3.1-3.3 for detailed information on the gauges used in the HEPA FFEIS.

27. *Data is used from a rain gauge located on Wilhelmina that is not included in the Ala Wai watershed. Again a lack of data collection and it should result in a lack of accuracy.*

RESPONSE: Please see maps, figures, and information available in Appendix A-1, Chapter 3, Section 3.1-3.3 for detailed information on the gauges used in the HEPA FFEIS. By itself, it may seem to reduce accuracy, however, when the data is then calibrated on three different rainfall events as outlined in Chapter 3, section 3.7, of Appendix A-1 and subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

28. *How can a few rain gauges on the lower extremes of backside of Manoa accurately reflect what is going on at the top of the mountain?*

RESPONSE: Please see maps, figures, and information available in Appendix A-1, Chapter 3, Section 3.1-3.3 for detailed information on the gauges used in the HEPA FFEIS. By itself, it may seem to reduce accuracy, however, when the data is then calibrated on three different rainfall events as outlined in Chapter 3, section 3.7, of Appendix A-1 and subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

29. *You use rain gauge collections on the Windward side of the island to support your claim of the severity of a storm. Doesn't this clear identify the lack of measurement facilities? A lack of accuracy and precision/*

RESPONSE: The data is calibrated on three different rainfall events as outlined in Chapter 3, section 3.7, of Appendix A-1 and subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

30. *Your modelings and diagrams are generated on data that has been interpolated over and over again and computed on shaky data.*

RESPONSE: Chapter 3 and 4 of Appendix A-1 explains in great detail how the model was developed, how the methodologies were executed, and how the models were calibrated to validate the information. Then subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

31. *There is a lack of flow rate data at each sub-basin and each fork of the streams and each bridge passings. There is no reason to interpolate or guess when you can easily install data collection equipment to improve your accuracy?*

RESPONSE: Chapter 3 and 4 of Appendix A-1 explains in great detail how the model was developed, how the methodologies were executed, and how the models were calibrated to validate the information. Then subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

32. *Are the rain gauges and stream flow equipment calibrated and certified?*

RESPONSE: Please see maps, figures, and information available in Appendix A-1, Chapter 3, Section 3.1-3.3 for detailed information on the gauges used in the HEPA FFEIS. By itself, it may seem to reduce accuracy, however, when the data is then calibrated on three different rainfall events as outlined in Chapter 3, section 3.7, of Appendix A-1 and subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

33. *What is the accuracy of the equipment and error tolerances?*

RESPONSE: Please see maps, figures, and information available in Appendix A-1, Chapter 3, Section 3.1-3.3 for detailed information on the gauges used in the HEPA FFEIS. By itself, it may seem to reduce accuracy, however, when the data is then calibrated on three different rainfall events as outlined in Chapter 3, section 3.7, of Appendix A-1 and subsequently reviewed at several levels in the Corps and outside of the Corps; the data is accepted as validated.

34. *Are the reading bulletproof or can they be affected by the environment to give incorrect results? For example, a bird, branch, or insect plugging the intake of a rain gauge and debris blocking the stream giving a false height of the flow?*

RESPONSE: The data used during the Feasibility Study was reviewed and determined to be sufficient for the proposed action in the HEPA FFEIS. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

35. *Data stretches back for almost a century. How reliable is it to use this old data to compute the storm frequencies?*

RESPONSE: Please refer to Chapter 3 and 4 of Appendix A-1 for how the data was used, calibrated, and modeled.
The modeling, data, and methodologies went through several levels of review within the Corps of Engineers and outside independent subject matter experts before being accepted as validated.

36. *Isn't it important to have accurate data? How valuable is it to have real ocean level measurements at the mouth of the Ala Wai Canal? Again, I don't think you can accurately interpolate data from Honolulu Harbor which is several miles away?*

RESPONSE: Yes, we concur that it is important to have accurate data and real ocean level measurements. Please refer to Chapter 3 and 4 of Appendix A-1 for how the data was used, calibrated, and modeled.

Appendix A-3, Section 5.1 includes discussion of the Honolulu Harbor tide gage which is located within 2 miles along the coastline to the west of the Ala Wai Canal. There is no dissimilar shoreline, bathymetry or hydrodynamic conditions between the tide station and the canal to disqualify the use of the Honolulu Harbor tide data. Based on a 1992 study by Edward K. Noda and Associates, previous tidal data collected in the Ala Wai Canal have shown that the tidal amplitude and phase between the harbor and the canal are nearly identical. Thus, the Honolulu Harbor data adequately represents the local sea-level conditions at the Ala Wai Canal.

37. *Isn't it possible to have a rain gauge reading signaling a 500-year storm and have flow readings of maybe a 2-year storm?*

RESPONSE: Discussion on rain gages and stream flow gages can be found in Appendix A-1, Sections 3.1 and 3.2 respectively. The modeling, data, and methodologies went through several levels of review within the Corps of Engineers and outside independent subject matter experts before being accepted as validated.

38. *Isn't it possible to have a rain gauge reading signaling only a 10-year storm and have flow reading of a 100-year storm?*

RESPONSE: Discussion on rain gages and stream flow gages can be found in Appendix A-1, Sections 3.1 and 3.2 respectively. The modeling, data, and methodologies went through several levels of review within the Corps of Engineers and outside independent subject matter experts before being accepted as validated.

39. *The New Year's Flood of 1987 in Hahaione Valley was said to be a 500-year storm? Can data from that area be interpolated with accuracy to the Ala Wai Canal Watershed or or vice versa?*

RESPONSE: It is not appropriate to incorporate the 1987 New Year's Eve flood into the data, because to do so will be an inaccurate sampling in the same way the project team could have incorporated flood data from the 1965 event on the windward side of the Koolau mountain range that claimed 30 homes, the lives of 2 people, and had estimated damages of $580,000. This led to the eventual Kaneohe-Kailua USACE Dam project, commonly referred to as Hoomaluhia. Each valley while close in proximity have different characteristics and data. In this study, storm data only within the Ala Wai Watershed is appropriate to incorporate.

40. *In a rather rushed review of the Ala Wai Canal Project, I have generated some questions, alternative thoughts and suggestions as follows:*

What percentage of the rain runoff and storm drainage system dumps into the Ala Wai?

RESPONSE: To answer your question, analysis of the sub-watershed drainage area is needed. This information can be found in Table 3-4 of Appendix A-1, Existing-Without Project Hydrologic Appendix. Table 3-4 provides a listing of all sub-watersheds with the drainage area associated. When correlated with the map in Figure 3-5, one can interpolate which sub-watersheds are urban and which ones are non-urban. Within the Ala Wai watershed all urban storm drainage systems drain into the Ala Wai Canal. Based on this, approximately 11 square miles of the total 16.2 square mile drainage area drains directly into the Ala Wai Canal, or approximately 68% of the rain runoff and storm drainage within the Ala Wai Watershed. For the purposes of this comment, sub-watersheds, M1, M2, M5, M13, P1, P2, P3 were all assumed to be non-urban.

41. *•Will there be backflow as the level of the Ala Wai exceeds the ground elevation of Waikiki?*

RESPONSE: The detailed information to answer your question is located in Appendix A-2, Chapter 8, Interior Drainage in this HEPA FFEIS.

42. *•Why not install pumps to force main the rain runoff from Waikiki straight into the ocean?*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options that include

evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

43. •*Why not use Kapiolani park as an emergency spillway?*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

44. •*Why not use Fort DeRussy as an emergency spillway?*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

45. •*Does the Upper Kaimuki sub-basin dump into the Ala Wai?*

RESPONSE: Yes, as referenced in response 25 to your letter dated 30 October 2015.

46. •*Why not install high capacity pumps similar to what is used in New Orleans and force main the Ala Wai Canal overflow straight off offshore into the ocean in the event of a 100-year storm?*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

47. •*When is the intended design life of the Ala Wai Canal coming to an end in 2076 or 61 years from now?*

RESPONSE: The Ala Wai Canal is recognized as critical infrastructure to the life safety, property, and economics of the area. It is assumed for the purpose of the proposed action within this HEPA FFEIS that the Canal will be maintained and operable for the duration of the flood project's functional lifetime. There are no plans in the foreseeable future to discontinue maintenance of the Canal or to decommission the Canal.

48. *Why are we pouring all this improvements into the perimeter of the canal. Isn't it a waste of tax-payers money?*

RESPONSE: No, we do not see flood reduction in the Ala Wai Canal and watershed community as a waste of time. Public safety and reducing the flood risk in the Ala Wai Watershed Community is a top concern of the project. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Public safety and community concerns will be considerations in designing system features that delivers the level of risk reduction authorized by Congress for this project. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

49. *Maybe the whole canal should be redesigned and improved with the latest engineering technologies to accommodate the 100-year storm.*

RESPONSE: Solely redesigning the whole canal to accommodate the 100-year storm does not address the risk to the University of Hawaii at Manoa near Manoa Marketplace and will not be pursued as a sole measure alternative.

50. *Alternate 1, a large detention basin designed to hold 11.5 million cubic feet or a series of smaller less visible detention basins on public land would be more viable?*

RESPONSE: This HEPA FFEIS is based on information evaluated and assessed during the 17-year feasibility study conducted by the Corps of Engineers. During the feasibility study there was a process done for alternative plan formulation, and selection which was shared with you in 2017. The proposed action from feasibility study recommended in the HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

51. *The larger landowners like the Catholic Church are in a better position to exchange land and work something out in the preliminary stages. They are better equipped to afford professional consultants to ensure fairness and are less likely to be personally affected by use of their lands.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. A final real estate and land use plan will be developed based on the updated data. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase.

52. *The amount of water retained can be increased for the Ala Wai Golf?*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

53. *Channels next to Kaimuki High School and all the way up to Woodlawn can be expanded and used as Channel Full retention channel with adequate overflow capacities.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

54. *Kanewai field should be reversed so that the school doesn't have a berm to cross over to use.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is

the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

55. *Rather than a berm a concrete retaining wall similar to the Ala Wai Canal wall should be built and lined with moss rock along the residential side and replacing the corroded chainlink fence.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

56. *Any use of the public parks or schools should be done in a way to enhance the area and improve the parks and schools uses to the benefit of the public.*

RESPONSE: Page 1-2 of the Federal NEPA Document, as well as this HEPA FFEIS proposed action discusses the USACE Environmental Operating Principles (EOP) which requires "mutually supporting economic and environmental sustainable solutions." These same EOP will be applied during the design phase as data is updated and designs are refined.

57. *Why build something that is ugly or an eyesore with the sole intent of only solving the problem?*

RESPONSE: Page 1-2 of the Federal NEPA Document, as well as this HEPA FFEIS proposed action discusses the USACE Environmental Operating Principles (EOP) which requires "mutually supporting economic and environmental sustainable solutions." These same EOP will be applied during the design phase as data is updated and designs are refined.

58. *Let's use Federal money to the maximum benefit of the public? Hey may be a portion of the maintenance of the park can paid for by the Feds to maintain the joint park and detention basin.*

RESPONSE: Federal money is appropriated for congressionally authorized projects. The appropriated funding must go towards reducing the flood risk in the community; maintenance for flood control projects is not the federal government's responsibility. In the case of Ala Wai project, it is the responsibility of the City and County of Honolulu.

59. *Manoa Park and Palolo Park should also be looked at as suitable locations for detention basins. Storm water can be captured up stream at higher elevations through a spillway and channeled downstream to the public parks detention basins which will only function in times of the most severe storms and will naturally drain over a short period of time to reduce the time of concentrations. Much like how the taro patches of old Hawaii worked.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

60. •*Other alternative to handle the storm water from Palolo would be to use State Lands or other public lands.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

61. *The State School properties throughout the watershed can be used and maybe even improved through the use of the public lands.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in

location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

62. •*Kaimuki High School Field is a large area?*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

63. •*The volume capacity behind Dole Street bride next to the UH is huge.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

64. •*The volume capacity behind the St. Louis Drive bridge next to City Mill is huge.*

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

65. •*Several locations can be detained and have enough elevation and depth to develop head pressure. Storm water can be force main at a much higher velocity and a larger volume of storm water can be move down stream in a shorter amount of time through the Ala Wai Canal to a point*

where overflow risk is minimal? The Ala Wai Canal and the channel next to Kaimuki School is relatively flat with little slope. The velocities are very low and the Ala Wai Canal is like a slow moving reservoir with zero slope.

RESPONSE: Thank you for your recommendation. We are continuing to evaluate alternative designs. The recommended action in the 2017 NEPA FFEIS and subsequent HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

66. *High capacity pumps can assist. Pumps don't need the head so they can even be position anywhere within the Ala Wai Canal.*

RESPONSE: During the Design phase modeling, and engineering data will be revised to determine the final volume of water that requires evacuating through a pump system. The volume of water will determine the type of pump options. Generally, submersible pump systems are only associated with small volumes of flows. Section 5.5 in Appendix A of this HEPA FFEIS indicate peak flow discharges in excess of 15,000 cubic feet per second (cfs) at the junction directly upstream the confluence of the Manoa-Palolo and Ala Wai Canals. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

67. *What do the pumps at the end of Ala Wai Canal do? Low volume pumps into the ground? That doesn't make any sense.*

RESPONSE: The pumps at the end of the canal are to evacuate water from interior drainage systems in the proposed action within this HEPA FFEIS.

68. *High capacity emergency pumps should be put in place to pump to a spillway through Kapiolani Park or directly offshore to the ocean.*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both

environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options that include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

69. •*The same concept can be used adjacent to Fort DeRussey. Pump to an emergency spillway or out to the ocean.*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options that include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

70. *Other locations to consider would be adjacent to the major watershed intakes alone the Ala Wai Canal.*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Options that include evacuating the water through Kapiolani Park or other areas along the Kapahulu end of the Ala Wai Canal.

71. *Is the only alternative for several detention basins in the upper areas of Tantalus, Manoa, and Palolo absolutely necessary?*

RESPONSE: This HEPA FFEIS is based on information evaluated and assessed during the 17-year feasibility study conducted by the Corps of Engineers. During the feasibility study there was a process done for alternative plan formulation, and selection which was shared with you in 2017. The proposed action from feasibility study recommended in the HEPA FFEIS is the economically justified and environmentally acceptable recommended plan based on the information available at that time. During the design phase, updated modeling, engineering data, and community input will be used to refine the project design to ensure the System delivers the level of risk reduction authorized by Congress. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be

developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

72. *Are there better site locations or alternatives that would comparable retention of storm water?*

RESPONSE: We received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed; the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction as authorized by Congress. As part of the design phase any changes to the recommended system features will be evaluated for environmental and community impacts, supplemental documentation will be developed commensurate with those impacts.

73. *It seems as though the use of public lands first was too quickly passed over and the small private landowners did not have a representative in the Project Delivery Team or have access to the Technical Advisory Team which placed the private landowners at a severe disadvantage compared to other stakeholders who were invited at the onset of the project.*

RESPONSE: Public involvement and agency coordination is detailed in Section 6 and Appendix G of the HEPA FFEIS. As shared with you in our 2017 response letter, "Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. A public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders, neighborhood commissions and property owners directly affected by the recommended plan. No further meetings are planned during the feasibility phase of the FEIS." During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

You are a stakeholder identified in Appendix G1 as a landowner. You were not intentionally omitted from the process, you purchased your property in October 2013 and received a notification of the public meeting and DFEIS once you were identified as a landowner in the

project area. As a stakeholder, you will also be added to a project mailing list and email distribution to regularly inform you of any upcoming community outreach and engagement opportunities.

Furthermore, land use and real estate impacts to privately owned properties remains an unresolved issue in this HEPA FFEIS. Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. A more detailed real estate plan will be developed in the Design Plan after the final design of System Features are complete and evaluated for environmental and community impacts. If there are new environmental impacts supplemental documentation will be developed commensurate with the level of impacts. Community outreach and engagement will serve a critical role in the design of a final system of features.

74. *Your guidelines specifically states that you should get early feedback from the private landowner stakeholder in Section 2.1. The private landowner stakeholders were supposed to be invited to the "Open House Meetings" and the EIS process should be deemed not in compliance with HRS Chapter 343 and NEPA.*

RESPONSE: A DLNR Press Release from us on May 8, 2014 announced the two Open House Meetings that the public was invited to attend and learn about the project.

75. •*Developable residential properties are very scarce in town and even more so in Manoa Valley and Palolo Valley. Why reduce the development potential of providing much needed housing to these areas? Let alone condemn properties with homes on it and directly affect the housing inventory.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

76. •*Private land and values can substantially change in value and use from now to the time the project receives all the necessary approvals and funding? This can be a major setback in the projects schedule or budgeting.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

77. •*Property values in many areas of Oahu have more than doubled in 10 years. Your economic assessment is outdated and several year-old and based on property tax assessment which in many cases could be way low from an appraisal or best use of the land or income valuation based on rental income potential.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

78. •*Basically, the Ala Wai Canal Project has less control of what a private landowner does until you secure the property unless an agreement is reached prior to condemnation whereas very little will change on government and public lands.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

79. •*Considering that the composition of the project could change, or different alternatives selected, or the project not receive funding for several years. It is detrimental, highly restrictive, ads risk, and limits a private landowner's rights and free uses of their land. For example, upon your designating the use on an individual's property the appreciation in value will come to a halt. The property becomes less valuable and unsellable. The property is less liquid and if for some reason the owner needed to sell, he would have to disclose the situation, and who on earth would want to buy a property that is in limbo.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

G. Specific Concerns raised in your letter dated September 28, 2015 to Chair, DLNR

1. *We are in receipt of your letter date stamped August 14, 2015 regarding the above project and informing us for the first time that our privately owned property TMK 34016059, located at 2532 Waiomao Road, Honolulu, HI 96816 is a part of the Ala Wai Canal Flood Risk Management Feasibility Study and that the US Army Corps of Engineers are recommending the purchase of our property for the construction of the Waiomao Detention Basin.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

2. *We received your certified letter in the week of September 14, 2015 only a few weeks prior to your September 30, 2015 public review meeting which gives us very little time to digest the thousands of pages of technical documents surrounding this massive $200 million project.*

RESPONSE: The integrated study for Feasibility and Environmental analysis review period was extended specifically for the reason you suggest. We recognize the amount of information and complexity of the information and to address this, we extended the statutory 45-day review period for an additional 33 days, starting on August 23, 2015 and ending on November 9, 2015 from the original deadline of October 7, 2015.

3. *It is very stressful and disturbing to us personally to see our privately-owned property targeted as a site for a detention basin and included in several voluminous reports with schematic drawings and feasibility studies.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

4. *The cutoff date for public input of October 7, 2015 is relatively short considering your experts have taken years to put this approximately $200 million project together up until this point.*

RESPONSE: The integrated study for Feasibility and Environmental analysis review period was extended specifically for the reason you suggest. We recognize the amount of information and complexity of the information and to address this, we extended the statutory 45-day review period for an additional 33 days, starting on August 23, 2015 and ending on November 9, 2015 from the original deadline of October 7, 2015.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
530 SOUTH KING STREET, ROOM 202
HONOLULU, HAWAII 96813-3065
TELEPHONE: (808) 768-5010 • FAX: (808) 768-5011

ANN H. KOBAYASHI
COUNCILMEMBER, DISTRICT 5
CHAIR, COMMITTEE ON BUDGET
TELEPHONE: (808) 768-5005
FAX: (808) 768-1227
EMAIL: akobayashi@honolulu.gov

November 5, 2015

Derek J. Chow
Civil and Public Works Branch
Honolulu District, USACE
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

RE: ALA WAI CANAL PROJECT

Dear Mr. Chow,

I am writing this letter on behalf of my constituents, who have expressed concerns regarding the Ala Wai Canal Project Draft Feasibility Report. As the Councilmember representing the Palolo and Manoa neighborhoods, I agree with their concerns that privately owned properties not be used for any detention basins, and that other alternatives such as public lands be seriously considered before implementation of the proposals.

I have also included a letter from a resident to the State of Hawaii Department of Land and Natural Resources, requesting answers to several questions in regard to the study's methodology, proposals, and conclusions.

In addition, Iolani School, Ala Wai Elementary School, and a number of condominium owners have also expressed concerns that the proposed project will place their properties in a floodway. The proposals are disconcerting for the residents and both schools' officials, who were only recently notified of the plan.

Their safety and the safety of our residents is of primary importance, therefore, I respectfully request that the U.S. Army Corps of Engineers seriously address the residents' and schools' concerns and reevaluate its proposals.

I further request that USACE and DLNR provide answers to the community's questions, including the attached letter, before it issues a Final Feasibility Report. I also request that more outreach and communication be provided to the residents and businesses, especially to those who are directly affected by the Project's proposals.

A majority of the proposals affect many of the neighborhoods in my district, as well as both Iolani School and Ala Wai Elementary. I am in accord with their concerns and fully support their requests to reconsider the Project's proposals.

I look forward to your responses to the questions provided, as well as those from the community in order to fully address the community's concerns, and more importantly, to address the health and safety of our residents.

Sincerely,

Ann H. Kobayashi, Councilmember
District V

ENCLOSURES

Dave K. Watase
1537 Ala Aoloa Loop
Honolulu, HI 96819
Cel. 728-0759
Email: dwatase@hotmail.com

September 30, 2015

Ms. Suzanne D. Case, Chairperson
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Re: Ala Canal Project
Prepared for September 30, 2015 Public Review Meeting

Dear Ms. Case,

I am in receipt of your letter date stamped August 14, 2015 regarding the above project and informing us for the first time that our privately owned property TMK 34016059, located at 2532 Waiomao Road, Honolulu, HI 96816 is a part of the Ala Wai Canal Flood Risk Management Feasibility Study and that the US Army Corps of Engineers are recommending the purchase of our property for the construction of the Waiomao Detention Basin.

Your letter to me states that "The Corps estimates that another major flooding event would result in damages to more than 3,000 structures in the watershed with a total damage of about $723 million."

- How precise and accurate is the claim of damage to 3,000 structures?
- How precise and accurate is your claim of the $723 million dollar damage figure? Most of the references on your website use a $314 million figure based on 2013 prices. Seems to be ballooning like the cost of the Honolulu Rail Project which started out at $2.7 billion in 2008 and now less than halfway completed at $6 billion.

Your letter to me states that "The canal has overtopped and previously flooded Waikiki during the November 1965 and December 1967 storms and the passage of Huriicane Iniki in 1992"as a basis to support the project.

- What percentage ratings were each of these 3 storms?
- What were the dollar damage figures for each of these 3 storms?
- What are the associated flow rates and rain gauge reading tied into determining the storm percentage?

Your letter to me states that "An October 2004 storm flooded Manoa Valley and a March 2005 storm flooded Makiki causing a combined $85 million dollar damages" and the claim is used in support of the project.

- I believe the University of Hawaii and Waikiki are highest valued areas of potential damage and comprise the majority of the claimed damage of a 100-year storm. The storm was estimated to be a 20-year or a 25-year storm. What impact did this storm have on Ala Wai Canal and the flow rates at the mouth of the Canal?
- Should the damage claim and any reference to the October 2004 be stricken because had the Woodlawn bridge been properly maintained and not been half filled with sediment, and had the canal ways been properly cleared of tree branches which clogged the remaining passage way, the Woodlawn bridge would have been able to accommodate the estimated flows from the October 2004 resulting in no damage to the UH.
- Also, isn't the USACE already in the process of improving the Woodlawn bridge to prevent the sedimentation buildup? The inclusion becomes a double request in my view. The current Woodlawn bridge improvements should be designed so that UH never gets flooded even with a 500-year storm. This can be done by adding a box culvert conduit around each side of the bridge as a spillway in case of a 500-year storm. Third level of protection can be accomplished by intercepting any overflows somewhere near Noelani School play area and channel directly to Manoa Stream after the Woodlawn bridge.

In the Executive Summary for your Draft EIS, it is claimed that "The tentatively selected plan is 99.8 percent reliable in protecting portions of Honolulu Hawaii from a flood which has a 1 percent chance of occurrence in any year. The tentatively selected plan would reduce the average annual flood risk and would leave the average annual residual damage estimated at $999,999. ... The benefit-cost ratio is approximately 2.38:1.

Your studies make thousands of assumptions, are one dimensional, use coefficients that may not pertain to Hawaii's geography and tropical forest and uses an average of a handful of different methodologies that are all claimed to be the best but have different results. Throughout your engineering studies they use the word "peaky" as a basis for unpredictability and to justify themselves if the calibrated results don't correlate to the rain gauge readings and flow rates.

- How can you substantiate such a high claim of protection and certainty?
- Is the average residual damage estimated to be $999,999 accurate to one dollar?
- How much of the benefit-cost ratio be adjusted if you took UH out of the picture?
- If you just focused on saving Waikiki and used improvements only on public lands, how would that lower the benefit-cost ratio?
- I believe the ES-1 USACE computer generated rendering showing the 100-year storm affected area is a "SCARE tactic" , misleading, and not be accurately portrayed with the lack of information and data.
- I'm also against using the 2006 storm and the flooding on H-1 as a means to justify this project. If I recall correctly, the flooding had nothing to do with the intensity of the storm but more of a breakdown of a pump at the Punahou overpass bridge.

I question the reliability of all the methodologies being use because they are only as good as the data that you feed into them.

- There are only about a dozen of rain gauge stations and some are automatically read and some are manually read.
- For the size of the watershed and vast different in topography and one that has over 30 subbasins. Isn't there a severe lack of rain gauge stations and a lack of data?
- There are over 30 subbasins most of which contain rain gauges. Isn't it common knowledge that what is going on in one subbasin may be totally different in another?, How can you reasonably interpolate data from one rain gauge and apply it to several subbasins?
- Rain gauges in adjacent watersheds because a lack of data collection within the Ala Wai Watershed. Doesn't this reduce accuracy?
- Not a single rain gauge up St. Louis Heights and the ridge to the other side of the Koolaus?
- Data is used from a rain gauge located on Wilhelmina that is not included in the Ala Wai watershed. Again a lack of data collection and it should result in a lack of accuracy.
- How can a few rain gauges on the lower extremes of backside of Manoa accurately reflect what is going on at the top of the mountain?
- You use rain gauge collections on the Windward side of the island to support your claim of the severity of a storm. Doesn't this clear identify the lack of measurement facilities? A lack of accuracy and precision/
- Your modelings and diagrams are generated on data that has been interpolated over and over again and computed on shaky data.
- There is a lack of flow rate data at each subbasin and each fork of the streams and each bridge passings. There is no reason to interpolate or guess when you can easily install data collection equipment to improve your accuracy?
- Are the rain gauges and stream flow equipment calibrated and certified?
- What is the accuracy of the equipment and error tolerances?
- Are the reading bulletproof or can they be affected by the environment to give incorrect results? For example, a bird, branch, or insect plugging the intake of a rain gauge and debris blocking the stream giving a false height of the flow?
- Data stretches back for almost a century. How reliable is it to use this old data to compute the storm frequencies?
- Isn't it important to have accurate data? How valuable is it to have real ocean level measurements at the mouth of the Ala Wai Canal? Again, I don't think you can accurately interpolate data from Honolulu Harbor which is several miles away?
- Isn't it possible to have a rain gauge reading signaling a 500-year storm and have flow readings of maybe a 2-year storm?
- Isn't it possible to have a rain gauge reading signaling only a 10-year storm and have flow reading of a 100-year storm?
- The New Year's Flood of 1987 in Hahaione Valley was said to be a 500-year storm? Can data from that area be interpolated with accuracy to the Ala Wai Canal Watershed or or vice versa?

In a rather rushed review of the Ala Wai Canal Project, I have generated some questions, alternative thoughts and suggestions as follows:

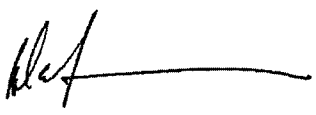
- What percentage of the rain runoff and storm drainage system dumps into the Ala Wai?
- Will there be backflow as the level of the Ala Wai exceeds the ground elevation of Waikiki?
- Why not install pumps to force main the rain runoff from Waikiki straight into the ocean?
- Why not use Kapiolani park as an emergency spillway?
- Why not use Fort DeRussy as an emergency spillway?
- Does the Upper Kaimuki subbasin dump into the Ala Wai?
- Why not install high capacity pumps similar to what is used in New Orleans and force main the Ala Wai Canal overflow straight off offshore into the ocean in the event of a 100-year storm?
- When is the intended design life of the Ala Wai Canal coming to an end in 2076 or 61 years from now? Why are we pouring all this improvements into the perimeter of the canal. Isn't it a waste of taxpayers money? Maybe the whole canal should be redesigned and improved with the latest engineering technologies to accommodate the 100-year storm.
- Alternate 1, a large detention basin designed to hold 11.5 million cubic feet or a series of smaller less visible detention basins on public land would be more viable? The larger landowners like the Catholic Church are in a better position to exchange land and work something out in the preliminary stages. They are better equipped to afford professional consultants to ensure fairness and are less likely to be personally affected by use of their lands.
- The the amount of water retained can be increased for the Ala Wai golf ?
- Channels next to Kaimuki High School and all the way up to Woodlawn can be expanded and used as Channel Full retention channel with adequate overflow capacities.
- Kanewai field should be reversed so that the school doesn't have a berm to cross over to use. Rather than a berm a concrete retaining wall similar to the Ala Wai Canal wall should be built and lined with moss rock along the residential side and replacing the corroded chainlink fence. Any use of the public parks or schools should be done in a way to enhance the area and improve the parks and schools uses to the benefit of the public. Why build something that is ugly or an eyesore with the sole intent of only solving the problem? Let's use Federal money to the maximum benefit of the public? Hey may be a portion of the maintenance of the park can paid for by the Feds to maintain the joint park and detention basin.
- Manoa Park and Palolo Park should also be looked at as suitable locations for detention basins. Storm water can be captured up stream at higher elevations through a spillway and channeled downstream to the public parks detention basins which will only function in times of the most severe storms and will naturally drain over a short period of time to reduce the time of concentrations. Much like how the taro patches of old Hawaii worked.
- Other alternative to handle the storm water from Palolo would be to use State Lands or other public lands. The State School properties throughout the watershed can be used and maybe even improved through the use of the public lands.
- Kaimuki High School Field is a large area?

- The volume capacity behind Dole Street bride next to the UH is huge.
- The volume capacity behind the St. Louis Drive bridge next to City Mill is huge.
- Several locations can be detained and have enough elevation and depth to develop head pressure. Storm water can be force main at a much higher velocity and a larger volume of storm water can be move down stream in a shorter amount of time through the Ala Wai Canal to a point where overflow risk is minimal? The Ala Wai Canal and the channel next to Kaimuki School is relatively flat with little slope. The velocities are very low and the Ala Wai Canal is like a slow moving reservoir with zero slope. High capacity pumps can assist. Pumps don't need the head so they can even be position anywhere within the Ala Wai Canal.
- What do the pumps at the end of Ala Wai Canal do? Low volume pumps into the ground? That doesn't make any sense. High capacity emergency pumps should be put in place to pump to a spillway through Kapiolani Park or directly off shore to the ocean.
- The same concept can be used adjacent to Fort DeRussey. Pump to an emergency spillway or out to the ocean. Other locations to consider would be adjacent to the major watershed intakes alone the Ala Wai Canal.
- Is the only alternative for several detention basins in the upper areas of Tantalus, Manoa, and Palolo absolutely necessary?
- Are there better site locations or alternatives that would comparable retention of storm water?
- It seems as though the use of public lands first was too quickly passed over and the small private landowners did not have a representative in the Project Delivery Team or have access to the Technical Advisory Team which placed the private landowners at a severe disadvantage compared to other stakeholders who were invited at the onset of the project.
- Your guidelines specifically states that you should get early feedback from the private landowner stakeholder in Section 2.1. The private landowner stakeholders were supposed to be invited to the "Open House Meetings" and the EIS process should be deemed not in compliance with HRS Chapter 343 and NEPA.
- It should not be assumed that a Neighborhood Board, a Condo Association, a Community Association will properly represent the individual property owners who are directly affected by the Ala Wai Canal Project. Many of these other Stakeholders are government agencies with paid staff members to lookout for only their personal agencies interest. Most will not even read or take the time to study the technical data, results, and designs. The Catfish had better representation than the private landowners.
- Developable residential properties are very scarce in town and even more so in Manoa Valley and Palolo Valley. Why reduce the development potential of providing much needed housing to these areas? Let alone condemn properties with homes on it and directly affect the housing inventory.
- Private land and values can substantially change in value and use from now to the time the project receives all the necessary approvals and funding? This can be a major setback in the projects schedule or budgeting.
- Property values in many areas of Oahu have more than doubled in 10 years. Your economic assessment is outdated and several year old and based on property tax assessment which in many cases could be way low from an appraisal or best use of the land or income valuation based on rental income potential.

- Basically, the Ala Wai Canal Project has less control of what a private landowner does until you secure the property unless an agreement is reached prior to condemnation whereas very little will change on government and public lands.
- Considering that the composition of the project could change, or different alternatives selected, or the project not receive funding for several years. It is detrimental, highly restrictive, ads risk, and limits a private landowner's rights and free uses of their land. For example, upon your designating the use on an individual's property the appreciation in value will come to a halt. The property becomes less valuable and unsellable. The property is less liquid and if for some reason the owner needed to sell, he would have to disclose the situation, and who on earth would want to buy a property that is in limbo.
- A better solutions would be to look for a site further up the watershed or stream. Some of these areas have hiking trails that are difficult to access and have very limited parking. Access to public lands for public recreational uses have a very high value and are popular if done the right way. Detention basins don't have to be a large earthen dam. The can be thinner concrete walls with moss rock facing. They can be integrated into a trail that meanders through a winding stream. Leave the natural stream and don't excavate for increased volume. It destroys the natural beauty of the streams so what if you have to put a series of smaller detention basins, if done right it can be a thing of beauty and would provide access to areas otherwise unaccessable. Other options would be to incorporate the detention area in to a parking lot but disguised in such a way that no one can tell. Access is important to our public lands and better access also permits better maintenance and upkeep with trash receptacles to keep the place clean.
- A lot of our playground areas and public park spaces are unusable because of the grading. These unusable spaces have been like that for all my life and will never change. But this can be an opportunity to improve and expand a public playground or park facility again if done correctly.

In short, I believe there is a need for improved storm protection for the Ala Wai Canal Project. I favor eliminating the use of all private properties unless the current ownership is will to partner with the project. The PDT should work with owners of potential sites at the very earliest stages. I favor coordinating this project and integrating it with not only flood protection but use it as an avenue for better access to public lands and hiking trails, improvement to public parks, public district parks, and school lands. I'm in favor of eliminating all controversial and unpopular designs and focus on less impacted parties. For example, focus on the Ala Wai Canal wall and the Ala Wai Golf Course and other flood protections at the lower extreme of the watershed. Stay within the Ala Wai Channel area. Ala Wai Districk Park, Kaimuki High School field. Fort DeRussy, Kapiolani Park. Fix Woodland bridge and East Manoa bridge to make sure UH is protected from a 100-year plus storm. I think the project the way it stands is too complicated and has too many elements that will only slow down the project and/or kill it. Good for job security for a bunch of people and consultants but does little to help solve the problem and highest economical risk to Waikiki and UH. I hope to add and expand to my comments and concerns. This letter was put together on short notice and rush so my be incomplete and in some cases unverified. Thank you for your time and consideration. Should you have any questions, you can reach me on my cel at 728-0759 or email me at dwatase@hotmail.com.

Aloha, Dave Watase



US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Councilmember Ann Kobayashi
City and County of Honolulu
530 South King Street, Room 202
Honolulu, Hawaii 96813-3065

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments on behalf of your constituents including Iolani School and David Watase. Response to both parties has been provided in writing and are attached to this letter.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Timothy Cottrell
Iolani School
563 Kamoku Street
Honolulu, Hawaii 96826

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding public outreach
- Alternative Plan Selection
- Concerns of Iolani School regarding the absence of a floodwall on school property
- Economic optimization of the recommended plan
- FEMA Floodzone Designation

Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Iolani School feedback was solicited at both EIS scoping points. Summaries of feedback received is attached to this letter. The following individuals are included on e-mail distributions as representatives of the school:

- Glenn Ching
- Reid Gushiken
- Dr. Yvonne Chan
- Megan Kawatachi
- Hye Jung Kim

Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. During this period, the following notices were provided to those individuals on the e-mail distribution list:

- 19 MAY 2014 Open House invitation
- 03 JUN 2014 Open House slideshow availability
- 24 AUG 2015 Draft FR/EIS and Public Meeting initial notice
- 26 SEP 2015 Draft FR/EIS Public Meeting reminder
- 07 OCT 2015 Draft FR/EIS Public Meeting follow up

As noted above, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if

the recommended plan is constructed. With that said, even with implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area.

Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS. Sea level rise is included in the analysis provided under Appendix A for the purpose of evaluating the resiliency of the recommended plan to a changing environment; sea level varies over time and increases under a number of scenarios. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase.

USACE has developed hydraulic information which can be utilized by regulatory agencies and the public as a part of the National Flood Insurance Program (NFIP). It is possible that FEMA could make adjustments to the floodplain without the project in place; however, USACE cannot speculate on the timing of any potential FEMA floodplain map revisions. All property owners are encouraged to participate in the NFIP to manage risks associated with flooding.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

July 6, 2004

Ms. Sherri Hiraoka
Townscape, Inc.
Environmental and Community Planning
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813

RE: ALA WAI CANAL PROJECT EIS SCOPE

Dear Ms. Hiraoka:

We appreciate this opportunity to submit comments to the Ala Wai Canal project.

In reviewing the information presented on June 29, we have the following observations:

1. There seems to be an over-reliance on the Manoa-Palolo Drainage Canal to handle the volume of water coming down from the mountain areas in the event of the 100-year storm. High tides would prevent drainage and while Ala Wai Golf Course and Kaimuki High School fields act as detention areas, they also appear inadequate.

2. Parts of the Manoa-Palolo drainage canal have concrete ducts while the canal area makai of Kaimuki High School does not. Vegetation and debris along the banks would cause refuse washed down to become entangled, thus restricting flow. The banks makai of the Date Street bridge are relatively low allowing flooding near Iolani School.

3. Dredging of the Ala Wai Canal to a deeper depth did not pass beyond the Manoa-Palolo drainage canal in the Diamond Head direction, and dredging of the Manoa-Palolo canal stopped adjacent to the Ala Wai B softball field, well short of the Date Street bridge.

4. The price tag of $30 - $60 million did not seem to include regular, periodic maintenance of the canal depth, bridge spans, concrete channels, and bank clean up.

5. Erection of floodwalls around the canal, while an engineering solution, would not be conducive to the Waikiki vistas and would be subject to graffiti and vandalism.

6. Widening the lower section of the Ala Wai Canal is a good engineering solution.

We have the following comments:

1. Allow a connection of the Ala Wai Canal to the ocean on the Kapahulu end to have a "flushing" action and to equalize water volume on both ends.

2. Allow Kapiolani Park to also become a water detention area through the "Kapahulu" connection.

3. Build up concrete banks and remove vegetation along the Manoa-Palolo Drainage Canal especially makai of the Date Street bridge. Since it is the area which empties into the Ala Wai Canal, it would be susceptible to blockage.

4. Construct spill ways along the Manoa-Palolo Drainage Canal which allow flood waters to go into the designated detention areas when the water levels rise above a certain height.

5. Reinstate the original stream path which traversed the Ala Wai Golf Course. It emptied near the Waikiki Library. Restoration of the natural habitat can happen here relatively undisturbed and made part of the golf course challenges.

6. Dredge the Manoa-Palolo drainage canal and the entire Ala Wai Canal length on a regular basis.

7. Examine whether the spans of the other bridges along the drainage canal need modifications like the McCully and Ala Moana bridges.

8. Continue community education and bulk refuse collection efforts to reduce dumping into the streams feeding into the Manoa-Palolo drainage canal.

9. The project's funding should also include regular, periodic maintenance to the flood mitigation measures.

Thank you for your consideration. Please contact me at 943-2209 if you have questions.

Sincerely,

Glenn Ching
Director of Finance

cc: State of Hawaii
Department of Land and Natural Resources, Engineering Division
P.O. Box 373
Honolulu, HI 96809
Attn: Andrew Monden

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

ALA WAI WATERSHED PROJECT (AWWP)
COMMUNITY CONSULTATION

Date: **June 17, 2009**
To: **Project Files**
From: **Townscape**
RE: **Meeting with Glenn Ching**

Participants: Glenn Ching, ʻIolani School, Director of Finance; Agnes Topp, Townscape.

The purpose of the meeting was to discuss issues associated with the lower portion of the Mānoa-Pālolo stream, near ʻIolani School, and to provide an update to Mr. Ching on the Ala Wai Watershed Project.

Background on the Ala Wai Watershed Project

- The Ala Wai Watershed Project (AWWP) is a partnership between the Army Corps of Engineers, the State Department of Land and Natural Resources, and City and County Environmental Services. After earlier iterations that looked at portions of the Ala Wai Watershed (specifically, the Ala Wai Canal and Mānoa Stream), the project is now taking a more holistic approach, looking at potential issues and mitigation in the entire watershed, which includes the neighborhoods of Makiki, Mānoa, Pālolo, St Louis-Kapahulu-Diamond Head, McCully-Mōʻiliʻili-Ala Moana, and Waikīkī.
- The project is currently in the feasibility phase, where we are gathering all necessary information to design flooding mitigation and ecosystem restoration measures. When the project team has preliminary measures designed, we will begin conducting neighborhood-level meetings to discuss potential measures and collect feedback from affected communities. These meetings should occur some time in the fall of 2009.

Lower Mānoa-Pālolo Stream Issues in the vicinity of Iolani School

- Upstream of the Date Street bridge, the Mānoa-Pālolo drainage canal has concrete banks and bottom, while on the *ma kai* side it has natural banks and bottom. This causes buildup of soil in the lower portion of the canal.
- The canal by ʻIolani School is about 5 feet deep. Silt buildup at the bottom is visible at low tide. When the Ala Wai Canal was dredged a few years back, they did not dredge the Mānoa-Pālolo drainage canal.
- ʻIolani School is concerned about the maintenance of the stream banks and vegetation in the lower Mānoa-Pālolo drainage canal. Stream banks are vegetated primarily with kiawe trees, milo trees, and mangrove. The mangrove in certain areas is encroaching into the stream and causing additional silt buildup.
- ʻIolani has been doing maintenance of the vegetation along the stream banks next to the portion of the bike path that the school maintains as part the Adopt-A-Park program. Maintenance includes removing broken branches in the stream, cutting tree branches that hang too low over the stream, and cutting some of the mangrove that is encroaching into the stream. ʻIolani is interested doing additional maintenance, such as removing more of the mangrove, and the nearby community has been proactive in helping to clean up the area, but they are not sure what they are allowed to do. (I provided Glenn with information about the "Adopt-A-Stream" program managed by the City's Environmental Services Division.) In the portion of the stream *ma kai* of Iolani, very little maintenance is being done and the vegetation encroaches farther into the stream.
- During the 2004 flood, the stream came up onto the road adjacent to ʻIolani School. The flood did not affect the school.
- Stream bank stabilization and increased bank height would be a good idea to decrease flooding in that area.

Community Members to Involve in Neighborhood-level Meetings

- 100th Infantry Battalion veterans club – located across the street from ʻIolani School at 520 Kamoku Street.
- Ala Wai School
- Condos in the neighborhood, including Kaimana Lanai Condo and 500 University.

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Dave and Nola Watase
1537 Ala Aoloa Loop
Honolulu, Hawaii 96819

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding public outreach
- Alternative Plan Selection
- Uncertainties related to the technical analysis

Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. A public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders, neighborhood commissions and property owners directly affected by the recommended plan. No further public meetings are planned during the feasibility phase of the FEIS.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints. Criteria considered is provided in Table 2 which includes the availability of land, the degree to which people or existing uses would be displaced and the consistency with applicable laws and regulations. Siting of

detention basins in particular is generally focused on stream reaches where natural stream beds and banks exist to maximize the effectiveness and efficiency of the structures.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature, including any necessary amendments for public safety. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

The process of acquiring property for a project is highly regulated. The Fifth Amendment of the Constitution states that private property shall not be taken for public use without just compensation. To address what constitutes just compensation, Congress passed the Uniform Relocation Assistance and

Real Property Acquisition Policies Act of 1970 (“Uniform Act”). The non-federal sponsors will be required to follow the Uniform Act in acquiring any lands. USACE will work with the non-Federal sponsors to ensure the correct process and procedures are adhered to throughout the process.

Generally speaking the value of land acquired is the fair market value of the property. The fair market value includes many aspects of the property in question. Earning potential is one of those aspects to be addressed in developing a fair market value. Regardless of the value determined, Public Law 91-646 outlines the requirements that must be followed to ensure a homeowner/landowner is compensated justly.

Part of the process will be an appraisal, which determines the fair market value of the property. Fair market value is an estimate of the market value of a property based upon what a knowledgeable, willing, and unpressured buyer would pay. The appraisal will attempt to take all objective property features into account when determining fair market value. The fair market value is determined without consideration for the effect the project has had on the value of the land. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Councilmember Ann Kobayashi
City and County of Honolulu
530 South King Street, Room 202
Honolulu, Hawaii 96813-3065

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 5, 2015 to USACE Honolulu District:

1. *I am writing this letter on behalf of my constituents, who have expressed concerns regarding the Ala Wai Canal Project Draft Feasibility Report. As the Councilmember representing the Palolo and Manoa neighborhoods, I agree with their concerns that privately-owned properties not be used for any detention basins, and that other alternatives such as public lands be seriously considered before implementation of the proposals.*

RESPONSE: Land use and real estate impacts to privately owned properties remains an unresolved issue in this HEPA FFEIS. Hawaii is different than many states in that private homeowners own the streams that run through their property. While this has many benefits, it also comes with challenges for developing flood control projects that seek to reduce the risk to the community. Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. There may be a need to purchase flowage easements with homeowners and potentially make property adjustments for access easements to allow for the City and County of Honolulu to perform maintenance. Examples can be seen in Appendix C of this HEPA FFEIS. These impacts on private property are much less intrusive on the property owner than full property acquisition in fee, but are still considered an impact. A more detailed real estate plan will be developed in the Design Plan after the final design of System Features are complete and evaluated for environmental and community impacts. If system changes are recommended during the design phase they will be evaluated for environmental and community impacts. If necessary, supplemental documentation will be developed commensurate with the level of impacts.

2. *I have also included a letter from a resident to the State of Hawaii Department of Land and Natural Resources, requesting answers to several questions in regard to the study's methodology, proposals, and conclusions.*

RESPONSE: The letter from Dave Watase, dated September 30, 2015, was also received by the project team during the review period for this DFEIS. A copy of our response will be provided in Appendix G-9 of this HEPA FFEIS.

3. *In addition, Iolani School, Ala Wai Elementary School, and a number of condominium owners have also expressed concerns that the proposed project will place their properties in a floodway. The proposals are disconcerting for the residents and both schools' officials, who were only recently notified of the plan.*

RESPONSE: The Iolani School Headmaster held a meeting on October 30, 2015 with both the Corps of Engineers and our DLNR Engineers. The Corps and DNLR explained during that meeting

and in subsequent responses to Federal NEPA comments that the Corps project would not increase the flood risk on Iolani or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper watershed detention. A copy of the response to Iolani School will be provided in Appendix G-9 of this HEPA FFEIS.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

4. *Their safety and the safety of our residents is of primary importance, therefore, I respectfully request that the U.S. Army Corps of Engineers seriously address the residents' and schools' concerns and reevaluate its proposals.*

RESPONSE: See Response #3. Public safety and reducing the flood risk in the Ala Wai Watershed Community is a top concern of the project. Public safety and community concerns will be considerations in designing system features that delivers the level of risk reduction authorized by Congress.

5. *I further request that USACE and DLNR provide answers to the community's questions, including the attached letter, before it issues a Final Feasibility Report.*

RESPONSE: In accordance with HRS Chapter 343 and HAR 11-200, responses will be provided to all comments submitted on the DFEIS. Those response letters will be incorporated into Appendix G-9 of this HEPA FFEIS.

6. *I also request that more outreach and communication be provided to the residents and businesses, especially to those who are directly affected by the Project's proposals.*

RESPONSE: There will be more community outreach and engagement as this project continues moving forward. Community members will have opportunities to provide comments and concerns to ensure that the final designed system balances engineering solutions with community impacts. If modifications are made to the system, they will be evaluated for environmental as well as community impacts and supplemental documentation will be developed commensurate with the impacts.

7. *A majority of the proposals affect many of the neighborhoods in my district, as well as both Iolani School and Ala Wai Elementary. I am in accord with their concerns and fully support their requests to reconsider the Project's proposals.*

RESPONSE: We understand that you are supporting your constituents and have been active in the project. We appreciate your participation and will keep you and the community informed on the project as we progress.

8. *I look forward to your responses to the questions provided, as well as those from the community in order to fully address the community's concerns, and more importantly, to address the health and safety of our residents.*

RESPONSE: Thank you for your comments, we look forward to continuing the communication during the next phase of the project as we develop a system that reduces the risk of flooding in the Ala Wai Watershed community.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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The Senate

STATE CAPITOL
HONOLULU, HAWAII 96813

November 9, 2015

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

State of Hawai`i, DLNR Engineering Division
ATTN: Gayson Ching
P. O. Box 373
Honolulu, HI 96809

RE: Ala Wai Canal Project, O`ahu, Hawai`i
Draft Report: Feasibility Study with Integrated Environmental Impact Statement

Dear U.S. Army Corps of Engineers and
State of Hawai`i Department of Land and Natural Resources:

Thank you for the opportunity to submit these comments on the above Draft Report. The Ala Wai Canal Project was initiated in 1998, and it has been a long process to get to this point.

A significant expansion of the project's study area to include the mauka areas of the Ala Wai Watershed to the Koolau crest occurred after the very destructive October 30, 2004 Mānoa Stream flood, which was estimated to have been a 5-percent annual chance ("20-year level") event. In 2006 occurred a period of more than 40 consecutive days of significant rainfall on O`ahu, which resulted in mud flow damage to the Puuhonua neighborhood in Mānoa, cinder soil landslides on Round Top and into Maunalaha Valley, and Makiki Stream floods makai of South King Street. These are the recently experienced major storm and flood events in the Ala Wai Watershed; the next events are only a question of when, not if, they will occur.

The Draft Report does not adequately address the need for ecosystem restoration in the upper areas of the Ala Wai Watershed. I understand that the feasibility study was rescoped to focus on flood risk management, thereby eliminating other project objectives. However, the Final Report should provide more information to guide the U.S. Congress, the local sponsors, potential private partners, and community at large about the overall scope of measures that would serve to mitigate storm water runoff and further improve flood risk management in the Ala Wai Watershed. This information would help to guide the decision-making necessary for Congressional authorization and approval of the project, and future public and private funding needs and efforts to further improve the resilience and stewardship of the area.

Also needed before completion of the Final Report is direct outreach to those real property owners who may be affected by the proposed siting of and means of access to the

detention basins included in the Tentatively Selected Plan. Many residents in Palolo and Mānoa have expressed their concerns about likely losing their real property to eminent domain after discovering at the USACE September 30, 2015 public meeting that their lots would be directly affected by the Plan.

I strongly encourage the U.S. Army Corps of Engineers and Department of Land and Natural Resources to fully complete the Final Feasibility Report/EIS by the end of 2016 to be able to move ahead with seeking Congressional authorization and approval.

I also strongly encourage DLNR and the City and County of Honolulu as the local sponsors to make the necessary commitments for the Ala Wai Canal Project to continue to move forward.

Many decisions in addition to providing the required cost share funding remain to be made and must be addressed to accomplish the flood risk management, public safety, and economic protection objectives of the Ala Wai Canal Project. Significant efforts began in January 2015 that have led to the formation of the Ala Wai Watershed Partnership, which recognizes the need for private participation to help fund elements of the project and to address other resilience and long-term sustainability needs of the Ala Wai Watershed through public-private partnering.

Please keep me informed of the progress on the Final Feasibility Report/EIS and what steps are needed to accomplish the commitments of the local sponsors to assure submittal of the Final Report to the U.S. Congress.

Sincerely,

Brian T. Taniguchi
Hawaii State Senator, District 11

Senator Brian T. Taniguchi
District 11: Mānoa, Makiki, Punchbowl, Papakōlea – O'ahu
State Capitol, Room 219 • 415 South Beretania Street • Honolulu, Hawai'i 96813
Telephone 808-586-6460 • Fax 808-586-6461 • E-mail sentaniguchi@capitol.hawaii.gov

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Senator Brian Taniguchi
Senate, State of Hawaii Capitol
415 South Beretania Street, Room 219
Honolulu, Hawaii 96813

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Absence of ecosystem restoration features within the recommended plan
- Concerns of affected landowners regarding real estate acquisition

As noted, the Ala Wai Canal study was originally developed as a multi-purpose flood risk management and ecosystem restoration study. Congressional mandates forced USACE to focus on critical issues with the study area to bring the on-going study to a conclusion within a mandated three year period, starting in late 2012. Discussions during this time between the USACE Honolulu District, USACE Headquarters, and the non-Federal sponsor, the DLNR, led the study team to focus exclusively on the flood risk portion of the study. This is the foundation of the current recommended plan. Opportunities for ecosystem restoration within the Ala Wai Canal Basin remain and are currently being evaluated by the non-Federal sponsor and others, however, ecosystem restoration features will not be a part of the FEIS recommended plan or a Federal recommendation to Congress.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

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2716A S. King Street
Honolulu, Hawaii 96826
November 8, 2015

Honolulu District Office, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, Hi 96858

Dear Sirs:

My concern is that even after the Manoa Stream overflowed in 2004 and damaged the nearby neighborhood and the University of Hawaii Hamilton Library, the project to address flood controls in the Ala Wai Watershed will not be implemented until 2021.

My understanding is that the U.S. Army Corps of Engineers will send the final version of the proposed Ala Wai Canal Project in January 2017 for congressional approval; then, the project is expected to start in 2021.

However, within six years before the start of the project, the State and City could mitigate future damage from heavy rains and storms by, intermittently, clearing the debris and rocks in the streams. One problem is that private owners of part of the streams may not wish to incur that expense. Also, because of financial and budget concerns, the State and City may not approve expending the money for the above.

Therefore, the neighborhoods of Makiki, Manoa, Palolo, Moiliili, Kapahulu, and Waikiki could be damaged from heavy rains and storms until the Ala Wai Canal Project is implemented in 2021.

Sincerely,

Janet Inamine

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Janet Inamine
2716A South King Street
Honolulu, HI 96826

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding flood risk prior to project implementation

The FEIS is currently in the feasibility phase which is concluded with a recommendation to Congress for both an investment of Federal funding and authorization for construction. Without funding and authorization, the role of USACE in assisting with flood risk management within the basin is limited. Should Congress provide the authorization and funding required, USACE will execute designs and construction activities with the most efficient schedule allowed, but the flood risk management contemplated in the FEIS would not become fully functional until completion of the construction.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

McCULLY/MO'ILI'ILI NEIGHBORHOOD BOARD NO. 8

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET, ROOM 406 • HONOLULU, HAWAII, 96813
TELEPHONE: (808) 768-3710 • FAX: (808) 768-3711 • INTERNET: http://www.honolulu.gov/nco

9 November 2015

Honolulu District USACE
ATTN: Ala Wai Canal project
Bldg. 230, CEPOH - PP – C
Fort Shafter, HI 96858

Aloha,

I've been tasked by the McCully – Mo'ili'ili Neighborhood Board #8 to write a letter expressing our concerns, on the Ala Wai Canal Project, rather than doing a Resolution.

1. Operation & Maintenance. (O & M)
   A. I believe I've heard USACE state, "they will develop an O & M manual for local sponsors. Will only state and city agencies be included in the generation of this manual, or will the public stakeholders be included also?
   B. Costs for the O & M were stated as $1 million/ year for the entire project. Can this be broken down to each catchment/retention area? City, state and stakeholders need to know the size and scope of their monetary involvement. Especially the stakeholders.
   C. Debris catchment. Will the O & M manual specify/mandate/lay out a timetable or schedule for clearing these catchments? Ingress, liability and security for entering these areas also need further clarification.
   D. Size and Depth of Catchment/Retention basins. Will these become an "attractive nuisance" for our young people and visitors as a place to swim, etc.?

2. Other Concerns.
   A. The use of eminent domain to acquire private property has been expressed as a concern from Makiki, Palolo and Manoa valley residents. Response to these stakeholders? Especially to the property owners that will live "next door" to these basins re: liability, trespassers, etc.
   B. Why isn't Kanewai Park being utilized as a retention/detention basin?
   C. Iolani and Ala Wai Elementary Schools are next to the Manoa/Palolo Streams as it enters the Ala Wai Canal. Why is there no floodwall being recommended to protect these properties?

Respectfully,

Ron Lockwood, Chair
McCully – Mo'ili'ili Neighborhood Board #8

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Ron Lockwood
McCully/Moiliili Neighborhood Board No. 8
530 South King Street, Room 406
Honolulu, HI 96813

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Operations and maintenance of the recommended plan
- Private property acquisition
- Plan formulation and consideration of alternative plans

Table 9, page 3-22 of the draft FEIS (page 3-23 of the final) details cursory operations and maintenance requirements based on project feature. These obligations are identified during the feasibility phase for the purpose of developing initial cost estimates. If approved, a detailed operations and maintenance plan will be developed during the design phase of the study. Operations and maintenance are the responsibility of the non-Federal sponsor, however, it is not anticipated that the general public would be involved in operations and maintenance of flood risk management features. Debris and detention structures are intended to pass normal stream flows. The structures are designed to function only during storm events, therefore, no impoundment of water is anticipated outside of such storm events.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. The FEIS includes the estimated costs of real estate acquisition required for implementation of the recommended plan based on a gross appraisal. A property by property assessment will be conducted after project authorization, if the project is authorized by Congress.

Real estate acquisitions are the responsibility of the non-Federal sponsors. The non-Federal sponsors will establish timetables for real estate acquisitions once the project has been authorized and funded based upon the needs of the project and available resources. If a property, or a portion of it, needs to be acquired, the property owner will be notified as soon as possible of the need to acquire the property. A qualified appraiser will be hired by the non-federal sponsors to determine the market value of the property. The appraiser must make a detailed appraisal report of his or her findings. The sponsors forward the report to USACE for review and confirmation of the quality and validity of the findings. Once the market value report is accepted, the property owner will be notified of the findings and the value determined will be the starting point for negotiations. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water

Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints. Specific line-of-protection for the Iolani and Ala Wai Elementary Schools was eliminated from consideration using the criteria specific in the FEIS, however, both facilities will benefit from a reduction in flood risk due to the measures recommended in the upstream watershed.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

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GOVERNOR OF
HAWAII

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CONSERVATION AND COASTAL LANDS
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ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Ron Lockwood
McCully/Moiliili Neighborhood Board No. 8
530 South King Street, Room 406
Honolulu, Hawaii 96813

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District USACE:

1. *I've been tasked by the Mccully - Mo'ili'ili Neighborhood Board #8 to write a letter expressing our concerns, on the Ala Wai Canal Project, rather than doing a Resolution.*

   RESPONSE: Thank you for your interest and participation in this project. This process does not end with the feasibility study, it will continue during the design and construction phase and we encourage your feedback and participation. Community engagement is a critical part of making this a successful project.

2. *Operation & Maintenance. (O & M)*

   I believe I've heard USACE state, "they will develop an O & M manual for local sponsors. Will only state and city agencies be included in the generation of this manual, or will the public stakeholders be included also?

   RESPONSE: This document will be developed by the USACE Honolulu District in partnership with the City and County of Honolulu and the State of Hawaii during and after construction. Other Stakeholders will be involved only when identified as necessary by the non-Federal Sponsor. The non-Federal Sponsor is responsible for the execution of O&M. Each feature or array of features depending on the interdependency of the features will have its own manual.

3. *Costs for the O & M were stated as $1 million/ year for the entire project. Can this be broken down to each catchment/retention area? City, state and stakeholders need to know the size and scope of their monetary involvement. Especially the stakeholders.*

   RESPONSE: Costs will vary depending on the activity, the year, and the feature. The estimated $1 Million that is accounted for in the feasibility study is an estimate based on the anticipated activities and will be updated during the design phase.

4. *Debris catchment. Will the O & M manual specify/mandate/lay out a timetable or schedule for clearing these catchments? Ingress, liability and security for entering these areas also need further clarification.*

   RESPONSE: This manual will outline the maintenance schedule, as well as activities to be conducted during scheduled maintenance. O&M associated with the features are tied to the activities outlined in Table 9 of the HEPA FFEIS.

5. *Size and Depth of Catchment/Retention basins. Will these become an "attractive nuisance" for our young people and visitors as a place to swim, etc.?*

RESPONSE: They will not be an attractive nuisance for people and visitors to swim. There will not be a permanent pool of water in these catchment or detention basins. The Debris and Detention basins in the project area will have a large culvert that remains open to allow typical stream flows and even some storm event flows to continue passing through. These are commonly referred to as low flow outlets. Water will begin to back up when flows exceed culvert capacity, which will be determined during the design phase based on feature location, geography, and function. Even still, the culvert will continue to flow, however, excess water will be detained for a temporary period of time.

6. *Other Concerns.*
The use of eminent domain to acquire private property has been expressed as a concern from Makiki, Palolo and Manoa valley residents. Response to these stakeholders? Especially to the property owners that will live "next door" to these basins re: liability, trespassers, etc.

RESPONSE: Although potential impacts to real property were described in detail in the real estate planning report in Appendix C, Section 5.19.5 of the HEPA FFEIS has been revised to clarify that residential property and land use impact remains an unresolved issue in the HEPA FFEIS. As was mentioned in the previous response sent in 2017, property acquisition is the responsibility of the non-Federal Sponsor and must be done following all federal and state laws. As stated in Section 5.19.5 of the HEPA FFEIS, during the design phase of the project land use requirements and impacts will be developed based on a more advanced design. In addition, any recommended changes to the system features in design will be evaluated for environmental and community impacts. If necessary, supplemental documentation will be developed commensurate with the level of impacts.

7. *Why isn't Kanewai Park being utilized as a retention/detention basin?*

RESPONSE: You requested to know why Kanewai Park is not being used as a detention basin. We apologize for the confusion, however, in the HEPA FFEIS recommended plan, Kanewai District Park is identified as a Multi-purpose Detention Basin.

8. *Iolani and Ala Wai Elementary Schools are next to the Manoa/Palolo Streams as it enters the Ala Wai Canal. Why is there no floodwall being recommended to protect these properties?*

RESPONSE: Modeling and data available during the Feasibility Study showed limited inundation to the school buildings themselves as many buildings were constructed above base floor elevation. An economic analysis determined that a floodwall extending from the canal to Date Street along the right bank of the Manoa-Palolo stream could not be economically justified. Nonetheless, the with-project conditions place both campuses and their students in much lower flood risk than the without-project conditions, due to less water in the canal from upper watershed detention. In addition, a flood warning system proposed as part of the recommended plan will notify those

threatened by flood risk when both water levels are rising and when action should be taken to vacate the flood prone regions of the study area.

Subsequently, the Corps did discuss options for the non-Federal Partner to construct a wall extension along the canal up to Date Street as a betterment (not part of the federally authorized project). Furthermore, the Corps of Engineers informed us that during the design phase, modeling and engineering data would be refined and the wall boundaries and footprint to include extension up to Date Street would be again evaluated, to include cost estimates. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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HAWAII STATE SENATE

Senator Les Ihara, Jr. • Hawaii State Senate
State Capitol, Room 220 • Honolulu, HI 96813

November 9, 2015

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

Subject: Ala Wai Canal Project Draft Feasibility Study and Integrated EIS

It has been almost twenty years since the Ala Wai Canal Project was launched by the U.S. Army Corps of Engineers and Hawaii's Department of Land and Natural Resources to address flooding concerns along the canal. I appreciate USACE for taking the lead to plan, design, and produce project materials, including the draft feasibility study and integrated environmental impact statement. My comments on this feasibility study and EIS are provided below.

Several constituents and organizations in my senate district have expressed concerns about potential project impacts on their property, and I'm confident they will submit their comments. To ensure that constituents have adequate opportunity to express concerns, I may request meetings with USACE and consideration of constituent proposals or mitigation measures.

As you know, Iolani School would like to avoid having half their school campus flooded a few inches during a 100-year flood. To address this, they have requested that the project include a wall along the Manoa-Palolo Drainage Canal adjacent to their property. I would like to request that USACE estimate the construction cost of a wall or berm at the minimum height necessary to avoid flooding of the Iolani School campus.

I understand that several privately owned parcels in Palolo Valley are proposed for use as a debris and detention basin, and that USACE is now aware of several publicly owned alternative sites. I would like to request that USACE determine the feasibility of using public lands in order to avoid condemning private property where possible.

It appears the USACE feasibility study and EIS does not discuss the criteria for selecting use of a floodwall or a berm, nor the feasibility of placing pumping stations underground. I would like to request inclusion of such discussion of criteria in the final report. Finally, while a tsunami is unlikely to occur during a 100-year storm event, I would like the report to discuss the impacts a tsunami might have on the community after the project is completed.

If you have any questions, or if I can be of assistance in addressing concerns of constituents, please feel free to contact me. Thank you.

Sincerely,

Les Ihara, Jr.
State Senator, 10th District

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Senator Les Ihara
Senate, State of Hawaii Capitol
415 South Beretania Street, Room 220
Honolulu, Hawaii 96813

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns of Iolani School regarding the absence of a floodwall on school property
- Concerns of affected landowners regarding real estate acquisition
- Selection of project features and aesthetics of proposed designs

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. Details regarding planning considerations leading to the development of alternative plans can be found in Section 3 of the FEIS. As noted, a floodwall has not been proposed on the property owned by the Iolani School. Section 8.3.1 describes the rationale for excluding this area from floodwall protection. However, the Iolani School property will benefit from the recommended plan as upstream storage is projected to reduce the projected 100-year flood stage (1-percent annual chance exceedance event) by approximately two-feet directly upstream of the school. The economic analysis presented in the Feasibility Report and integrated Environmental Impact Statement uses the standard methodology prescribed by the Water Resources Council's "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" and the USACE Engineer Regulation 1105-2-100. All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property

assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

The design of project features is focused on the most economical design that will provide the needed function while observing compliance with applicable Federal law. Pump stations are above ground to avoid costs associated with sub-surface placement and must contain maintenance features which will allow for annual remove and inspection of pumps. The design of floodwalls and the pump stations must meet the criteria set forth in Section 106 of the Historic Preservation Act. This design will be coordinated with the State Historic Preservation Office to ensure appropriate design aspects are integrated into the project to ensure preservation of the historic value of the area.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

DAVID Y. IGE
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HAWAII

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FORESTRY AND WILDLIFE
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Senator Les Ihara
Senate, State of Hawaii Capitol
415 South Beretania Street, Room 220
Honolulu, Hawaii 96813

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District USACE:

1. *It has been almost twenty years since the Ala Wai Canal Project was launched by the U.S. Army Corps of Engineers and Hawaii's Department of Land and Natural Resources to address flooding concerns along the canal. I appreciate USACE for taking the lead to plan, design, and produce project materials, including the draft feasibility study and integrated environmental impact statement. My comments on this feasibility study and EIS are provided below.*

RESPONSE: Senator Ihara, we've received your comments and will respond accordingly below. Thank you for your continued investment in the community and this project. We will address the comments and concerns of your constituents as they emerge.

2. *Several constituents and organizations in my senate district have expressed concerns about potential project impacts on their property, and I'm confident they will submit their comments. To ensure that constituents have adequate opportunity to express concerns, I may request meetings with USACE and consideration of constituent proposals or mitigation measures.*

RESPONSE: Although potential impacts to real property are described in detail in the real estate planning report in Appendix C, the impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. As stated in Section 5.19.5 of the HEPA FFEIS, during the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. A final real estate and land use plan will be developed based on the updated data. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us, the State, at the time of the study not to acquire any property until the design phase.

3. *As you know, Iolani School would like to avoid having half their school campus flooded a few inches during a 100-year flood. To address this, they have requested that the project include a wall along the Manoa-Palolo Drainage Canal adjacent to their property. I would like to request that USACE estimate the construction cost of a wall or berm at the minimum height necessary to avoid flooding of the Iolani School campus.*

RESPONSE: The Iolani School made similar comments during the DFEIS review period. While the modeling and data in the feasibility study did not show inundation to the school buildings themselves, the Corps did discuss options for the non-Federal Partner to construct a wall extension along the canal up to Date Street as a betterment (not part of the federally authorized project). Furthermore, as will be stated in Section 5.19.5 of the HEPA FFEIS, the Corps of Engineers informed us that during the design phase, modeling and engineering data would be refined and the wall boundaries and footprint would be evaluated. If the modeling and data demonstrates different

needs than what is recommended in this HEPA FFEIS, supplemental evaluation of environmental and community impacts will be developed and documented commensurate with the impacts.

4. *I understand that several privately-owned parcels in Palolo Valley are proposed for use as a debris and detention basin, and that USACE is now aware of several publicly owned alternative sites. I would like to request that USACE determine the feasibility of using public lands in order to avoid condemning private property where possible.*

RESPONSE: During the DFEIS comment period, the Corps and DLNR received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses, alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed; the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction as authorized by Congress. As part of the design phase, any changes to the recommended system features will be evaluated for environmental and community impacts. If necessary, supplemental documentation will be developed commensurate with those impacts.

5. *It appears the USACE feasibility study and EIS does not discuss the criteria for selecting use of a floodwall or a berm, nor the feasibility of placing pumping stations underground. I would like to request inclusion of such discussion of criteria in the final report.*

RESPONSE: Pumping stations themselves would not go underground, however, there are submersible pumps which is what we surmise you are requesting be investigated further. During the design phase, modeling and engineering data will be revised to determine the final volume of water that requires evacuating through a pump system. The volume of water will determine the type of pump options; generally, submersible pump systems are only associated with small volumes of flows. The HEPA and NEPA FFEIS document describes pump stations in Section 5.5.2.

As stated in section 5.19.5 Unresolved Issues, the design process will identify final design features, which will be evaluated for environmental impacts and real estate land impacts. Feature footprints will be determined by updating modeling, engineering data, and community engagement. The land use requirements and impacts of this action will be refined and finalized during the design phase for resolution or mitigation accordingly.

There are two key differences between a flood wall and berms, one is the cost and the other is the required space. Generally speaking, berms are a much more cost-effective way to channel flows

and reduce the risk of inundation risks. One factor is the cost of constructing a foundation for a flood wall and the amount of concrete that is necessary, another factor is that in most cases earthen material is readily available whereas concrete requires batch plants and manufacturing. In the case of Ala Wai and the Island of Oahu, there may be less of a cost advantage due to less availability of the silty clay materials that are usually used in berm or levee construction. The second factor in determining wall versus berm or levee is the space factor. A wall is advantageous in areas where there is not space available for an earthen berm. A wall generally requires twice the wall height for foundation, so a five-foot wall would require ten feet of space for foundation. For an earthen berm or levee the slope is determined by the crest elevation of the berm, so a 5 foot crest elevation with a crest width of 48" (wide enough for a walkway) would slope down each side of the crest at a 2:1 ratio, requiring significantly more space. While this detailed explanation is not included in the HEPA FFEIS, it is because analysis will be done in the Design phase to determine final barriers such as walls, berms, levees, or hybrids.

6. *Finally, while a tsunami is unlikely to occur during a 100-year storm event, I would like the report to discuss the impacts a tsunami might have on the community after the project is completed.*

RESPONSE: The impacts that a tsunami would have on the community after this project is constructed was not evaluated during this study because the probability and size of the tsunami is such an unknown factor. Coastal surge however, was evaluated on page 63 of Appendix A2, Hydraulics and Hydrology in the with- and without-project conditions. Additionally, there is an analysis of sea level rise and climate change within the Appendices A2 and A3 of this HEPA FFEIS.

7. *If you have any questions, or if I can be of assistance in addressing concerns of constituents, please feel free to contact me. Thank you.*

RESPONSE: Thank you, your continued participation is appreciated.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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TO: Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

State of Hawai`i, DLNR Engineering Division
ATTN: Gayson Ching
P. O. Box 373
Honolulu, HI 96809

FROM: Tom Heinrich, President JTH
Ala Wai Watershed Association
P. O. Box 2808
Honolulu, HI 96803-2808

Work: 808-586-6042
Cell: 808-551-4098

DATE: November 9, 2015

RE: Ala Wai Canal Project, O`ahu, Hawai`i
Draft Report: Feasibility Study with Integrated Environmental Impact Statement

Aloha! Thank you for the opportunity to submit these comments on the above Public Review Draft Report. I offer these summary comments in my capacity as President of the Ala Wai Watershed Association (AWWA). The Ala Wai Canal Project was formally initiated in 1998, and it has been a long process to get to this point. AWWA has followed the Project since the start and participated in a number of Project activities over the years, including providing volunteer assistance to do stream assessments and data collection.

AWWA had consistently advocated for the Ala Wai Canal Project study to include the mauka lands of the entire Ala Wai Watershed, which contributes the largest amount of water to the Canal. The original scope of the study was in fact expanded to the crest of the Koolau after the occurrence of the October 30, 2004 Mānoa Stream flood, which was estimated to have been a 5-percent annual chance ("20-year level") event.

In 2006 occurred a period of more than 40 consecutive days of significant rainfall on O`ahu, which resulted in mud flow damage to the Pu'uhonua neighborhood in Mānoa, cinder soil landslides on Round Top and into Maunalaha Valley, and Makiki Stream floods makai of South King Street. The State of Hawai'i Department of Land and Natural Resources (DLNR) has since completed two major projects on the east and west sides of Puu Ualakaa (Round Top) necessitated by the 2006 events.

These recently experienced major storm and flood events in the Ala Wai Watershed caused significant damage to residential, institutional, public, and infrastructure resources. The University of Hawai'i at Mānoa alone suffered more than $85,000,000 in damages from the 2004 flood. It is not a question of if, only *when*, the next storm events will occur. The effects of climate change on the frequency and magnitude of storm events and sea level rise have greatly increased the risks of flooding.

Due to other factors with the U.S. Congress and changes to the U.S. Army Corps of Engineers (USACE) study scoping process, the present Ala Wai Canal Project feasibility study was unfortunately rescoped to focus on flood risk management only, thereby eliminating other project objectives that had been considered and studied. These other objectives are necessary for the long-term for the resilience of the Ala Wai Watershed – the most densely populated area of the State, and to protect the role of Waikiki to the State economy.

Summary Comments

Community Outreach. In anticipation of the completion of the Final Report, USACE and DLNR need to significantly improve their outreach to the community by updating and broadening the scope of identified persons and organizations who should be notified and consulted as the Ala Wai Canal Project progresses. AWWA can help with that process, as personal networking is critical to the success of this task.

Cost vs. Cost Avoidance. The Project summary materials must make clear that while the Tentatively Selected Plan is directed at the 1% annual chance exceedance (ACE) level, the ultimate level of flood protection desired (ACE events of 5%, 2%, 1%, more/less?) is a political decision based on demand, available funding, economic benefit, effect on flood insurance rates, public-private partnering opportunities, the law governing the mission and duties of USACE, etc. The scope and final plan may be significantly different than the draft plan, as determined by those political choices and other factors.

Ecosystem Restoration. The Draft Report does not adequately address the need for ecosystem restoration in the upper areas of the Ala Wai Watershed. The Final Report should provide more information to guide the U.S. Congress, the local sponsors, potential private partners, and community at large about the overall scope of measures that would serve to mitigate storm water runoff and further improve flood risk management in the Ala Wai Watershed. This information would help to guide the decision-making necessary for Congressional authorization and approval of the project, and future public and private funding needs and efforts to further improve the resilience and stewardship of the area.

Ecosystem restoration especially in the mountainous and forested uplands of the Ala Wai Watershed is a long-term process and will require the community's participation, but is critical to O'ahu's water conservation and supply, storm water management, disaster preparedness, resilience, and sustainability as an isolated island community. Identification of the effects of invasive species (e.g., albizia trees and their high canopy) underscores the need for ecosystem restoration in the mauka areas.

Eminent Domain; Public Safety. At and since the USACE September 30, 2015 Draft Report public information meeting at Washington Middle School and November 5, 2015 discussion at Paradise Park hosted by the South O'ahu Soil and Water Conservation District, a number of residents of Palolo and Mānoa have expressed their concerns about likely losing their real property to eminent domain after discovering that their lots would be directly affected by the detention basins identified in the Tentatively Selected Plan (TSP).

While the design is currently only to the 35% level, before the Final Report is completed, direct outreach is needed to those real property owners who may be affected by the proposed siting of and means of access to the detention basins included in the TSP. Folks in the far mauka areas like Paradise Park in Mānoa (Waihi and Waiakeakua Detention Basins) and Carlos Long Street and La`i Road in Palolo (Pukele Detention Basin) are especially concerned about public safety and security risks by the creation of service road access to the secluded detention basins through their back of valley areas.

Operations and Maintenance; *Kuleana.* The local sponsors – the State of Hawai'i and City and County of Honolulu – are identified as being responsible for the long-term operation and maintenance of the Ala Wai Canal Project elements after completion of construction. The cost is estimated as

$928,000 annually. The Final Report needs to include the community at large as a responsible partner to assist with some of the O&M tasks and to revitalize the Hawaiian cultural practice of *kuleana* – everyone sharing in the tasks of stewardship of the watercourses, debris catchments, detention basins, and flood walls. Timely and consistent O&M is an absolute requirement to protect public safety.

USACE said it would develop an O&M manual for the local sponsors. AWWA strongly encourages the preparation of such a manual, inclusion of public participation plans for O&M, and the identification of best management practices for the community.

Drainage Culverts. Residents have expressed concerns about the size and length of the detention basin drainage culverts as posing risks to children, becoming an attractive nuisance, and increasing the risk of drowning during flood events. What can be done to prevent entry into the drainage culverts?

Use of Manoa Valley District Park. The TSP shows only an in-stream debris catchment on Manoa Stream at the Manoa Valley District Park site. Due to the damage incurred by the Lowrey Avenue and East Manoa Road neighborhoods upstream of the Woodlawn Drive Bridge from the flood waters that came through the field areas of Manoa Valley District Park, this large public open space should be included in the TSP as a detention basin site.

Stream Gages. There is an urgent need for a more comprehensive system of stream gages for real-time data collection and historical records. The Final Report should include this objective and provide information concerning how gages may be privately sponsored though the U.S. Geological Service.

'Iolani School has voiced concerns that the TSP does not provide any floodwall along the west side of the Manoa-Palolo Drainage Canal between the Ala Wai Canal and Date Street. Please explain why not.

Water Quality. Much of the preliminary effort that began in 1995 focused on possible measures, including by the community, that would help to improve water quality in the Ala Wai Canal. This objective needs to be addressed in the Final Report.

Agency Collaboration. The Final Report should include recommendations for complementary components that should be considered and list the types of things that other agencies (e.g., the Natural Resources Conservation Service) could help with as a basis for community follow-up.

Private-public partnering opportunities are developing to help fund the project and other resilience efforts in the Ala Wai Watershed. "Precovery" efforts for the long-term in the Ala Wai Watershed are in development, using the area as a "pilot/model project."

Other master plans are needed re ecosystem restoration, infrastructure resilience (e.g, bridges, utility structures), storm water drainage system capacity improvements (e.g., the University of Hawai'i at Mānoa campus), and building code requirements.

The Ala Wai Watershed Association strongly encourages the U.S. Army Corps of Engineers and Department of Land and Natural Resources to fully complete the Final Feasibility Report/EIS by the end of 2016 to be able to move ahead with seeking Congressional authorization and approval.

The Ala Wai Watershed Association also strongly encourages DLNR and the City and County of Honolulu as the local sponsors to make the necessary commitments for the Ala Wai Canal Project to continue to move forward, and when appropriate, fund their portion of construction costs once the U.S. Congress provides authorization for the project.

Many decisions in addition to providing the required cost share funding remain to be made and must be addressed to accomplish the flood risk management, public safety, and economic protection objectives of the Ala Wai Canal Project. Significant efforts began in January 2015 that have led to the formation of the Ala Wai Watershed Partnership, which recognizes the need for private participation to help fund elements of the project and to address other resilience and long-term sustainability needs of the Ala Wai Watershed through public-private partnering.

Please keep the Ala Wai Watershed Association informed of the progress on the Final Feasibility Report/EIS and what steps are needed to accomplish the commitments of the local sponsors to assure submittal of the Final Report to the U.S. Congress.

Thank you for your consideration of these comments.

Tom Heinrich

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Tom Heinrich
Ala Wai Watershed Association
PO Box 2808
Honolulu, Hawaii 96803-2808

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding public outreach
- Alternative Plan Selection
- Concerns of Iolani School regarding the absence of a floodwall on school property
- Economic optimization of the recommended plan
- Absence of ecosystem restoration features within the recommended plan
- Concerns of affected landowners regarding real estate acquisition
- Operations and maintenance of the project features
- Improvement to water quality within Ala Wai Canal
- Planning and collaboration with other agencies

Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures including a presentation to your organization. In addition, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. Details regarding planning considerations leading to the development of alternative plans can be found in Section 3 of the FEIS. As noted, a floodwall has not been proposed on the property owned by the Iolani School. Section 8.3.1 describes the rationale for excluding this area from floodwall protection. However, the Iolani School property will benefit from the recommended plan as upstream storage is projected to reduce the projected 100-year flood stage (1-percent annual chance exceedance event) by approximately two-feet directly upstream of the school. The economic analysis presented in the Feasibility Report and integrated Environmental Impact Statement uses the standard methodology prescribed by the Water Resources Council's "Economic and

Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" and the USACE Engineer Regulation 1105-2-100. All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. The recommended plan includes 100-year protection (1-percent annual chance exceedance event) for areas along the Ala Wai Canal; the level of protection provided by the recommended plan was selected as the economically optimized plan.

As noted, the Ala Wai Canal study was originally developed as a multi-purpose flood risk management and ecosystem restoration study. Congressional mandates forced USACE to focus on critical issues with the study area to bring the on-going study to a conclusion within a mandated three year period, starting in late 2012. Discussions during this time between the USACE Honolulu District, USACE Headquarters, and the non-Federal sponsor, the DLNR, led the study team to focus exclusively on the flood risk portion of the study. This is the foundation of the current recommended plan. Opportunities for ecosystem restoration within the Ala Wai Canal Basin remain and are currently being evaluated by the non-Federal sponsor and others, however, ecosystem restoration features will not be a part of the FEIS recommended plan or a Federal recommendation to Congress.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

Attached is the 35% design for the Pukele Debris and Detention Structure. The top of the structure is intended to serve as an overflow spillway, not a structure utilized for public access. Section C-C shows that the top of the structure is 441' in elevation whereas the spillway elevation is located at 437' with vertical side slopes on the furthest lateral extent of the spillway. The assumed four foot elevation difference would not be conducive to either vehicle or pedestrian traffic across the structure. If constructed, ownership, operations and maintenance of the structure would be the responsibility of the non-Federal sponsor.

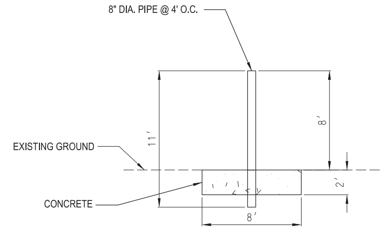
Table 9, page 3-22 of the draft FEIS details (page 3-23 of the final) cursory operations and maintenance requirements based on project feature. These obligations are identified during the feasibility phase for the purpose of developing initial cost estimates. If approved, a detailed operations and maintenance plan will be developed during the design phase of the study. Operations and maintenance are the responsibility of the non-Federal sponsor, however, it is not anticipated that the general public would be involved in operations and maintenance of flood risk management features. Debris and detention structures are intended to pass normal stream flows without impounding water. The structures are designed to function only during storm events, therefore, no impoundment of water is anticipated outside of such storm events.

The non-Federal sponsors must enter into a Project Partnership Agreement with USACE to construct the Project. This agreement sets the required cost sharing of the Project between the non-Federal sponsors and the Federal government and requires that the non-Federal sponsors be solely responsible for the Operation and Maintenance of the Project. The sponsors are responsible for financing their local share and operation and maintenance costs.

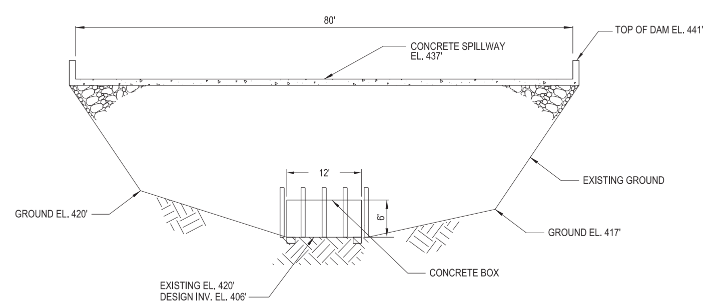
Note that while streamflow gauges are proposed for Ala Wai Canal as a part of the flood warning system, unfortunately, the issues related to water quality, additional stream gauge network installation and terrestrial ecosystem improvements are not topics addressed by the FEIS nor does USACE have the authorization to study those issues. It is suggested that you contact the State of Hawaii Department of Health for information related to water quality, the US Geological Survey for information on stream gauges and the USDA Natural Resources Conservation Service (NRCS) for implementation of terrestrial ecosystem improvements.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

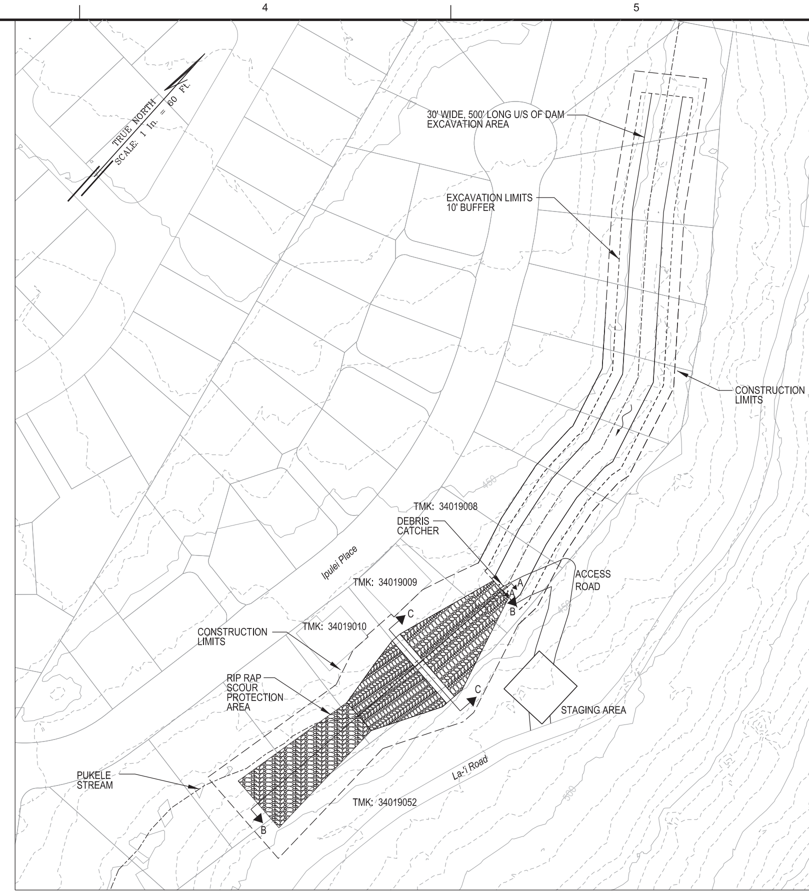
http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx



PUKELE DEBRIS AND DETENTION BASIN
SECTION A-A
SCALE: 1"=5'



PUKELE DEBRIS AND DETENTION BASIN
SECTION C-C
SCALE: 1"=5'

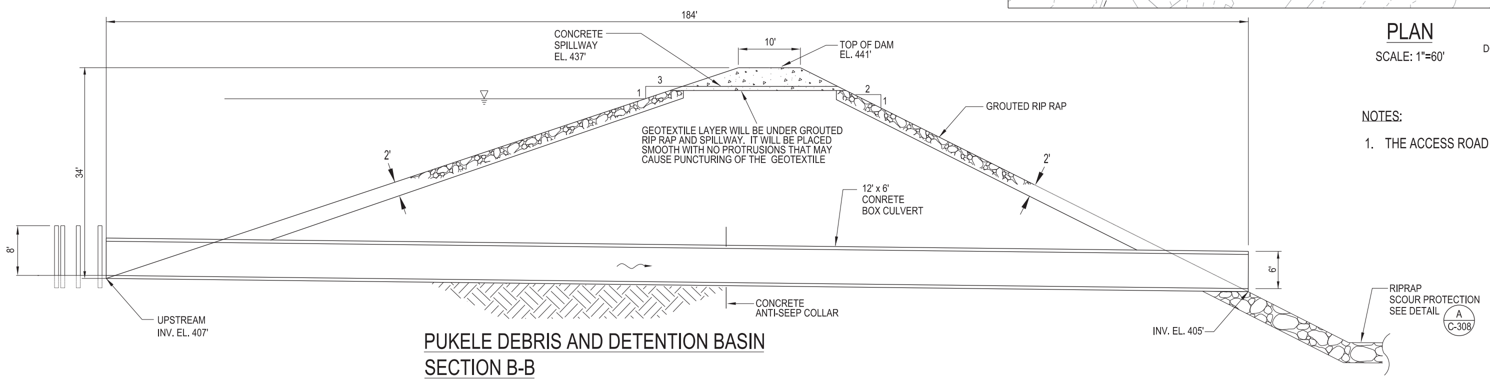


PLAN
SCALE: 1"=60'

SOLID LINE = 50' CONTOURS
DOTTED LINE = 10' CONTOURS

NOTES:

1. THE ACCESS ROAD WILL ALSO BE USED FOR MAINTENANCE.



PUKELE DEBRIS AND DETENTION BASIN
SECTION B-B
SCALE: 1"=5'

5 2.5' 0 5 10
SCALE: 1" = 5'
Note: All elevations are feet MSL

US Army Corps of Engineers®
Honolulu District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

35% DESIGN

US ARMY CORPS OF ENGINEERS
HONOLULU DISTRICT
HONOLULU, HAWAII

DESIGNED BY: JHH	DATE:	REVISION:
DRAWN BY:	CHECKED BY:	SOLICIT./ CONTRACT NO.:
SUBMITTED BY:		LOCATION CODE
PLOT SCALE:	PLOT DATE: 8/30/2016	DRAWING NUMBER:
SIZE: ANSI D	FILE NAME: Ala_Wai_C-313xxx	

ALA WAI CANAL PROJECT

PUKELE DEBRIS AND DETENTION BASIN
PLAN AND SECTIONS

SHEET IDENTIFICATION
C-313
SHEET 18 OF 31

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DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Tom Heinrich
Ala Wai Watershed Association
Post Office Box 2808
Honolulu, Hawaii 96803-2808

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District USACE:

1. *Aloha! Thank you for the opportunity to submit these comments on the above Public Review Draft Report. I offer these summary comments in my capacity as President of the Ala Wai Watershed Association (AWWA). The Ala Wai Canal Project was formally initiated in 1998, and it has been a long process to get to this point. AWWA has followed the Project since the start and participated in a number of Project activities over the years, including providing volunteer assistance to do stream assessments and data collection.*

RESPONSE: Thank you for your participation in the process. This process does not end with the feasibility, it will continue during the design and construction phase and we encourage your feedback and participation. Community engagement is a critical part of making this a successful project.

2. *AWWA had consistently advocated for the Ala Wai Canal Project study to include the mauka lands of the entire Ala Wai Watershed, which contributes the largest amount of water to the Canal. The original scope of the study was in fact expanded to the crest of the Koolau after the occurrence of the October 30, 2004 Manoa Stream flood, which was estimated to have been a 5-percent annual chance ("20-year level") event.*

RESPONSE: Thank you for your advocacy and continued participation in the project. NOAA National Weather Service shows the 2004 event as potentially a 50-year event or a 2% annual exceedance probability event; either way, the amount of impacts from the 2004 event were calculated and evaluated as part of this feasibility study.

3. *In 2006 occurred a period of more than 40 consecutive days of significant rainfall on O'ahu, which resulted in mud flow damage to the Pu'uhonua neighborhood in Manoa, cinder soil landslides on Round Top and into Maunalaha Valley, and Makiki Stream floods makai of South King Street. The State of Hawai'i Department of Land and Natural Resources (DLNR) has since completed two major projects on the east and west sides of Puu Ualakaa (Round Top) necessitated by the 2006 events.*

RESPONSE: Thank you for providing the information on the two projects conducted as a result of the 2006 forty consecutive rain days.

4. *These recently experienced major storm and flood events in the Ala Wai Watershed caused significant damage to residential, institutional, public, and infrastructure resources. The University of Hawai'i at Manoa alone suffered more than $85,000,000 in damages from the 2004 flood. It is not a question of if, only when, the next storm events will occur. The effects of climate change on the frequency and magnitude of storm events and sea level rise have greatly increased the risks of flooding.*

RESPONSE: Thank you for your comment about damages caused by past flooding events. This project evaluated the impacts of climate change and sea level rise in the project area. This analysis can be found in Appendix A of this HEPA FFEIS, specifically in Appendix A3.

5. *Due to other factors with the U.S. Congress and changes to the U.S. Army Corps of Engineers (USACE) study scoping process, the present Ala Wai Canal Project feasibility study was unfortunately rescoped to focus on flood risk management only, thereby eliminating other project objectives that had been considered and studied. These other objectives are necessary for the long-term for the resilience of the Ala Wai Watershed - the most densely populated area of the State, and to protect the role of Waikiki to the State economy.*

RESPONSE: While ecosystem restoration as a multipurpose project object was removed from scope in 2012, the environmental operating principles of design were carried through feasibility and will continue in the design phase. Balancing engineering solutions with environmental and community impacts remains a priority for this project.

6. *Summary Comments*
Community Outreach. In anticipation of the completion of the Final Report, USACE and DLNR need to significantly improve their outreach to the community by updating and broadening the scope of identified persons and organizations who should be notified and consulted as the Ala Wai Canal Project progresses. AWWA can help with that process, as personal networking is critical to the success of this task.

RESPONSE: We appreciate the continued participation of organizations such as AWWA. As this project progresses, modeling and engineering data will be refined to help inform the final design of the system features. Community engagement and outreach will also play a critical role in final design.

7. *Cost vs. Cost Avoidance. The Project summary materials must make clear that while the Tentatively Selected Plan is directed at the 1% annual chance exceedance (ACE) level, the ultimate level of flood protection desired (ACE events of 5%, 2%, 1 %, more/less?) is a political decision based on demand, available funding, economic benefit, effect on flood insurance rates, public-private partnering opportunities, the law governing the mission and duties of USACE, etc. The scope and final plan may be significantly different than the draft plan, as determined by those political choices and other factors.*

RESPONSE: The recommended plan in feasibility will be evaluated in design based on updated data and modeling. The final system design shall reduce the risk in the Ala Wai Watershed community to the level authorized by Congress. The local sponsor can incorporate "betterments" (other features, in addition to the recommended action) into the project provided they do not reduce the level of protection authorized by Congress and all costs for betterments are 100% local sponsor funded.

8. *Ecosystem Restoration. The Draft Report does not adequately address the need for ecosystem restoration in the upper areas of the Ala Wai Watershed. The Final Report should provide more information to guide the U.S. Congress, the local sponsors, potential private partners, and community at large about the overall scope of measures that would serve to mitigate storm water runoff and further improve flood risk management in the Ala Wai Watershed. This information would help to guide the decision-making necessary for Congressional authorization and approval of the project, and future public and private funding needs and efforts to further improve the resilience and stewardship of the area.*

RESPONSE: While ecosystem restoration as a multipurpose project object was removed from scope in 2012, the environmental operating principles of design were carried through feasibility and will continue in the design phase. Balancing engineering solutions with environmental and community impacts remains a priority for this project. Other ecosystem restoration opportunities can be incorporated as betterments to the Flood Risk Management project or requested under parallel efforts using other Corps of Engineers authorities. The Corps requires partnership and requests to partner in order to investigate ecosystem restoration opportunities.

9. *Ecosystem restoration especially in the mountainous and forested uplands of the Ala Wai Watershed is a long-term process and will require the community's participation, but is critical to O'ahu's water conservation and supply, storm water management, disaster preparedness, resilience, and sustainability as an isolated island community. Identification of the effects of invasive species (e.g., albizia trees and their high canopy) underscores the need for ecosystem restoration in the mauka areas.*

RESPONSE: See Response #8

10. *Eminent Domain; Public Safety. At and since the USACE September 30, 2015 Draft Report public information meeting at Washington Middle School and November 5, 2015 discussion at Paradise Park hosted by the South O'ahu Soil and Water Conservation District, a number of residents of Palolo and Manoa have expressed their concerns about likely losing their real property to eminent domain after discovering that their lots would be directly affected by the detention basins identified in the Tentatively Selected Plan (TSP).*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. When and if it is determined in the Design Phase that private property acquisition or compensation

is necessary to execute the project, it will be acquired in accordance with both state and federal laws.

11. *While the design is currently only to the 35% level, before the Final Report is completed, direct outreach is needed to those real property owners who may be affected by the proposed siting of and means of access to the detention basins included in the TSP. Folks in the far mauka areas like Paradise Park in Manoa (Waihi and Waiakeakua Detention Basins) and Carlos Long Street and La' i Road in Palolo (Pukele Detention Basin) are especially concerned about public safety and security risks by the creation of service road access to the secluded detention basins through their back of valley areas.*

RESPONSE: Although crime statistical analysis as a direct factor is not within the authorization of the feasibility study or this HEPA FFEIS proposed action, the undertaking of connecting Lai Road to Ipulei Place is a reasonable request for clarification. Under the proposed action which will be further refined in the Design Phase, there is no plan to connect Lai Road and Ipulei Place. The feature that is proposed would be secured to keep pedestrian and or vehicular traffic from traversing the feature. In addition to the approximate 4' elevation difference between the ground and the spillway on the feature, there would be other measures for the safety of the community and the security of the feature. The features proposed in the upper watershed of the Manoa Valley would be similarly secured to mitigate against security concerns and if a feature remains in the upper Manoa Valley after design, coordination and outreach will be done with the local stakeholders such as Paradise Park and Kumuola Foundation.

12. *Operations and Maintenance; Kuleana. The local sponsors -the State of Hawai'i and City and County of Honolulu- are identified as being responsible for the long-term operation and maintenance of the Ala Wai Canal Project elements after completion of construction. The cost is estimated as $928,000 annually. The Final Report needs to include the community at large as a responsible partner to assist with some of the O&M tasks and to revitalize the Hawaiian cultural practice of kuleana - everyone sharing in the tasks of stewardship of the watercourses, debris catchments, detention basins, and flood walls. Timely and consistent O&M is an absolute requirement to protect public safety.*

RESPONSE: Every feature will have a maintenance manual with it that describes procedures for making sure the features functions as designed; additionally, after construction, the Corps of Engineers will routinely inspect the feature and provide a list of deficiencies to the City and County of Honolulu. This document will be developed by the Honolulu District in partnership with the City and County of Honolulu and the State of Hawaii during and after construction. Individual Stakeholders will be involved only when identified as necessary by the City and County or State of Hawaii and will be by exception. The non-Federal Sponsor is responsible for the execution of O&M. Each feature or array of features depending on the interdependency of the features will have its own manual.

13. *USACE said it would develop an O&M manual for the local sponsors. AWWA strongly encourages the preparation of such a manual, inclusion of public participation plans for O&M, and the identification of best management practices for the community.*

RESPONSE: This document will be developed by the Honolulu District in partnership with the City and County of Honolulu and the State of Hawaii during and after construction. Individual Stakeholders will be involved only when identified as necessary by the City and County or State of Hawaii and will be by exception. The non-Federal Sponsor is responsible for the execution of O&M. Each feature or array of features depending on the interdependency of the features will have its own manual.

14. *Drainage Culverts. Residents have expressed concerns about the size and length of the detention basin drainage culverts as posing risks to children, becoming an attractive nuisance, and increasing the risk of drowning during flood events. What can be done to prevent entry into the drainage culverts?*

RESPONSE: During the Design phase of the project design requirements and construction considerations will be examined in great detail to meet local, state, and federal requirements. These include safety assurance reviews by both state and federal dam safety agencies which manage low flow outlets, as you describe above through risk assessments. In addition to the agency review there will be community engagement and outreach to ensure concerns are captured and considered in order to deliver a project that reduces flood risk in the Ala Wai Watershed community as authorized by Congress.

15. *Use of Manoa Valley District Park. The TSP shows only an in-stream debris catchment on Manoa Stream at the Manoa Valley District Park site. Due to the damage incurred by the Lowrey Avenue and East Manoa Road neighborhoods upstream of the Woodlawn Drive Bridge from the flood waters that came through the field areas of Manoa Valley District Park, this large public open space should be included in the TSP as a detention basin site.*

RESPONSE: During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. This process will include looking at areas such as Manoa Valley District Park and evaluating it for technical feasibility, benefits, cost, and acceptability. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

16. *Stream Gages. There is an urgent need for a more comprehensive system of stream gages for real-time data collection and historical records. The Final Report should include this objective and provide information concerning how gages may be privately sponsored though the U.S. Geological Service.*

RESPONSE: The topic of stream gages was discussed in our 2017 response letter. For additional clarification, with updated modeling and data, this will be reevaluated. As part of the authorized Federal project there is an Early Warning System. This system will be developed during design, once a final system is determined and residual risk and warning system requirements are identified. Your suggestion for additional stream gauges will be evaluated as part of this warning system. While funding and maintenance of the gauges will be coordinated during the Design phase, we will discuss your suggestion with USGS at that time.

17. *'Iolani School has voiced concerns that the TSP does not provide any floodwall along the west side of the Manoa-Palolo Drainage Canal between the Ala Wai Canal and Date Street. Please explain why not.*

RESPONSE: As quoted in the May 2017 response letter you received, "The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention flood flows in the upper watershed combined with line or protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of features necessary for flood risk management in the lower watershed. Details regarding planning considerations leading to the development of alternative plans can be found in Section 3 of the HEPA FFEIS. As noted, a floodwall has not been proposed on the property owned by the Iolani School. Section 8.3.1 describes the rationale for excluding this area from floodwall protection. However, the Iolani School property will benefit from the recommended plan as upstream storage is projected to reduce the projected 100-year flood stage (1-percent annual chance exceedance event) by approximately two feet directly upstream of the school."

To further elaborate, the modeling and data in the feasibility study did not show inundation to the school buildings themselves. The Corps did discuss options for the non-Federal Partner to construct a wall extension along the canal up to Date Street as a betterment (not part of the federally authorized project). Furthermore, as will be stated in Section 5.19.5 of the HEPA FFEIS, the Corps of Engineers informed us that during the design phase, modeling and engineering data would be refined and the wall boundaries and footprint would be evaluated. If the modeling and data demonstrates different needs than what is recommended in this HEPA FFEIS, supplemental evaluation of environmental and community impacts will be developed and documented commensurate with the impacts.

18. *Water Quality. Much of the preliminary effort that began in 1995 focused on possible measures, including by the community, that would help to improve water quality in the Ala Wai Canal. This objective needs to be addressed in the Final Report.*

RESPONSE: Page 1-2 of the Federal NEPA Document, as well as this HEPA FFEIS proposed action discusses the USACE Environmental Operating Principles (EOP) which requires "mutually supporting economic and environmental sustainable solutions." This evaluation occurred in the

feasibility study despite a 2012 shift in focus to strictly a flood control study. Water quality improvement is not an objective of the project study, although it may be an opportunity. By reducing the flood risk in the community and keeping more water in the streams, the opportunity may present itself to see a reduced level of trash and chemical pollutants as a result of water staying in the stream. Additionally, any water detained upstream may provide an opportunity for the initial plume of brown water and sediment to be dropped out of the flow reducing the amount of brown water discharge in the Canal and below. These are opportunities and not objectives within this HEPA FFEIS (Please See Section 2.1.2).

19. *Agency Collaboration. The Final Report should include recommendations for complementary components that should be considered and list the types of things that other agencies (e.g., the Natural Resources Conservation Service) could help with as a basis for community follow-up.*

RESPONSE: Complementary components are either considered betterments or projects that done outside of the construction window of this project would require a Section 408, alteration of a federal project permit. These components can be discussed with the non-Federal sponsor, in the Design Phase. Any complementary components would be funded 100% by the non-Federal sponsor.

20. *Private-public partnering opportunities are developing to help fund the project and other resilience efforts in the Ala Wai Watershed. "Precovery" efforts for the long-term in the Ala Wai Watershed are in development, using the area as a "pilot/model project."*

RESPONSE: How the Funding is obtained for the project is not within the scope for this HEPA FFEIS.

21. *Other master plans are needed re ecosystem restoration, infrastructure resilience (e.g, bridges, utility structures), storm water drainage system capacity improvements (e.g., the University of Hawai'i at Manoa campus), and building code requirements.*

RESPONSE: We concur. This project is one piece of an overall plan for the watershed and will need to be integrated into a greater resilience plans.

22. *The Ala Wai Watershed Association strongly encourages the U.S. Army Corps of Engineers and Department of Land and Natural Resources to fully complete the Final Feasibility Report/EIS by the end of 2016 to be able to move ahead with seeking Congressional authorization and approval.*

RESPONSE: Thank you for supporting the advancement of the project. We will keep AWWA informed of the project's progress.

23. *The Ala Wai Watershed Association also strongly encourages DLNR and the City and County of Honolulu as the local sponsors to make the necessary commitments for the Ala Wai Canal Project to*

continue to move forward, and when appropriate, fund their portion of construction costs once the U.S. Congress provides authorization for the project.

RESPONSE: We concur and will work with the City and County of Honolulu to determine the appropriate path forward for non-Federal participation.

24. *Many decisions in addition to providing the required cost share funding remain to be made and must be addressed to accomplish the flood risk management, public safety, and economic protection objectives of the Ala Wai Canal Project. Significant efforts began in January 2015 that have led to the formation of the Ala Wai Watershed Partnership, which recognizes the need for private participation to help fund elements of the project and to address other resilience and long-term sustainability needs of the Ala Wai Watershed through public-private partnering.*

RESPONSE: How the non-Federal sponsor funds the required proportion is outside of the scope of this HEPA FFEIS. It is our position to support this project moving forward understanding there is a cost share requirement.

25. *Please keep the Ala Wai Watershed Association informed of the progress on the Final Feasibility Report/EIS and what steps are needed to accomplish the commitments of the local sponsors to assure submittal of the Final Report to the U.S. Congress.*

Thank you for your consideration of these comments.

RESPONSE: Thank you for your comments and desire to continue participation. We will keep you informed as the project progresses.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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'IOLANI SCHOOL

November 9, 2015

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

Re: *Draft Feasibility Report/Environmental Impact Statement for the Ala Wai Canal Project*

To whom it may concern:

On behalf of 'Iolani School and our thousands of Alumni, students, parents, teachers and supporters, we write to submit comments on the U.S. Army Corps of Engineers (USACE) Draft Feasibility Report/Environmental Impact Statement for the Ala Wai Canal Project. Please include these comments in the administrative record.

'Iolani School with 1,900 students, 300+ faculty and staff, and significant real property, assets and resources is a critical stakeholder in this plan and stands to be dramatically and negatively impacted by the proposed plan specifically due to the potential for flooding and damage to 'Iolani's campus. In addition, the campus serves many more members of the community through the numerous academic, arts and sporting events that are open to educators and students from throughout the state and beyond. The school is also the site for conferences, summits, and non-profit organization meetings. In the Tentatively Selected Plan, the potential for flooding 'Iolani School has been identified as an "acceptable risk." We strongly disagree.

- The first building to be impacted in a flood is our Kindergarten and 1st Grade Building, which serves as the primary education space for more than 140 of our youngest students. The ability to evacuate the school's students, faculty, and staff onto a street that is already congested, and would most likely be flooded, is not realistic.

- We believe the proposed plan causes a significant public safety hazard to our entire school community and it is unacceptable to put our students at risk in the event of a flood. We feel it is possible to engineer a workable solution that protects 'Iolani School and the residents in the area, while not prioritizing the safety and well-being of visitors and Waikiki hotels over the safety and well-being of our students and 'ohana.

- The current cost benefit analysis of project plan 3A vastly underestimates the amount of loss that would be incurred by 'Iolani School and the neighboring community as it has not appropriately captured the value of the true damage to buildings and infrastructure that we believe would occur in a flood (both on 'Iolani's campus and the neighboring community)

and does not consider the economic costs associated with other consequences that the proposed plan would potentially result in, including increased liability and the cost of additional insurance. Beyond underestimating the monetary loss that would be incurred, the cost benefit analysis used to support plan 3A completely ignores the negative impact to public safety for the students and families in our neighborhood as it does not take into consideration the "costs" associated with the risk of loss of life or other health concerns due to flood-water contaminants. If these safety concerns were properly incorporated into the analysis, we find it hard to believe that anybody would conclude that flooding 'Iolani School would be identified as an "acceptable risk" as stated in the Draft Feasibility Report.

- 'Iolani School has not been adequately engaged as a stakeholder in this process, despite the fact that our students, faculty and staff stand to be dramatically impacted by this Project.

We look forward to the opportunity to have more thorough and in-depth conversations with USACE and DLNR to work towards a more acceptable solution for everyone.

Sincerely yours,

Reid Gushiken
'Iolani School
Chief Financial Officer

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Reid Gushiken
Iolani School
563 Kamoku Street
Honolulu, Hawaii 96826

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding public outreach
- Alternative Plan Selection
- Concerns of Iolani School regarding the absence of a floodwall on school property
- Economic optimization of the recommended plan
- FEMA Floodzone Designation

Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Iolani School feedback was solicited at both EIS scoping points. Summaries of feedback received is attached to this letter. The following individuals are included on e-mail distributions as representatives of the school:

- Glenn Ching
- Reid Gushiken
- Dr. Yvonne Chan
- Megan Kawatachi
- Hye Jung Kim

Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. During this period, the following notices were provided to those individuals on the e-mail distribution list:

- 19 MAY 2014 Open House invitation
- 03 JUN 2014 Open House slideshow availability
- 24 AUG 2015 Draft FR/EIS and Public Meeting initial notice
- 26 SEP 2015 Draft FR/EIS Public Meeting reminder
- 07 OCT 2015 Draft FR/EIS Public Meeting follow up

As noted above, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if

the recommended plan is constructed. With that said, even with implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area.

Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS. Sea level rise is included in the analysis provided under Appendix A for the purpose of evaluating the resiliency of the recommended plan to a changing environment; sea level varies over time and increases under a number of scenarios. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase.

USACE has developed hydraulic information which can be utilized by regulatory agencies and the public as a part of the National Flood Insurance Program (NFIP). It is possible that FEMA could make adjustments to the floodplain without the project in place; however, USACE cannot speculate on the timing of any potential FEMA floodplain map revisions. All property owners are encouraged to participate in the NFIP to manage risks associated with flooding.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

July 6, 2004

Ms. Sherri Hiraoka
Townscape, Inc.
Environmental and Community Planning
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813

RE: ALA WAI CANAL PROJECT EIS SCOPE

Dear Ms. Hiraoka:

We appreciate this opportunity to submit comments to the Ala Wai Canal project.

In reviewing the information presented on June 29, we have the following observations:

1. There seems to be an over-reliance on the Manoa-Palolo Drainage Canal to handle the volume of water coming down from the mountain areas in the event of the 100-year storm. High tides would prevent drainage and while Ala Wai Golf Course and Kaimuki High School fields act as detention areas, they also appear inadequate.

2. Parts of the Manoa-Palolo drainage canal have concrete ducts while the canal area makai of Kaimuki High School does not. Vegetation and debris along the banks would cause refuse washed down to become entangled, thus restricting flow. The banks makai of the Date Street bridge are relatively low allowing flooding near Iolani School.

3. Dredging of the Ala Wai Canal to a deeper depth did not pass beyond the Manoa-Palolo drainage canal in the Diamond Head direction, and dredging of the Manoa-Palolo canal stopped adjacent to the Ala Wai B softball field, well short of the Date Street bridge.

4. The price tag of $30 - $60 million did not seem to include regular, periodic maintenance of the canal depth, bridge spans, concrete channels, and bank clean up.

5. Erection of floodwalls around the canal, while an engineering solution, would not be conducive to the Waikiki vistas and would be subject to graffiti and vandalism.

6. Widening the lower section of the Ala Wai Canal is a good engineering solution.

We have the following comments:

1. Allow a connection of the Ala Wai Canal to the ocean on the Kapahulu end to have a "flushing" action and to equalize water volume on both ends.

2. Allow Kapiolani Park to also become a water detention area through the "Kapahulu" connection.

3. Build up concrete banks and remove vegetation along the Manoa-Palolo Drainage Canal especially makai of the Date Street bridge. Since it is the area which empties into the Ala Wai Canal, it would be susceptible to blockage.

4. Construct spill ways along the Manoa-Palolo Drainage Canal which allow flood waters to go into the designated detention areas when the water levels rise above a certain height.

5. Reinstate the original stream path which traversed the Ala Wai Golf Course. It emptied near the Waikiki Library. Restoration of the natural habitat can happen here relatively undisturbed and made part of the golf course challenges.

6. Dredge the Manoa-Palolo drainage canal and the entire Ala Wai Canal length on a regular basis.

7. Examine whether the spans of the other bridges along the drainage canal need modifications like the McCully and Ala Moana bridges.

8. Continue community education and bulk refuse collection efforts to reduce dumping into the streams feeding into the Manoa-Palolo drainage canal.

9. The project's funding should also include regular, periodic maintenance to the flood mitigation measures.

Thank you for your consideration. Please contact me at 943-2209 if you have questions.

Sincerely,

Glenn Ching
Director of Finance

cc: State of Hawaii
Department of Land and Natural Resources, Engineering Division
P.O. Box 373
Honolulu, HI 96809
Attn: Andrew Monden

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

ALA WAI WATERSHED PROJECT (AWWP)
COMMUNITY CONSULTATION

Date: **June 17, 2009**
To: **Project Files**
From: **Townscape**
RE: **Meeting with Glenn Ching**

Participants: Glenn Ching, ʻIolani School, Director of Finance; Agnes Topp, Townscape.

The purpose of the meeting was to discuss issues associated with the lower portion of the Mānoa-Pālolo stream, near ʻIolani School, and to provide an update to Mr. Ching on the Ala Wai Watershed Project.

Background on the Ala Wai Watershed Project

- The Ala Wai Watershed Project (AWWP) is a partnership between the Army Corps of Engineers, the State Department of Land and Natural Resources, and City and County Environmental Services. After earlier iterations that looked at portions of the Ala Wai Watershed (specifically, the Ala Wai Canal and Mānoa Stream), the project is now taking a more holistic approach, looking at potential issues and mitigation in the entire watershed, which includes the neighborhoods of Makiki, Mānoa, Pālolo, St Louis-Kapahulu-Diamond Head, McCully-Mōʻiliʻili-Ala Moana, and Waikīkī.
- The project is currently in the feasibility phase, where we are gathering all necessary information to design flooding mitigation and ecosystem restoration measures. When the project team has preliminary measures designed, we will begin conducting neighborhood-level meetings to discuss potential measures and collect feedback from affected communities. These meetings should occur some time in the fall of 2009.

Lower Mānoa-Pālolo Stream Issues in the vicinity of Iolani School

- Upstream of the Date Street bridge, the Mānoa-Pālolo drainage canal has concrete banks and bottom, while on the *ma kai* side it has natural banks and bottom. This causes buildup of soil in the lower portion of the canal.
- The canal by ʻIolani School is about 5 feet deep. Silt buildup at the bottom is visible at low tide. When the Ala Wai Canal was dredged a few years back, they did not dredge the Mānoa-Pālolo drainage canal.
- ʻIolani School is concerned about the maintenance of the stream banks and vegetation in the lower Mānoa-Pālolo drainage canal. Stream banks are vegetated primarily with kiawe trees, milo trees, and mangrove. The mangrove in certain areas is encroaching into the stream and causing additional silt buildup.
- ʻIolani has been doing maintenance of the vegetation along the stream banks next to the portion of the bike path that the school maintains as part the Adopt-A-Park program. Maintenance includes removing broken branches in the stream, cutting tree branches that hang too low over the stream, and cutting some of the mangrove that is encroaching into the stream. ʻIolani is interested doing additional maintenance, such as removing more of the mangrove, and the nearby community has been proactive in helping to clean up the area, but they are not sure what they are allowed to do. (I provided Glenn with information about the "Adopt-A-Stream" program managed by the City's Environmental Services Division.) In the portion of the stream *ma kai* of Iolani, very little maintenance is being done and the vegetation encroaches farther into the stream.
- During the 2004 flood, the stream came up onto the road adjacent to ʻIolani School. The flood did not affect the school.
- Stream bank stabilization and increased bank height would be a good idea to decrease flooding in that area.

Community Members to Involve in Neighborhood-level Meetings

- 100th Infantry Battalion veterans club – located across the street from ʻIolani School at 520 Kamoku Street.
- Ala Wai School
- Condos in the neighborhood, including Kaimana Lanai Condo and 500 University.

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Reid Gushiken
Iolani School
563 Kamoku Street
Honolulu, Hawaii 96826

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District USACE:

1. *On behalf of 'Iolani School and our thousands of Alumni, students, parents, teachers and supporters, we write to submit comments on the U.S. Army Corps of Engineers (USACE) Draft Feasibility Report/Environmental Impact Statement for the Ala Wai Canal Project. Please include these comments in the administrative record.*

RESPONSE: Thank you for your interest and participation in this project. This process does not end with the feasibility study, it will continue during the design and construction phase and we encourage your feedback and participation. Iolani School has been identified as a critical stakeholder in this project and as such will continue to be consulted with under both HEPA and NEPA. Community engagement is a critical part of making this a successful project.
Your comments will be included in Appendix G Public Involvement of this HEPA FFEIS.

2. *'Iolani School with 1,900 students, 300+ faculty and staff, and significant real property, assets and resources is a critical stakeholder in this plan and stands to be dramatically and negatively impacted by the proposed plan specifically due to the potential for flooding and damage to 'Iolani's campus. In addition, the campus serves many more members of the community through the numerous academic, arts and sporting events that are open to educators and students from throughout the state and beyond. The school is also the site for conferences, summits, and non-profit organization meetings. In the Tentatively Selected Plan, the potential for flooding 'Iolani School has been identified as an "acceptable risk." We strongly disagree.*

RESPONSE: The Tentatively Selected Plan identified in the Feasibility Study was based on information available at the time, with an awareness that the information and plan would require refinement after Congressional authorization to proceed.

Section 7.6.3 of Appendix B, Economics details the impacts to the Iolani School campus with- and without- project in place. “With no project in place, the potential exists for flooding practically the entire 25-acre campus, inundating more than one dozen large school buildings and endangering the lives of many of the 1,800 students enrolled there and the 200 faculty and 160 administrators and staff who work there. In a 0.01 ACE event with project in place, flood waters would rise almost to the floor levels of several classrooms and/or administration buildings and also flood as much as one-half of the campus, although this would be mostly athletic fields, courts and support facilities. This limited level of protection for the school is provided not by the Ala Wai floodwalls, but entirely by detaining flood water upstream and within the adjacent Ala Wai Golf Course.”

The with-project conditions place the campus and its students in much lower risk than the without-project conditions. In our follow up meeting you held with our DLNR engineers and the Corps of Engineers, it was explained during that the project would not increase flood risk on Iolani or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper

watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk. To further elaborate on your comment about *potential for flooding 'Iolani School has been identified as an acceptable risk*: Modeling and data available during the Feasibility Study showed limited inundation to the school buildings themselves but primarily affected the athletic fields, courts, and support facilities. An economic analysis was performed to determine whether the cost to extend the floodwall from the canal to Date Street along the right bank of the Manoa-Palolo stream could be economically justified. However, with the lower values associated with athletic fields, courts, and supporting facilities, the cost of this floodwall could not be incrementally economically justified. Subsequently, the Corps did discuss options for the non-Federal Partner to construct a wall extension along the canal up to Date Street as a betterment (not part of the federally authorized project). We also understand that the Corp of Engineers intend to update modeling and engineering data during the design phase. This includes incorporating updated geotechnical and topographic data, cost estimates, and economic analysis to determine again whether extending the wall boundaries is economically justifiable. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

3. *The first building to be impacted in a flood is our Kindergarten and 1st Grade Building, which serves as the primary education space for more than 140 of our youngest students. The ability to evacuate the school's students, faculty, and staff onto a street that is already congested, and would most likely be flooded, is not realistic.*

RESPONSE: See Response #2. In addition, as stated in our 2017 response letter, "When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if the recommended plan is constructed. With that said, even with implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area."

4. *We believe the proposed plan causes a significant public safety hazard to our entire school community and it is unacceptable to put our students at risk in the event of a flood.*

RESPONSE: See Responses #2 and #3.

5. *We feel it is possible to engineer a workable solution that protects 'Iolani School and the residents in the area, while not prioritizing the safety and well-being of visitors and Waikiki hotels over the safety and well-being of our students and 'ohana.*

RESPONSE: See Responses #2 and #3. The Recommended Plan 3A with a combination of detention and line of protection features, projects a reduction of flood stage resulting from a 100-year storm by approximately two feet. The project does not prioritize the well-being of visitors and Waikiki hotels, as the Recommended Plan reduces the overall flood risk to the Iolani campus and its surrounding area.

As stated in our 2017 response letter, "Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS."

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

6. *The current cost benefit analysis of project plan 3A vastly underestimates the amount of loss that would be incurred by 'Iolani School and the neighboring community as it has not appropriately captured the value of the true damage to buildings and infrastructure that we believe would occur in a flood (both on 'Iolani's campus and the neighboring community) and does not consider the economic costs associated with other consequences that the proposed plan would potentially result in, including increased liability and the cost of additional insurance.*

RESPONSE: See Responses #2 and #3. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental

environmental documentation will be developed commensurate with the level of impacts, if necessary.

7. *Beyond underestimating the monetary loss that would be incurred, the cost benefit analysis used to support plan 3A completely ignores the negative impact to public safety for the students and families in our neighborhood as it does not take into consideration the "costs" associated with the risk of loss of life or other health concerns due to flood-water contaminants. If these safety concerns were properly incorporated into the analysis, we find it hard to believe that anybody would conclude that flooding 'Iolani School would be identified as an "acceptable risk" as stated in the Draft Feasibility Report.*

RESPONSE: See Responses #2 and 3. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Economic impacts and life safety analysis will be further evaluated with the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

8. *'Iolani School has not been adequately engaged as a stakeholder in this process, despite the fact that our students, faculty and staff stand to be dramatically impacted by this Project.*

RESPONSE: As stated in our 2017 response letter, "Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Iolani School feedback was solicited at both EIS scoping points…. The following individuals are included on e-mail distributions as representatives of the school:

- Glenn Ching
- Reid Gushiken
- Dr. Yvonne Chan
- Megan Kawatachi
- Hye Jung Kim

Table 38 [of the NEPA FFEIS] details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. During this period, the following notices were provided to those individuals on the e-mail distribution list:

- 19 MAY 2014 Open House invitation
- 03 JUN 2014 Open House slideshow availability
- 24 AUG 2015 Draft FR/EIS and Public Meeting initial notice
- 26 SEP 2015 Draft FR/EIS Public Meeting reminder
- 07 OCT 2015 Draft FR/EIS Public Meeting follow up

As noted above, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS."

Summaries of the above listed feedback and meetings can be found in Appendix G of this HEPA FFEIS.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

9. *We look forward to the opportunity to have more thorough and in-depth conversations with USACE and DLNR to work towards a more acceptable solution for everyone.*

RESPONSE: We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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ʻIolani School

HEAD OF SCHOOL

November 9, 2015

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

RE: Ala Wai Canal Project ("Project") – Draft Feasibility Study Report with Integrated Environmental Impact Statement dated August 2015 (the "Draft Report/EIS" or "Report")

Dear Sir or Madam:

`Iolani School respectfully submits these comments in response to the U.S. Army Corps of Engineers ("USACE") and State of Hawaii Department of Land and Natural Resources' ("DLNR") (USACE and DLNR, collectively, are the "Agencies") request for public input regarding their Draft Report/EIS.[1] We request that these comments and attachments be included in the administrative record.[2]

As of the date of submission of this letter, the Project website (www.alawaicanalproject.com) requested that written comments regarding the Draft Report/EIS be submitted to the USACE pursuant to NEPA and DLNR pursuant to HEPA, with a postmark no later than November 9, 2015. `Iolani School is submitting its comments within the deadline prescribed and advertised by the Agencies.[3]

[1] `Iolani School requests that it be a consulting party and/or stakeholder under both NEPA and HEPA.

[2] We understand that comments may be submitted separately by government agencies, members of the public, community organizations, and the like. All of those comments are hereby incorporated by reference.

[3] Note that the presentation distributed at the public meeting on September 30, 2015 also notes a public comment deadline of November 9, 2015 for both the USACE under NEPA and DLNR under HEPA. Accordingly, `Iolani School believes that its comments are timely under both NEPA and HEPA and must be considered and responded to.

Executive Summary.

At the request of the DLNR Division of Engineering, the USACE has conducted a feasibility study for the proposed Ala Wai Canal Project, Oahu, Hawaii. The purpose of this Project in its current scope is to reduce riverine flood risks in the Ala Wai Watershed. After considering several alternatives, the USACE has identified Plan 3A in the Report as its preferred plan ("Tentatively Selected Plan" or "TSP"). The analyses produced as a result of this study show the 1-percent annual chance exceedance ("ACE") floodplain extending into approximately 1,358 acres of the watershed with modeling results indicating resultant damages to more than 3,000 structures and approximately $318 million in structural damages, not including loss to business income or loss of life.

`Iolani School, with 1,900 students, over 300 faculty and staff, and significant real property, assets and resources, is a critical stakeholder in this plan and stands to be dramatically and negatively impacted by the proposed plan specifically due to the potential for flooding and damage to `Iolani's campus. In addition, the campus serves many more members of the community through numerous academic, arts and sporting events that are open to educators and students from throughout the state and beyond. The school is also the frequent site for conferences, summits, and meetings. In the Tentatively Selected Plan, the potential for flooding `Iolani School has been identified as an acceptable risk. We strongly disagree.

The Report states:

> The risk of flooding `Iolani School could be further reduced by extending the floodwalls to protect the school, but it would induce higher water surface elevations on the Waikīkī side of the Ala Wai Canal, as well as limit the effectiveness of the Ala Wai Golf Course detention improvement. The modeling results indicate that this would be an unacceptable trade-off, as the additional induced damages in Waikīkī would greatly exceed any benefit associated with `Iolani School. Nonstructural solutions were evaluated as a means of providing additional protection in lieu of extending the floodwalls, but none were found to be economically feasible.

See Report at 8-6. Additionally, Appendix B to the Report notes: "One area of significance that does not stand to benefit from a reduction in flood damages and risk of loss of life, as the project is now formulated (under the Tentatively Selected Plan), is the `Iolani School buildings and campus grounds."

While two other plans that were considered included floodwalls to protect `Iolani School, those plans were not selected and the floodwalls are not included in the Tentatively Selected Plan being proposed by the USACE. The Report further explains that while other schools and properties will be protected, `Iolani School will remain in the 1% annual chance exceedance (ACE) floodplain:

> In addition to reducing health and safety risks to the affected population, critical infrastructure and other public facilities would be removed from the

> 1-percent ACE floodplain, thus contributing to health and safety through increased resiliency in response to flood events (IMP SAF-2). Specifically, the project would provide protection for 2 of the 4 fire stations, the police station, both medical clinics, and 6 of the 9 emergency shelters that are currently in the 1- percent ACE floodplain. Critical infrastructure that would remain in the floodplain includes 2 fire stations (the Makaloa station in Ala Moana and the Wilder station in Makiki), and 2 emergency shelters (Lunalilo Elementary and Washington Intermediate in McCully/Mō'ili'ili). In addition to the three schools that serve as emergency shelters, the only other school that would remain in the 1-percent ACE floodplain would be a portion of `Iolani School; the other 7 schools that are currently in the floodplain would be protected by the project.

See Report at 5-80.

`Iolani School has reached out to the USACE and the State sponsor, DLNR, in hopes of working towards a collaborative solution that permits the Project to move forward while still adequately protecting the `Iolani community and area residents. While `Iolani School supports the overall intent of this flood mitigation project, we do not support the Project in its current scope with Plan 3A as the TSP as the TSP is based upon engineering that lacks scientific integrity. The TSP erroneously excludes significant economic impacts not considered by the Agencies, as well as includes unacceptable risk to the life and safety of the students and surrounding community.

`Iolani School also believes that the Agencies did not adequately engage `Iolani School or other stakeholders since the October 2012 re-scoping of the Project. For these reasons and others discussed in further detail below, we believe that the Draft Report/EIS must be significantly revised and reissued in a separate draft for further public review and comment.

NEPA.

The National Environmental Policy Act ("NEPA") requires all federal agencies to prepare an environmental impact statement ("EIS") for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332. "The primary purpose of an EIS is to serve as an action-forcing device to insure that the policies and goals defined in the Act NEPA are infused into the ongoing programs and actions of the Federal Government." 40 C.F.R. § 1502.1. An EIS must "provide full and fair discussion of significant environmental impacts and inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." Id. Among other things, an EIS must discuss the environmental impact of the proposed federal action, any adverse and avoidable environmental effects, any alternatives to the proposed action, and any irreversible and irretrievable commitment of resources involved in the proposed action. 42 U.S.C. § 4332(2)(C) and (2)(E).

Exploring alternatives is at the heart of the EIS. Federal agencies must, among other things, (1) rigorously explore and objectively evaluate all reasonable alternatives, and

for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated, (2) devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits, and (3) include appropriate mitigation measures not already included in the proposed action or alternatives. 40 C.F.R. § 1502.14.

Under NEPA, federal agencies must, to the fullest extent possible, encourage and facilitate public involvement in decisions which affect the quality of the human environment, and use all practicable means, consistent with the requirements of NEPA and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment. 40 C.F.R. § 1500.2(d) and (f).

HEPA.

The Hawaii Environmental Policy Act ("HEPA"), Hawaii Revised Statutes Chapter 343, is intended to ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations. Hawaii Administrative Rules ("HAR") § 11-200-1. Specifically,

> Chapter 343, HRS, directs that in both agency and applicant actions where statements are required, the preparing party shall prepare the EIS, submit it for review and comments, and revise it, taking into account all critiques and responses. Consequently, the EIS process involves more than the preparation of a document; it involves the entire process of research, discussion, preparation of a statement, and review. The EIS process shall involve at a minimum: identifying environmental concerns, obtaining various relevant data, conducting necessary studies, receiving public and agency input, evaluating alternatives, and proposing measures for avoiding, minimizing, rectifying or reducing adverse impacts. An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self-serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision-making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision-makers will be enlightened to any environmental consequences of the proposed action.

HAR § 11-200-14.

Consultation is critical to the HEPA process. Accordingly, agencies are required to endeavor to develop a fully acceptable EIS prior to the time the EIS is filed with the appropriate office, "through a full and complete consultation process." HEPA requires that proposing agencies not rely solely upon the review process to expose environmental concerns. HAR § 11-200-15.

The Agencies did not take a "hard look" under Either NEPA or HEPA.

A federal agency must take a "hard look" at the environmental consequences of the proposed action before the decision to proceed is made. Earth Island Inst. V. U.S. Forest Serv., 351 F.3d 1291, 1300 (9th Cir. 2003); see 40 C.F.R. § 1500.1(b). Under state law, state agencies must ensure that environmental concerns are given appropriate consideration in decision making. HAR § 11-200-1. In this instance, the Agencies failed to meet these standards.

Modeling for the TSP 3A was based on erroneous topographical analysis which does not reflect the current elevation and building structures at `Iolani School. This resulted in an improper projection of environmental consequences and economic damage.

The Tentatively Selected Plan lacks scientific integrity and should be rejected.

NEPA recognizes that sound methodology and scientific accuracy are paramount to the integrity of the NEPA process. Section 1502.24 specifically provides,

> Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.

40 C.F.R. § 1502.24 (emphasis added). Section 1500.1(b) further affirms that,

> NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. "The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA".

40 C.F.R. § 1500.1(b) (emphasis added).

In this case, it is clear that the scientific analysis, modeling and methodology are flawed and cannot be relied upon. `Iolani School requested and attended a meeting with USACE and DLNR on October 30, 2015. Upon being questioned at the meeting regarding the engineering analysis and validity of the inundation area modeling associated with the TSP, Mike Wong, P.E. USACE, admitted that the modeling was flawed, contained artifacts and represented flood boundaries as 1 ft. deep edges. Gayson Ching, P.E. DLNR, graphically illustrated how their model represented a completely unrealistic model of what would happen in a flood. Given the lack of scientific integrity and low quality of the information utilized in the Project analysis, the TSP cannot be accepted in its current form and the Report must be significantly revised and reissued after further public review and comment.

The Agencies should have involved `Iolani School in the NEPA and HEPA process.

Federal agencies are required by NEPA to "make diligent efforts to involve the public in preparing and implementing their NEPA procedures." 40 C.F.R. § 1506.6. Further, for any proposed action, NEPA requires that there be an early and open process for

determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process is known as the scoping process. As part of the scoping process the lead agency must, among other things, invite the participation of affected agencies, any affected Indian tribe, the proponent of the action, and "other interested persons (including those who might not be in accord with the action on environmental grounds) . . ." 40 C.F.R. § 1501.7 (emphasis added).

Similarly, HEPA requires the involvement of the public and concerned individuals. HEPA provides that a proposing agency must "seek, at the earliest practicable time, the advice and input of the county agency responsible for implementing the county's general plan for each county in which the proposed action is to occur, and consult with other agencies having jurisdiction or expertise as well as those citizen groups and individuals which the proposing agency reasonably believes to be affected." HAR § 11-200-9(a)(1) (emphasis added). Pursuant to HAR Section 11-200-15, "[i]n the preparation of a draft EIS, proposing agencies . . . shall consult all appropriate agencies . . . and other citizen groups, and concerned individuals as noted in sections 11-200-9 and 11-200-9.1." HAR § 11-200-15(a). Concerned individuals include those individuals which the proposing agency reasonably believes to be affected. See HAR § 11-200-9.

In this instance, the Agencies failed to properly reach out to `Iolani School and include it in the NEPA and HEPA process despite the fact that the Draft Report/EIS clearly indicates that `Iolani School will be affected. Project records show that `Iolani School was involved at a minimal level when the Project was focused on watershed restoration. However,

`Iolani School was neither involved in nor contacted regarding the re-scoping of the Project, despite the fact that the Project included negative impacts on the school and prominent mention in the Report. While two emails regarding the Project were sent to `Iolani School in 2014 and three emails in 2015, the USACE and DLNR failed to make any meaningful effort to communicate with `Iolani School beyond sending these emails between 2009 and 2015. USACE and DLNR did not respond to `Iolani School's requests for an extension to the public comment period or requests for additional meetings with the `Iolani School community. It is clear the attempts to communicate and collaborate with `Iolani School were insufficient.

Specific questions regarding the Project and TSP.

`Iolani School has several questions and comments related to the Tentatively Selected Plan and is hereby requesting specific answers and/or responses to the following questions and/or comments:

1. Page ES-7 states that the Tentatively Selected Plan "allows for 2 feet of freeboard."

    a. Because the proposed floodwalls are four feet tall, a 2-foot freeboard would result in a backwater effect upstream in the Mānoa-Pālolo Drainage Canal and cause floodwaters to

overtop the drainage canal's west bank. Such flooding is not indicated in Figure 12b. Note that the elevations of the Ala Wai Golf Course and east bank of the Mānoa-Pālolo Drainage Canal are significantly higher than the elevations of the `Iolani School, Ala Wai Elementary School, and east bank of the drainage canal.

2. Page ES-12 states that implementation of the Tentatively Selected Plan would substantially reduce the 1-percent ACE floodplain, with decreased water surface elevations of approximately 2.2 feet.

    a. Is the 2.2 feet reduction an average value? What is the range in the reduction of the water surface elevation across the watershed? Stating a 2.2 feet reduction over the entire 1-percent ACE floodplain oversimplifies the true benefit of the Tentatively Selected Plan. Table 10 clearly shows a wide range of reduced flood depths so that some areas in the watershed clearly gain more benefits than other areas.

    b. When the Report says a reduction in water surface elevation, does the Report mean a reduction in the base flood elevation? Will this Report or the data in the Report be used by DLNR, USACE or other government agencies to change the accepted FIRMs in the Ala Wai Canal Watershed? Does the hydrologic and hydraulic analysis, surveying data, and mapping comply with FEMA standards?

    c. Are there any areas where the proposed measures of the Tentatively Selected Plan would actually increase flood elevations from current conditions?

3. Figure 12b Tentatively Selected Plan (Alternative 3A-2.2).

    a. This figure shows flooding of the southern end of `Iolani School's campus. In addition to `Iolani School, Ala Wai Elementary School would also be at risk to flooding. The extent of the flooding shown on this figure does not correspond to existing topography at either the school campus or the immediately adjacent areas. The topography in this area is flat. However, this figure shows the floodwaters stopping arbitrarily along several buildings and an athletic field. If floodwaters overtopped the existing west bank of the Mānoa-Pālolo Drainage Canal, the topography at `Iolani School and Ala Wai Elementary School is relatively flat such that the floodwaters would extend further than the area shown in this figure, perhaps even as far as Kamoku Street. No depressions, basins or other structures to detain floodwaters are in this area as indicated in the figure.

b. This figure shows the Ala Wai Golf Course as a multi-purpose detention basin with an earthen berm only along the east and northeast perimeter of the golf course. The figure also shows the golf course being almost completely underwater. The elevations of the golf course and the east bank of the Mānoa-Pālolo Drainage Canal are significantly higher than the elevation at `Iolani School and Ala Wai Elementary School. Both schools would be flooded before the golf course could act as an effective detention basin. Floodwaters detained on the golf course would raise the floodwater elevations at both schools, further exacerbating the flooding beyond that shown in the figure.

4. Page 8-4 states that a limited level of protection for `Iolani School is "provided not by the Ala Wai Canal floodwalls, but through detention of floodwaters upstream and within the adjacent Ala Wai Golf Course."

    a. Did the hydraulic analysis assume all measures were constructed and operating under optimal conditions? Or did the analysis account for reduced capacity or effectiveness of the measures due to inadequate or infrequent maintenance?

    b. Did the detention basin measures incorporate capacity to account for sediment accumulation so as not to reduce the flood attenuation capacity of the basins?

    c. If a factor of safety was not incorporated into the hydraulic model to account for inadequate or infrequent maintenance of or sediment accumulation with the various detention basin measures, then the figures in the report do not accurately represent real world conditions and flooding would be more severe and extensive than that presented in Figure 12b. See previous comment on Figure 12b.

5. Page 3-4 provides a range of sea-level rise but doesn't state the specific value that was used in the hydraulic model.

    a. What is the actual value of the sea-level rise assumed in the model?

    b. What was the basis of the sea-level rise estimates?

    c. Did the sea-level rise estimates match or correspond to values estimated by other organizations and scientists working on sea-level rise in Hawaii?

    d. Did the hydraulic analysis incorporate storm surge effects in addition to sea-level rise?

6. What was the model used to conduct the hydraulic analysis? Was it a one-dimensional model like HEC-RAS? Was a 2-dimensional model used to conduct a hydraulic analysis or even considered for the analysis? Two-dimensional hydraulic models tend to give better, more accurate representation of actual flooding conditions.

7. How was the hydraulic model quality controlled? The results presented in the Report and by USACE's own admission appear to be flawed. Was a third-party evaluation of the hydraulic model conducted? Because the selected alternative will affect such a large number of businesses, residents, and visitors, should not that the hydraulic model undergo a more rigorous quality control procedure than USACE may normally conduct?

8. The executive summary (page ES-5) states that life safety considerations were taken into consideration. However, the Tentatively Selected Plan still leaves schools with children within the 1% ACE. How do you reconcile this statement on page ES-5 with the Tentatively Selected Plan that fails to provide protection for some of the schools within the watershed?

9. Was the survey used for the hydraulic analysis ground-truthed and when? What was the method used for the ground-truthing? Ground-truthing of the `Iolani School and Ala Wai Elementary School campuses does not appear to have been conducted based on the results of the model.

10. Figure 21: Potential Areas of Shallow Flooding due to Overtopping of Floodwalls/Berms or Failure of Interior Drainage Systems.

    a. This figure shows the inundation due to overtopping of the floodwalls along the north bank of the Ala Wai Canal. This figure contradicts the floodwater extent shown in Figure 12b, which limited flooding at `Iolani School to the southern portion of the campus. Furthermore, Page 8-9 states that "There is no bathtub effect in any overtopping area and ponding is expected to be in the 1-to 2-foot range. Damages would be related to those at the 2-foot depth for those overtopping areas illustrated." The flooding extent in Figure 12b does not reflect the existing topography at either `Iolani School or Ala Wai Elementary School.

    b. Figure 21 illustrates a condition with zero freeboard at the floodwalls and shows that the flooding would be extensive north of the floodwall. A 1- to 2-foot depth would result in a large volume of water in the shaded area shown in Figure 21 and result in significant damage to school property. As the water surface elevation in the Ala Wai Canal would increase to the full height of the floodwall, floodwaters would overtop the west bank of the Mānoa-Pālolo Drainage Canal (even before the floodwalls are overtopped) on to `Iolani School

and Ala Wai Elementary School property. Because "there is no bathtub effect" in this area, floodwaters would flow relatively freely across the flat terrain of the two schools. Any sediment and debris carried with the floodwaters would remain on the school properties as floodwaters either infiltrated or receded. The cleanup of the properties would be expensive and reduce the usefulness of the inundated areas for an unknown period, potentially harming the educational missions of both schools to our island's keiki. In addition, the waters of the Ala Wai Canal and sediment and debris may attract nuisance vectors and pose potential health risks to schoolchildren, depending on the nature and quality of the water, sediment and debris.

Conclusion:

`Iolani School understands the importance of flood risk management and appreciates the USACE and DLNR's efforts to mitigate flooding in the Project areas. However, in evaluating a plan to address flooding, NEPA and HEPA must be followed and the environmental impacts of the action must be appropriately and accurately considered. The Agencies must follow the correct process, take a hard look at the environmental effects of the proposed action, analyze reasonable alternatives, utilize proper scientific methods, and mitigate negative environmental impacts to the extent practicable. Because NEPA and HEPA were not adhered to in this case, the Draft Report/EIS must be significantly revised and reissued in a separate draft for further public review and comment.

Sincerely,

Timothy R. Cottrell
Head of School

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Timothy Cottrell
Iolani School
563 Kamoku Street
Honolulu, Hawaii 96826

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Concerns regarding public outreach
- Alternative Plan Selection
- Concerns of Iolani School regarding the absence of a floodwall on school property
- Economic optimization of the recommended plan
- FEMA Floodzone Designation

Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Iolani School feedback was solicited at both EIS scoping points. Summaries of feedback received is attached to this letter. The following individuals are included on e-mail distributions as representatives of the school:

- Glenn Ching
- Reid Gushiken
- Dr. Yvonne Chan
- Megan Kawatachi
- Hye Jung Kim

Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. During this period, the following notices were provided to those individuals on the e-mail distribution list:

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- 07 OCT 2015 Draft FR/EIS Public Meeting follow up

As noted above, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if

the recommended plan is constructed. With that said, even with implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area.

Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS. Sea level rise is included in the analysis provided under Appendix A for the purpose of evaluating the resiliency of the recommended plan to a changing environment; sea level varies over time and increases under a number of scenarios. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase.

USACE has developed hydraulic information which can be utilized by regulatory agencies and the public as a part of the National Flood Insurance Program (NFIP). It is possible that FEMA could make adjustments to the floodplain without the project in place; however, USACE cannot speculate on the timing of any potential FEMA floodplain map revisions. All property owners are encouraged to participate in the NFIP to manage risks associated with flooding.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

July 6, 2004

Ms. Sherri Hiraoka
Townscape, Inc.
Environmental and Community Planning
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813

RE: ALA WAI CANAL PROJECT EIS SCOPE

Dear Ms. Hiraoka:

We appreciate this opportunity to submit comments to the Ala Wai Canal project.

In reviewing the information presented on June 29, we have the following observations:

1. There seems to be an over-reliance on the Manoa-Palolo Drainage Canal to handle the volume of water coming down from the mountain areas in the event of the 100-year storm. High tides would prevent drainage and while Ala Wai Golf Course and Kaimuki High School fields act as detention areas, they also appear inadequate.

2. Parts of the Manoa-Palolo drainage canal have concrete ducts while the canal area makai of Kaimuki High School does not. Vegetation and debris along the banks would cause refuse washed down to become entangled, thus restricting flow. The banks makai of the Date Street bridge are relatively low allowing flooding near Iolani School.

3. Dredging of the Ala Wai Canal to a deeper depth did not pass beyond the Manoa-Palolo drainage canal in the Diamond Head direction, and dredging of the Manoa-Palolo canal stopped adjacent to the Ala Wai B softball field, well short of the Date Street bridge.

4. The price tag of $30 - $60 million did not seem to include regular, periodic maintenance of the canal depth, bridge spans, concrete channels, and bank clean up.

5. Erection of floodwalls around the canal, while an engineering solution, would not be conducive to the Waikiki vistas and would be subject to graffiti and vandalism.

6. Widening the lower section of the Ala Wai Canal is a good engineering solution.

We have the following comments:

1. Allow a connection of the Ala Wai Canal to the ocean on the Kapahulu end to have a "flushing" action and to equalize water volume on both ends.

2. Allow Kapiolani Park to also become a water detention area through the "Kapahulu" connection.

3. Build up concrete banks and remove vegetation along the Manoa-Palolo Drainage Canal especially makai of the Date Street bridge. Since it is the area which empties into the Ala Wai Canal, it would be susceptible to blockage.

4. Construct spill ways along the Manoa-Palolo Drainage Canal which allow flood waters to go into the designated detention areas when the water levels rise above a certain height.

5. Reinstate the original stream path which traversed the Ala Wai Golf Course. It emptied near the Waikiki Library. Restoration of the natural habitat can happen here relatively undisturbed and made part of the golf course challenges.

6. Dredge the Manoa-Palolo drainage canal and the entire Ala Wai Canal length on a regular basis.

7. Examine whether the spans of the other bridges along the drainage canal need modifications like the McCully and Ala Moana bridges.

8. Continue community education and bulk refuse collection efforts to reduce dumping into the streams feeding into the Manoa-Palolo drainage canal.

9. The project's funding should also include regular, periodic maintenance to the flood mitigation measures.

Thank you for your consideration. Please contact me at 943-2209 if you have questions.

Sincerely,

Glenn Ching
Director of Finance

cc: State of Hawaii
Department of Land and Natural Resources, Engineering Division
P.O. Box 373
Honolulu, HI 96809
Attn: Andrew Monden

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

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ALA WAI WATERSHED PROJECT (AWWP)
COMMUNITY CONSULTATION

Date: **June 17, 2009**
To: **Project Files**
From: **Townscape**
RE: **Meeting with Glenn Ching**

Participants: Glenn Ching, ʻIolani School, Director of Finance; Agnes Topp, Townscape.

The purpose of the meeting was to discuss issues associated with the lower portion of the Mānoa-Pālolo stream, near ʻIolani School, and to provide an update to Mr. Ching on the Ala Wai Watershed Project.

Background on the Ala Wai Watershed Project

- The Ala Wai Watershed Project (AWWP) is a partnership between the Army Corps of Engineers, the State Department of Land and Natural Resources, and City and County Environmental Services. After earlier iterations that looked at portions of the Ala Wai Watershed (specifically, the Ala Wai Canal and Mānoa Stream), the project is now taking a more holistic approach, looking at potential issues and mitigation in the entire watershed, which includes the neighborhoods of Makiki, Mānoa, Pālolo, St Louis-Kapahulu-Diamond Head, McCully-Mōʻiliʻili-Ala Moana, and Waikīkī.
- The project is currently in the feasibility phase, where we are gathering all necessary information to design flooding mitigation and ecosystem restoration measures. When the project team has preliminary measures designed, we will begin conducting neighborhood-level meetings to discuss potential measures and collect feedback from affected communities. These meetings should occur some time in the fall of 2009.

Lower Mānoa-Pālolo Stream Issues in the vicinity of Iolani School

- Upstream of the Date Street bridge, the Mānoa-Pālolo drainage canal has concrete banks and bottom, while on the *ma kai* side it has natural banks and bottom. This causes buildup of soil in the lower portion of the canal.
- The canal by ʻIolani School is about 5 feet deep. Silt buildup at the bottom is visible at low tide. When the Ala Wai Canal was dredged a few years back, they did not dredge the Mānoa-Pālolo drainage canal.
- ʻIolani School is concerned about the maintenance of the stream banks and vegetation in the lower Mānoa-Pālolo drainage canal. Stream banks are vegetated primarily with kiawe trees, milo trees, and mangrove. The mangrove in certain areas is encroaching into the stream and causing additional silt buildup.
- ʻIolani has been doing maintenance of the vegetation along the stream banks next to the portion of the bike path that the school maintains as part the Adopt-A-Park program. Maintenance includes removing broken branches in the stream, cutting tree branches that hang too low over the stream, and cutting some of the mangrove that is encroaching into the stream. ʻIolani is interested doing additional maintenance, such as removing more of the mangrove, and the nearby community has been proactive in helping to clean up the area, but they are not sure what they are allowed to do. (I provided Glenn with information about the "Adopt-A-Stream" program managed by the City's Environmental Services Division.) In the portion of the stream *ma kai* of Iolani, very little maintenance is being done and the vegetation encroaches farther into the stream.
- During the 2004 flood, the stream came up onto the road adjacent to ʻIolani School. The flood did not affect the school.
- Stream bank stabilization and increased bank height would be a good idea to decrease flooding in that area.

Community Members to Involve in Neighborhood-level Meetings

- 100th Infantry Battalion veterans club – located across the street from ʻIolani School at 520 Kamoku Street.
- Ala Wai School
- Condos in the neighborhood, including Kaimana Lanai Condo and 500 University.

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Timothy Cottrell
Iolani School
563 Kamoku Street
Honolulu, Hawaii 96826

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District, USACE:

1. *'Iolani School respectfully submits these comments in response to the U.S. Army Corps of Engineers ("USACE") and State of Hawaii Department of Land and Natural Resources' ("DLNR") (USACE and DLNR, collectively, are the "Agencies") request for public input regarding their Draft Report/EIS.*[1]

   [1] *'Iolani School requests that it be a consulting party and/or stakeholder under both NEPA and HEPA.*

   RESPONSE: Thank you for your interest and participation in this project. This process does not end with the feasibility study, it will continue during the design and construction phase and we encourage your feedback and participation. Community engagement is a critical part of making this a successful project.

   Iolani School has been identified as a critical stakeholder in this project and as such will continue to be consulted with under both HEPA and NEPA.

2. *We request that these comments and attachments be included in the administrative record.*[2]

   [2] *We understand that comments may be submitted separately by government agencies, members of the public, community organizations, and the like. All of those comments are hereby incorporated by reference.*

   RESPONSE: Your comments, attachments, and all associated response letters will be included in Appendix G Public Involvement of the HEPA FFEIS. Comments and responses to other *government agencies, members of the public, community organizations, and the like* can also be found in Appendix G.

3. *As of the date of submission of this letter, the Project website (www.alawaicanalproject.com) requested that written comments regarding the Draft Report/EIS be submitted to the USACE pursuant to NEPA and DLNR pursuant to HEPA, with a postmark no later than November 9, 2015. 'Iolani School is submitting its comments within the deadline prescribed and advertised by the Agencies.*[3]

   [3] *Note that the presentation distributed at the public meeting on September 30, 2015 also notes a public comment deadline of November 9, 2015 for both the USACE under NEPA and DLNR under HEPA. Accordingly, 'Iolani School believes that its comments are timely under both NEPA and HEPA and must be considered and responded to.*

   RESPONSE: We acknowledge you submitted your comment letter date stamped November 9, 2015 within the DFEIS public review period of August 23, 2015 to November 9, 2015. Your written comments and associated response letters are included in Appendix G of this HEPA FFEIS.

4. *Executive Summary.*
At the request of the DLNR Division of Engineering, the USACE has conducted a feasibility study for the proposed Ala Wai Canal Project, Oahu, Hawaii. The purpose of this Project in its current scope is to reduce riverine flood risks in the Ala Wai Watershed. After considering several alternatives, the USACE has identified Plan 3A in the Report as its preferred plan ("Tentatively Selected Plan" or "TSP"). The analyses produced as a result of this study show the 1-percent annual chance exceedance ("ACE") floodplain extending into approximately 1,358 acres of the watershed with modeling results indicating resultant damages to more than 3,000 structures and approximately $318 million in structural damages, not including loss to business income or loss of life.

'Iolani School, with 1,900 students, over 300 faculty and staff, and significant real property, assets and resources, is a critical stakeholder in this plan and stands to be dramatically and negatively impacted by the proposed plan specifically due to the potential for flooding and damage to 'Iolani's campus. In addition, the campus serves many more members of the community through numerous academic, arts and sporting events that are open to educators and students from throughout the state and beyond. The school is also the frequent site for conferences, summits, and meetings. In the Tentatively Selected Plan, the potential for flooding 'Iolani School has been identified as an acceptable risk. We strongly disagree.

RESPONSE: The Tentatively Selected Plan identified in the Feasibility Study was based on information available at the time, with an awareness that the information and plan would require refinement after Congressional authorization to proceed.

Section 7.6.3 of Appendix B, Economics details the impacts to the Iolani School campus with- and without- the project in place. "With no project in place, the potential exists for flooding practically the entire 25-acre campus, inundating more than one dozen large school buildings and endangering the lives of many of the 1,800 students enrolled there and the 200 faculty and 160 administrators and staff who work there. In a 0.01 ACE event with project in place, flood waters would rise almost to the floor levels of several classrooms and/or administration buildings and also flood as much as one-half of the campus, although this would be mostly athletic fields, courts and support facilities. This limited level of protection for the school is provided not by the Ala Wai floodwalls, but entirely by detaining flood water upstream and within the adjacent Ala Wai Golf Course."

The with-project conditions place the campus and its students in much lower risk than the without-project conditions. In the follow up meeting held with DLNR engineers and the Corps of Engineers, it was explained that the project would not increase flood risk on Iolani School or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

To further elaborate on your comment about *potential for flooding 'Iolani School has been identified as an acceptable risk*: Modeling and data available during the Feasibility Study showed limited inundation to the school buildings themselves but that inundation would primarily affect the athletic fields, courts, and support facilities. An economic analysis was performed to determine whether the cost to extend the floodwall from the canal to Date Street along the right bank of the Manoa-Palolo stream could be economically justified. However, with the lower values associated with athletic fields, courts, and supporting facilities, the cost of this floodwall could not be incrementally economically justified. Subsequently, the Corps did discuss options for the non-Federal Partner to construct a wall extension along the canal up to Date Street as a betterment (not part of the federally authorized project). We also understand that the Corp of Engineers intend to update modeling and engineering data during the design phase. This includes incorporating updated geotechnical and topographic data, cost estimates, and economic analysis to determine again whether extending the wall boundaries is economically justifiable. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

5. *The Report States:*

> *The risk of flooding 'Iolani School could be further reduced by extending the floodwalls to protect the school, but it would induce higher water surface elevations on the Waikiki side of the Ala Wai Canal, as well as limit the effectiveness of the Ala Wai Golf Course detention improvement. The modeling results indicate that this would be an unacceptable trade-off, as the additional induced damages in Waikiki would greatly exceed any benefit associated with 'Iolani School. Nonstructural solutions were evaluated as a means of providing additional protection in lieu of extending the floodwalls, but none were found to be economically feasible.*

See Report at 8-6. Additionally, Appendix B to the Report notes: "One area of significance that does not stand to benefit from a reduction in flood damages and risk of loss of life, as the project is now formulated (under the Tentatively Selected Plan), is the 'Iolani School buildings and campus grounds."

RESPONSE: The proposed HEPA FFEIS language has been changed to reflect engineering data in lieu of the above-stated subjective statement in Section 8.3.1 of the HEPA FFEIS and Section 7.6.3 of Appendix B Economics.

Modeling and data available during the Feasibility Study showed limited inundation to the school buildings themselves as they were constructed above base flood elevation. An economic analysis was performed to determine whether extending a floodwall from the canal to Date Street along the right bank of the Manoa-Palolo stream could be economically justified. However, with the lower values associated with athletic fields, courts, and supporting facilities, the cost of this floodwall could not be incrementally justified. Subsequently, the Corps did discuss options for the non-

Federal Partner to construct a wall extension along the canal up to Date Street as a betterment (not part of the federally authorized project). The Corp of Engineers also informed us that during the design phase modeling and engineering data would be refined and the wall boundaries and footprint to include extension up to Date Street would again be evaluated, to include cost estimates. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

6. *While two other plans that were considered included floodwalls to protect 'Iolani School, those plans were not selected and the floodwalls are not included in the Tentatively Selected Plan being proposed by the USACE. The Report further explains that while other schools and properties will be protected, 'Iolani School will remain in the 1% annual chance exceedance (ACE) floodplain:*

> *In addition to reducing health and safety risks to the affected population, critical infrastructure and other public facilities would be removed from the 1-percent ACE floodplain, thus contributing to health and safety through increased resiliency in response to flood events (IMP SAF-2). Specifically, the project would provide protection for 2 of the 4 fire stations, the police station, both medical clinics, and 6 of the 9 emergency shelters that are currently in the 1- percent ACE floodplain. Critical infrastructure that would remain in the floodplain includes 2 fire stations (the Makaloa station in Ala Moana and the Wilder station in Makiki), and 2 emergency shelters (Lunalilo Elementary and Washington Intermediate in McCully/Mo'ili'ili). In addition to the three schools that serve as emergency shelters, the only other school that would remain in the 1-percent ACE floodplain would be a portion of 'Iolani School; the other 7 schools that are currently in the floodplain would be protected by the project.*

See Report at 5-80.

RESPONSE: As stated in our 2017 response letter, "When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if the recommended plan is constructed. With that said, even with

implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area."

7. *'Iolani School has reached out to the USACE and the State sponsor, DLNR, in hopes of working towards a collaborative solution that permits the Project to move forward while still adequately protecting the 'Iolani community and area residents. While 'Iolani School supports the overall intent of this flood mitigation project, we do not support the Project in its current scope with Plan 3A as the TSP as the TSP is based upon engineering that lacks scientific integrity.*

RESPONSE: The Recommended Plan 3A with a combination of detention and line of protection features, projects a reduction of flood stage resulting from a 100-year storm by approximately two feet. As mentioned in #4, 5, and 6 above, the Recommended Plan reduces the overall flood risk to the campus and its students and faculty.

As stated in our 2017 response letter, "Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS."

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

8. *The TSP erroneously excludes significant economic impacts not considered by the Agencies, as well as includes unacceptable risk to the life and safety of the students and surrounding community.*

RESPONSE: The Tentatively Selected Plan identified in the Feasibility Study was based on information available at the time, with an awareness that the information and plan would require refinement after Congressional authorization to proceed.

Section 7.6.3 of Appendix B, Economics details the impacts to the Iolani School campus with- and without- project in place. "With no project in place, the potential exists for flooding practically the entire 25-acre campus, inundating more than one dozen large school buildings and endangering the lives of many of the 1,800 students enrolled there and the 200 faculty and 160 administrators

and staff who work there. In a 0.01 ACE event with project in place, flood waters would rise almost to the floor levels of several classrooms and/or administration buildings and also flood as much as one-half of the campus, although this would be mostly athletic fields, courts and support facilities. This limited level of protection for the school is provided not by the Ala Wai floodwalls, but entirely by detaining flood water upstream and within the adjacent Ala Wai Golf Course."

The with-project conditions place the campus and its students in much lower risk than the without-project conditions. In the follow up meeting held with DLNR engineers and the Corps of Engineers, it was explained that the project would not increase flood risk on Iolani School or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Economic impacts and life safety analysis will be further evaluated with the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

9. *'Iolani School also believes that the Agencies did not adequately engage 'Iolani School or other stakeholders since the October 2012 re-scoping of the Project.*

RESPONSE: As stated in our 2017 response letter, "Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Iolani School feedback was solicited at both EIS scoping points…. The following individuals are included on e-mail distributions as representatives of the school:

- •Glenn Ching
- •Reid Gushiken
- •Dr. Yvonne Chan
- •Megan Kawatachi
- •Hye Jung Kim

Table 38 [of the NEPA FFEIS] details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. During this period, the following notices were provided to those individuals on the e-mail distribution list:

- •19 MAY 2014 Open House invitation
- •03 JUN 2014 Open House slideshow availability
- •24 AUG 2015 Draft FR/EIS and Public Meeting initial notice
- •26 SEP 2015 Draft FR/EIS Public Meeting reminder
- •07 OCT 2015 Draft FR/EIS Public Meeting follow up

As noted above, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS."

Summaries of the above listed feedback and meetings can be found in Appendix G of this HEPA FFEIS.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

10. *For these reasons and others discussed in further detail below, we believe that the Draft Report/EIS must be significantly revised and reissued in a separate draft for further public review and comment.*

RESPONSE: As stated in our 2017 response letter, "Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS."

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

11. *NEPA.*
The National Environmental Policy Act ("NEPA") requires all federal agencies to prepare an environmental impact statement ("EIS") for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332. "The primary purpose of an EIS is to serve as an action-forcing device to ensure that the policies and goals defined in the Act NEPA are infused into the ongoing programs and actions of the Federal Government." 40 C.F.R. § 1502.1.

An EIS must "provide full and fair discussion of significant environmental impacts and inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." Id. Among other things, an EIS must discuss the environmental impact of the proposed federal action, any adverse and avoidable environmental effects, any alternatives to the proposed action, and any irreversible and irretrievable commitment of resources involved in the proposed action. 42 U.S.C. § 4332(2)(C) and (2)(E).

Exploring alternatives is at the heart of the EIS. Federal agencies must, among other things, (1) rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated, (2) devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits, and (3) include appropriate mitigation measures not already included in the proposed action or alternatives. 40 C.F.R. § 1502.14.

Under NEPA, federal agencies must, to the fullest extent possible, encourage and facilitate public involvement in decisions which affect the quality of the human environment, and use all practicable means, consistent with the requirements of NEPA and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment. 40 C.F.R. § 1500.2(d) and (f).

HEPA.

The Hawaii Environmental Policy Act ("HEPA"), Hawaii Revised Statutes Chapter 343, is intended to ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical considerations. Hawaii Administrative Rules ("HAR") § 11-200-1. Specifically,

> *Chapter 343, HRS, directs that in both agency and applicant actions where statements are required, the preparing party shall prepare the EIS, submit it for review and comments, and revise it, taking into account all critiques and responses. Consequently, the EIS process involves more than the preparation of a document; it involves the entire process of research, discussion, preparation of a statement, and review. The EIS process shall involve at a minimum: identifying environmental concerns, obtaining various relevant data, conducting necessary studies, receiving public and agency input, evaluating alternatives, and proposing measures for avoiding, minimizing, rectifying or reducing adverse impacts. An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self-serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision-making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision-makers will be enlightened to any environmental consequences of the proposed action.*

HAR§ 11-200-14.
Consultation is critical to the HEPA process. Accordingly, agencies are required to endeavor to develop a fully acceptable EIS prior to the time the EIS is filed with the appropriate office, "through a full and complete consultation process." HEPA requires that proposing agencies not rely solely upon the review process to expose environmental concerns. HAR § 11-200-15.

RESPONSE: Thank you for providing a summary of NEPA and HEPA policy.

As stated in Section ES-16 of the HEPA FFEIS "Consistent with the requirements of NEPA and HRS 343, the consequences of implementing each alternative were assessed, based on the range of resources that comprise the human and natural environment. The assessment of environmental consequences involves the comparison of the effects of each alternative plan (i.e. the recommended plan and Alternative 2A) relative to the No Action (future without-project) conditions. For those resources that may be adversely affected, measures that would be implemented to mitigate the potential impacts were identified."

As stated in our 2017 response letter, "Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS."

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

12. *The Agencies did not take a "hard look" under Either NEPA or HEPA.*
A federal agency must take a "hard look" at the environmental consequences of the proposed action before the decision to proceed is made. Earth Island Inst. V. U.S. Forest Serv., 351 F.3d 1291, 1300 (9th Cir. 2003); see 40 C.F.R. § 1500.1(b). Under state law, state agencies must ensure that environmental concerns are given appropriate consideration in decision making. HAR § 11-200-1. In this instance, the Agencies failed to meet these standards.
Modeling for the TSP 3A was based on erroneous topographical analysis which does not reflect the current elevation and building structures at 'Iolani School. This resulted in an improper projection of environmental consequences and economic damage.

RESPONSE: LiDAR data was collected, processed, and verified by Oceanit and their sub consultants in late 2006 and early 2007 as described in Appendix A, A2, Section 3.1.2. Modeling for the TSP 3A was based on the data and information available at the time, with an awareness that the information and the plan would require refinement after Congressional authorization to proceed.

As stated in our 2017 response letter, "Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS."

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Both topographical and economic analysis will be further refined with this updated information. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

13. *The Tentatively Selected Plan lacks scientific integrity and should be rejected.*
NEPA recognizes that sound methodology and scientific accuracy are paramount to the integrity of the NEPA process. Section 1502.24 specifically provides,
Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.
40 C.F.R. § 1502.24 (emphasis added).
Section 1500.1 (b) further affirms that,
NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. "The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA".
40 C.F.R. § 1500.1 (b) (emphasis added).
In this case, it is clear that the scientific analysis, modeling and methodology are flawed and cannot be relied upon. 'Iolani School requested and attended a meeting with USACE and DLNR on October 30, 2015. Upon being questioned at the meeting regarding the engineering analysis and validity of the inundation area modeling associated with the TSP, Mike Wong, P.E. USACE, admitted that the modeling was flawed, contained artifacts and represented flood boundaries as

1 ft. deep edges. Gayson Ching, P.E. DLNR, graphically illustrated how their model represented a completely unrealistic model of what would happen in a flood. Given the lack of scientific integrity and low quality of the information utilized in the Project analysis, the TSP cannot be accepted in its current form and the Report must be significantly revised and reissued after further public review and comment.

RESPONSE: While we cannot speak to the context or content of past conversations, we can assure you that the proposed action in this HEPA FFEIS underwent several levels of review, both internal and external. Specifically, the modeling was developed by the Honolulu District, reviewed by the Pacific Ocean Division, reviewed by the US Army Corps of Engineers Enterprise, as well as an independent external review from experts not associated with the Corps of Engineers. The 1D steady state hydrologic and hydraulic modeling with artificial boundary constraints conducted in the feasibility phase met the intended objective of illustrating there were sufficient benefits to the overall watershed to warrant Federal funding and advancing to the design phases of work. Modeling in the design phase will include more accurate and expensive 2D unsteady state modeling using updated topographic data points obtained with Light Detection and Range (LIDAR) methods. These findings will be reviewed by USACE personnel at the Hydrologic Engineering Center (HEC) who developed and continuously enhance this widely used River Analysis System (RAS) computer program, HEC-RAS.

During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Included in the design phase will be community engagement and several levels of review and risk analyses. Reviews and risk analyses include USACE Agency Technical review; USACE Safety Assurance Reviews, USACE Quantitative Risk Analysis Reviews; our own State of Hawaii Safety Assurance Reviews; as well as an Independent External Peer Review conducted by a team of experts not associated with the Corps of Engineers.

If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

14. *The Agencies should have involved 'Iolani School in the NEPA and HEPA process.*
Federal agencies are required by NEPA to "make diligent efforts to involve the public in preparing and implementing their NEPA procedures." 40 C.F.R. § 1506.6. Further, for any proposed action, NEPA requires that there be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process is known as the scoping process. As part of the scoping process the lead agency must, among other things, invite the participation of affected agencies, any affected Indian tribe, the proponent of the action, and "other interested persons (including those who might not be in accord with the action on environmental grounds) ... " 40 C.F.R. § 1501.7 (emphasis added).

Similarly, HEPA requires the involvement of the public and concerned individuals. HEPA provides that a proposing agency must "seek, at the earliest practicable time, the advice and input of the county agency responsible for implementing the county's general plan for each county in which the proposed action is to occur, and consult with other agencies having jurisdiction or expertise as well as those citizen groups and individuals which the proposing agency reasonably believes to be affected." HAR§ 11-200-9(a)(1) (emphasis added). Pursuant to HAR Section 11-200-15, "[i]n the preparation of a draft EIS, proposing agencies . . . shall consult all appropriate agencies ... and other citizen groups, and concerned individuals as noted in sections 11-200-9 and 11-200-9.1." HAR § 11-200-15(a). Concerned individuals include those individuals which the proposing agency reasonably believes to be affected. See HAR§ 11-200-9.

In this instance, the Agencies failed to properly reach out to 'Iolani School and include it in the NEPA and HEPA process despite the fact that the Draft Report/EIS clearly indicates that 'Iolani School will be affected. Project records show that 'Iolani School was involved at a minimal level when the Project was focused on watershed restoration. However, 'Iolani School was neither involved in nor contacted regarding the re-scoping of the Project, despite the fact that the Project included negative impacts on the school and prominent mention in the Report. While two emails regarding the Project were sent to 'Iolani School in 2014 and three emails in 2015, the USACE and DLNR failed to make any meaningful effort to communicate with 'Iolani School beyond sending these emails between 2009 and 2015. USACE and DLNR did not respond to 'Iolani School's requests for an extension to the public comment period or requests for additional meetings with the 'Iolani School community. It is clear the attempts to communicate and collaborate with 'Iolani School were insufficient.

RESPONSE: As stated in our 2017 response letter, "Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Iolani School feedback was solicited at both EIS scoping points…. The following individuals are included on e-mail distributions as representatives of the school:

- Glenn Ching
- Reid Gushiken
- Dr. Yvonne Chan
- Megan Kawatachi
- Hye Jung Kim

Table 38 [of the NEPA FFEIS] details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. During this period, the following notices were provided to those individuals on the e-mail distribution list:

- 19 MAY 2014 Open House invitation
- 03 JUN 2014 Open House slideshow availability
- 24 AUG 2015 Draft FR/EIS and Public Meeting initial notice
- 26 SEP 2015 Draft FR/EIS Public Meeting reminder
- 07 OCT 2015 Draft FR/EIS Public Meeting follow up

As noted above, a public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders and neighborhood commissions. No further public meetings are planned during the feasibility phase of the FEIS."

Summaries of the above listed feedback and meetings can be found in Appendix G of this HEPA FFEIS.

We recognize the amount of information and complexity of the information contained in the DFEIS, and to address this, we extended the statutory 45-day review period for an additional 33 days, starting on August 23, 2015 and originally ending October 7, 2015 but extended instead to November 9, 2015.

There will be more community outreach and engagement as this project continues moving forward. Community members will have opportunities to provide comments and concerns to ensure that the final designed system balances engineering solutions with community impacts. If modifications are made to the system, they will be evaluated for environmental as well as community impacts and supplemental documentation will be developed commensurate with the impacts.

15. *Specific questions regarding the Project and TSP.*
'Iolani School has several questions and comments related to the Tentatively Selected Plan and is hereby requesting specific answers and/or responses to the following questions and/or comments:
(1.) Page ES-7 states that the Tentatively Selected Plan "allows for 2 feet of freeboard."
    a. *Because the proposed floodwalls are four feet tall, a 2-foot freeboard would result in a backwater effect upstream in the Manoa-Palolo Drainage Canal and cause floodwaters to overtop the drainage canal's west bank. Such flooding is not indicated in Figure 12b. Note that the elevations of the Ala Wai Golf Course and east bank of the Manoa-Palolo Drainage Canal are significantly higher than the elevations of the 'Iolani School, Ala Wai Elementary School, and east bank of the drainage canal.*

RESPONSE: The floodwall height is based on the water surface elevation not ground elevation. If there are any walls or barriers, it will be designed to ensure that on either side of the canal, risk is not transferred to the other; we refer to it as levee superiority.

The with-project conditions place the campus and its students in much lower risk than the without-project conditions. In the follow up meeting held with DLNR engineers and the Corps of Engineers, it was explained that the project would not increase flood risk on Iolani School or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Freeboard and topographic data will be analyzed using the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

16. *(2.) Page ES-12 states that implementation of the Tentatively Selected Plan would substantially reduce the 1-percent ACE floodplain, with decreased water surface elevations of approximately 2.2 feet.*

a. *Is the 2.2 feet reduction an average value? What is the range in the reduction of the water surface elevation across the watershed? Stating a 2.2 feet reduction over the entire 1-percent ACE floodplain oversimplifies the true benefit of the Tentatively Selected Plan. Table 10 clearly shows a wide range of reduced flood depths so that some areas in the watershed clearly gain more benefits than other areas.*

RESPONSE: The approximately 2.2 feet reduction is an average value based on the difference in water surface elevations at HEC-FDA Index points between with-project (Alternative 3A) and without-project. This table listing the range in water surface elevations can be found in Appendix A, A2 Plate 8.

It is noted that some areas in the watershed clearly gain more benefits than others. During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Water surface elevation will be analyzed using the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

b. *When the Report says a reduction in water surface elevation, does the Report mean a reduction in the base flood elevation? Will this Report or the data in the Report be used by DLNR, USACE or other government agencies to change the accepted FIRMs in the Ala Wai Canal Watershed? Does the hydrologic and hydraulic analysis, surveying data, and mapping comply with FEMA standards?*

RESPONSE: The approximately 2.2 feet reduction is an average value based on the difference in water surface elevations at HEC-FDA Index points between with-project (Alternative 3A) and without-project. This table listing the range in water surface elevations can be found in Appendix A, A2 Plate 8.

Developing FEMA-level models in a feasibility study is beyond the scope of this HEPA FFEIS. FEMA-level modeling and analysis for a future FIRM update is a task of FEMA-level design and is addressed during the design phase of a project.

c. *Are there any areas where the proposed measures of the Tentatively Selected Plan would actually increase flood elevations from current conditions?*

RESPONSE: Appendix A, A2 Plate 8 lists water surface elevations at HEC-FDA Index points both with- and without-project. Table 10 in this HEPA FFEIS lists the depth and velocities at select locations both with- and without-project.

It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Water surface elevation will be analyzed using the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

17. *(3.) Figure 12b Tentatively Selected Plan (Alternative 3A-2.2).*
    a. *This figure shows flooding of the southern end of 'Iolani School's campus. In addition to "Iolani School, Ala Wai Elementary School would also be at risk to flooding. The extent of the flooding shown on this figure does not correspond to existing topography at either the school campus or the immediately adjacent areas. The topography in this area is flat. However, this figure shows the floodwaters stopping arbitrarily along several buildings and an athletic field. If floodwaters overtopped the existing west bank of the Manoa-Palolo Drainage Canal, the topography at 'Iolani School and Ala Wai Elementary School is relatively flat such that the floodwaters would extend further than the area shown in this figure, perhaps even as far as Kamoku Street. No depressions, basins or other structures to detain floodwaters are in this area as indicated in the figure.*

RESPONSE: The with-project (TSP 3A) conditions place the campus and its students in much lower risk than the without-project conditions. In the follow up meeting held with DLNR engineers and the Corps of Engineers, it was explained that the project would not increase flood risk on Iolani School or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal

from upper watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

In addition, as stated in our 2017 response letter, "When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if the recommended plan is constructed. With that said, even with implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area."

The 1D steady state hydrologic and hydraulic modeling with artificial boundary constraints conducted in the feasibility phase met the intended objective of illustrating there were sufficient benefits to the overall watershed to warrant Federal funding and advancing to the design phases of work. Modeling in the design phase will include more accurate and expensive 2D unsteady state modeling using updated topographic data points obtained with Light Detection and Range (LIDAR) methods. These findings will be reviewed by USACE personnel at the Hydrologic Engineering Center (HEC) who developed and continuously enhance this widely used River Analysis System (RAS) computer program, HEC-RAS.

During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Included in the design phase will be community engagement and several levels of review and risk analyses. Reviews and risk analyses include USACE Agency Technical review; USACE Safety Assurance Reviews, USACE Quantitative Risk Analysis Reviews; our own State of Hawaii Safety Assurance Reviews; as well as an Independent External Peer Review conducted by a team of experts not associated with the Corps of Engineers.

If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

b. *This figure shows the Ala Wai Golf Course as a multipurpose detention basin with an earthen berm only along the east and northeast perimeter of the golf course. The figure also shows the golf course being almost completely underwater. The elevations of the golf course and the east bank of the Manoa-Palolo Drainage Canal are significantly higher than the elevation at 'Iolani School and Ala Wai Elementary School. Both schools would be flooded before the golf course could act as an effective detention basin. Floodwaters detained on the golf course would raise the floodwater elevations at both schools, further exacerbating the flooding beyond that shown in the figure.*

RESPONSE: The with-project (TSP 3A) conditions place the campus and its students in much lower risk than the without-project conditions. In the follow up meeting held with DLNR engineers and the Corps of Engineers, it was explained that the project would not increase flood risk on Iolani School or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

The floodwall height is based on the water surface elevation not ground elevation. If there are any walls or barriers, it will be designed to ensure that on either side of the canal, risk is not transferred to the other; we refer to it as levee superiority.

During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Included in the design phase will be community engagement and several levels of review and risk analyses. Comprehensive hydrologic modeling will be conducted using the latest version of HEC-RAS and updated topographic data to develop accurate, project-specific elevation data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

18. *(4.) Page 8-4 states that a limited level of protection for 'Iolani School is "provided not by the Ala Wai Canal floodwalls, but through detention of floodwaters upstream and within the adjacent Ala Wai Golf Course."*

a. *Did the hydraulic analysis assume all measures were constructed and operating under optimal conditions? Or did the analysis account for reduced capacity or effectiveness of the measures due to inadequate or infrequent maintenance?*

b. *Did the detention basin measures incorporate capacity to account for sediment accumulation so as not to reduce the flood attenuation capacity of the basins?*

c. *If a factor of safety was not incorporated into the hydraulic model to account for inadequate or infrequent maintenance of or sediment accumulation with the various detention basin measures, then the figures in the report do not accurately represent real world conditions and flooding would be more severe and extensive than that presented in Figure 12b. See previous comment on Figure 12b.*

RESPONSE: Manning's n-values were calibrated to account for sediment or debris "bulking." More detailed information can be found in Appendix A, A2, Section 3.1.3. Blockages due to debris is further discussed in Appendix A, A2, Section 3.1.4. Debris generation due to large storm events is discussed in Appendix A, A3, Section 5.4. Appropriate safety factors are incorporated into the design of the risk management features in adherence to USACE design directives and policy.

To reduce the impact of debris at culvert openings, the Recommended Plan includes debris catchment structures upstream of each proposed detention basin. General maintenance will consist of cutting and clearing vegetation 20-feet around the structure twice per year and clearing debris following a flood event or annually (whichever is greater). Maintenance requirements can be found in Table 9 of Section 3.8.1 in the HEPA FFEIS.

In addition, an Operations & Maintenance (O&M) manual will be developed by the USACE Honolulu District in partnership with the City and County of Honolulu and the State of Hawaii during and after construction. The non-Federal sponsor will be responsible for the execution of O&M. Each feature or array of features depending on the interdependency will have its own manual. After construction completion, the Corps of Engineers will conduct routine, periodic, and emergency inspections of the system features and prepare reports for the City and County to ensure that deficiencies or maintenance requirements are known. Provided the system features are maintained, they will be eligible for federal funding in the event they are damaged or require significant rehabilitation.

19. *(5.) Page 3-4 provides a range of sea-level rise but doesn't state the specific value that was used in the hydraulic model.*

a. *What is the actual value of the sea-level rise assumed in the model?*
b. *What was the basis of the sea-level rise estimates?*
c. *Did the sea-level rise estimates match or correspond to values estimated by other organizations and scientists working on sea-level rise in Hawaii?*
d. *Did the hydraulic analysis incorporate storm surge effects in addition to sea-level rise?*

RESPONSE: As stated in our 2017 response letter, "Sea level rise is included in the analysis provided under Appendix A for the purpose of evaluating the resiliency of the recommended plan to a changing environment; sea level varies over time and increases under a number of scenarios." Detailed analysis of sea level rise and its basis, derivation, external agency considerations, and storm surge effects can be found in Appendix A, A3, Section 5. Dr. Chip Fletcher of the University of Hawaii conducted a study of accelerated glacial ice melting, with results estimating 0.5 to 1.4 meter global sea-level rise by 2100. This study was used to eliminate the low rate scenario from consideration in the Ala Wai Canal planning process.

20. *(6.) What was the model used to conduct the hydraulic analysis? Was it a one-dimensional model like HEC-RAS? Was a 2-dimensional model used to conduct a hydraulic analysis or even considered for the analysis? Two-dimensional hydraulic models tend to give better, more accurate representation of actual flooding conditions.*

RESPONSE: The one-dimensional steady state HEC-RAS computer program was used to generate the model for this HEPA FFEIS. The 1D steady state hydrologic and hydraulic modeling with artificial boundary constraints conducted in the feasibility phase met the intended objective of illustrating there were sufficient benefits to the overall watershed to warrant Federal funding and advancing to the design phases of work. Modeling in the design phase will include more accurate and expensive 2D unsteady state modeling using updated topographic data points obtained with Light Detection and Range (LIDAR) methods. These findings will be reviewed by USACE personnel at the Hydrologic Engineering Center (HEC) who developed and continuously enhance this widely used River Analysis System (RAS) computer program, HEC-RAS.

21. *(7.) How was the hydraulic model quality controlled? The results presented in the Report and by USACE's own admission appear to be flawed. Was a third-party evaluation of the hydraulic model conducted? Because the selected alternative will affect such a large number of businesses, residents, and visitors, should not that the hydraulic model undergo a more rigorous quality control procedure than USACE may normally conduct?*

RESPONSE: The proposed action in this HEPA Final underwent several levels of review, both internal and external. Specifically, the modeling was developed by the Honolulu District, reviewed by the Pacific Ocean Division, reviewed by the US Army Corps of Engineers Enterprise, as well as an independent external review from experts not associated with the Corps of Engineers.

The 1D steady state hydrologic and hydraulic modeling with artificial boundary constraints conducted in the feasibility phase met the intended objective of illustrating there were sufficient benefits to the overall watershed to warrant Federal funding and advancing to the design phases of work. Modeling in the design phase will include more accurate and expensive 2D unsteady state modeling using updated topographic data points obtained with Light Detection and Range (LIDAR) methods. These findings will be reviewed by USACE personnel at the Hydrologic Engineering Center (HEC) who developed and continuously enhance this widely used River Analysis System (RAS) computer program, HEC-RAS.

During the design phase of the project, updated modeling, engineering data, and community input will be used to refine or change the system features. Included in the design phase will be community engagement and several levels of review and risk analyses. Reviews and risk analyses include USACE Agency Technical review; USACE Safety Assurance Reviews, USACE Quantitative Risk Analysis Reviews; State of Hawaii Safety Assurance Reviews; as well as an Independent External Peer Review conducted by a team of experts not associated with the Corps of Engineers.

If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

22. *(8.) The executive summary (page ES-5) states that life safety considerations were taken into consideration. However, the Tentatively Selected Plan still leaves schools with children within the 1 % ACE. How do you reconcile this statement on page ES-5 with the Tentatively Selected Plan that fails to provide protection for some of the schools within the watershed?*

RESPONSE: As stated in our 2017 response letter, "When evaluating the effectiveness of the recommended plan included in the FEIS, it is important to recognize that the threat and consequence of flooding to the Iolani School in the existing study area conditions is significant. If the school does not have plans in place to manage the safety of students during a flood event, you are strongly encouraged to develop such plans to address the current existing threat (in the FEIS, this is defined as the without-project condition). If implemented, the recommended plan included in the FEIS reduces, but does not eliminate that flood risk for the school property relative to the without-project condition. Note that the recommended plan neither induces flooding on the property nor increases the existing flood stage but rather is projected to reduce flood stages by approximately two feet resulting from a 100-year flood event (1-percent chance annual exceedance), measured at a node immediately upstream of the school location on the Manoa Stream. The reduction of the flood stage at the site is due to the upstream storage provided by the recommended plan. As a result, both the likelihood of flooding and the consequences of flooding will be reduced for the school if the recommended plan is constructed. With that said, even with implementation of the recommended plan, residual risk of flooding remains throughout the watershed. The flood warning system proposed as a part of the recommended plan will notify those threatened by flood risk when both water levels are rising and when action should be taken to vacate flood prone regions of the study area."

The Tentatively Selected Plan identified in the Feasibility Study was based on information available at the time, with an awareness that the information and plan would require refinement after Congressional authorization to proceed.

Section 7.6.3 of Appendix B, Economics details the impacts to the Iolani School campus with- and without- project in place. "With no project in place, the potential exists for flooding practically the entire 25-acre campus, inundating more than one dozen large school buildings and endangering the lives of many of the 1,800 students enrolled there and the 200 faculty and 160 administrators and staff who work there. In a 0.01 ACE event with project in place, flood waters would rise almost to the floor levels of several classrooms and/or administration buildings and also flood as much as one-half of the campus, although this would be mostly athletic fields, courts and support facilities. This limited level of protection for the school is provided not by the Ala Wai floodwalls, but entirely by detaining flood water upstream and within the adjacent Ala Wai Golf Course."

The with-project conditions place the campus and its students in much lower risk than the without-project conditions. In our follow up meeting you held with our DLNR engineers and the Corps of Engineers, it was explained during that the project would not increase flood risk on Iolani or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper

watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Life safety considerations will be evaluated with the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

23. *(9.) Was the survey used for the hydraulic analysis ground-truthed and when? What was the method used for the ground-truthing? Ground-truthing of the 'Iolani School and Ala Wai Elementary School campuses does not appear to have been conducted based on the results of the model.*

RESPONSE: LiDAR data was collected, processed, and verified by Oceanit and their sub consultants in late 2006 and early 2007 as described in Appendix A, A2, Section 3.1.2. In addition, numerous field survey visits were conducted over the course of January 2008 to September 2009; details can be found in Appendix A, A1, Section 3.5.

24. *(10.) Figure 21: Potential Areas of Shallow Flooding due to Overtopping of Floodwalls/Berms or Failure of Interior Drainage Systems.*

a. *This figure shows the inundation due to overtopping of the floodwalls along the north bank of the Ala Wai Canal. This figure contradicts the floodwater extent shown in Figure 12b, which limited flooding at 'Iolani School to the southern portion of the campus. Furthermore, Page 8-9 states that "There is no bathtub effect in any overtopping area and ponding is expected to be in the 1-to 2-foot range. Damages would be related to those at the 2-foot depth for those overtopping areas illustrated." The flooding extent in Figure 12b does not reflect the existing topography at either 'Iolani School or Ala Wai Elementary School.*

b. *Figure 21 illustrates a condition with zero freeboard at the floodwalls and shows that the flooding would be extensive north of the floodwall. A 1- to 2-foot depth would result in a large volume of water in the shaded area shown in Figure 21 and result in significant damage to school property. As the water surface elevation in the Ala Wai Canal would increase to the full height of the floodwall, floodwaters would overtop the west bank of the Manoa-Palolo Drainage Canal (even before the floodwalls are overtopped) on to 'Iolani School and Ala Wai Elementary School property. Because "there is no bathtub effect" in this area, floodwaters would flow relatively freely across the flat terrain of the two schools. Any sediment and debris carried with the floodwaters would remain on the school properties as floodwaters either infiltrated or receded. The cleanup of the properties would be expensive and reduce the usefulness of the inundated areas for an unknown period, potentially harming the educational missions of both schools to our island's keiki. In addition, the waters of the Ala Wai Canal and sediment and debris may attract nuisance vectors and pose potential health risks to schoolchildren, depending on the nature and quality of the water, sediment and debris.*

RESPONSE: As stated in our 2017 response letter, "Designs and engineering associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs and benefits, and consider environmental impacts. The design and engineering of project features has undergone both an internal agency technical review as well as an independent external peer review and was deemed sufficient for the purposes of the FEIS. Following technical reviews, changes to input parameters for hydrology, hydraulic and economic analysis have been completed to fully comply with current USACE policies and regulations. Hydrology and hydraulic analyses are discussed in detail in Appendix A, and the economic analysis completed for the study is included in Appendix B of the final FEIS. Sea level rise is included in the analysis provided under Appendix A-2 for the purpose of evaluating the resiliency of the recommended plan to a changing environment; sea level varies over time and increases under a number of scenarios. The result of the revised technical analysis has not changed the recommended plan. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase."

The with-project (TSP 3A) conditions place the campus and its students in much lower risk than the without-project conditions. In the follow up meeting held with DLNR engineers and the Corps of Engineers, it was explained that the project would not increase flood risk on Iolani School or Ala Wai Elementary School, but in fact there was a benefit from less water in the canal from upper watershed detention. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

25. *Conclusion:*
'Iolani School understands the importance of flood risk management and appreciates the USACE and DLNR's efforts to mitigate flooding in the Project areas. However, in evaluating a plan to address flooding, NEPA and HEPA must be followed and the environmental impacts of the action must be appropriately and accurately considered. The Agencies must follow the correct process, take a hard look at the environmental effects of the proposed action, analyze reasonable alternatives, utilize proper scientific methods, and mitigate negative environmental impacts to the extent practicable. Because NEPA and HEPA were not adhered to in this case, the Draft Report/EIS must be significantly revised and reissued in a separate draft for further public review and comment.

RESPONSE: The Integrated Feasibility Study and Environmental Impact Study followed the NEPA and HEPA process. The observations and concerns articulated in Iolani School's written

comments during the public review period are noted and will be addressed during the design phase of the project as outlined in prior responses.

The Tentatively Selected Plan identified in the Feasibility Study was based on information available at the time, with an awareness that the information and plan would require refinement after Congressional authorization to proceed.

The with-project conditions place the campus and its students in much lower risk than the without-project conditions. It is against both Federal and State policy to increase flood risk to the community; modifications would be recommended if engineering data identified that as a risk.

In addition, during the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary. Community outreach and engagement will serve a critical role in the design of a final system of features.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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DATE: November 9, 2015

TO: Honolulu District, USACE

ATTN: Ala Wai Canal Project

Building 230, CEPOH-PP-C

Fort Shafter, HI 96858

FR: Steve Holmes

2541 Ipulei Way

Honolulu, HI 98816

RE: Ala Wai Canal Project

To Whom It May Concern:

Upon my review of The Ala Wai Canal Project I would like to offer these observations regarding the Pukele portion of the project:

Any site selection should be made via "boots on the ground" assessment and not only via topographical maps or aerial observations. I am aware that the Pukele project never had the advantage of a "boots on the ground" assessment.

All effort must be made that any site selection seriously take into consideration the economic impact on those directly affected including individual land holders and the entire neighborhoods in which the projects will be constructed.

That the report states that 3 fee real estate lots will be "damaged" by the berm feature what guarantee is there that fair market and future market value be taken into consideration?

That the report stated that 6 additional fee lots will be impacted by the flowage easement but the flowage will remain within the stream banks and have "limited" impact on these 6 lots relies on the engineering expertise of the USACE and the adequate maintenance of the area around the berm and upstream after the project is complete. As a resident of Hawaii it is my experience that the USACE often makes decisions that are revealed in the future to be wrong. The State and The City of Honolulu usually fails in maintaining streams and man-made features and this failure is often the cause of flood damage.

Sincerely,

Steve Holmes

Steve Holmes

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Steve Holmes
2541 Ipulei Way
Honolulu, Hawaii 96858

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Alternative Plan Selection
- Concerns of affected landowners regarding real estate acquisition
- Operations and maintenance of the project features

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. The engineering analysis presented in the FEIS uses the standard methodology prescribed by the Water Resources Council's "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" and the USACE Engineer Regulation 1105-2-100. All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts.

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

The process of acquiring property for a project is highly regulated. The Fifth Amendment of the Constitution states that private property shall not be taken for public use without just compensation. To address what constitutes just compensation, Congress passed the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 ("Uniform Act"). The non-federal sponsors will be required

to follow the Uniform Act in acquiring any lands. USACE will work with the non-Federal sponsors to ensure the correct process and procedures are adhered to throughout the process.

Generally speaking the value of land acquired is the fair market value of the property. The fair market value includes many aspects of the property in question. Earning potential is one of those aspects to be addressed in developing a fair market value. Regardless of the value determined, Public Law 91-646 outlines the requirements that must be followed to ensure a homeowner/landowner is compensated justly.

Part of the process will be an appraisal, which determines the fair market value of the property. Fair market value is an estimate of the market value of a property based upon what a knowledgeable, willing, and unpressured buyer would pay. The appraisal will attempt to take all objective property features into account when determining fair market value. The fair market value is determined without consideration for the effect the project has had on the value of the land. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

Table 9, page 3-22 of the draft FEIS (page 3-23 of the final) details cursory operations and maintenance requirements based on project feature. These obligations are identified during the feasibility phase for the purpose of developing initial cost estimates. If approved, a detailed operations and maintenance plan will be developed during the design phase of the study. Operations and maintenance are the responsibility of the non-Federal sponsor, however, it is not anticipated that the general public would be involved in operations and maintenance of flood risk management features. Debris and detention structures are intended to pass normal stream flows without impounding water. The structures are designed to function only during storm events, therefore, no impoundment of water is anticipated outside of such storm events.

The non-Federal sponsors must enter into a Project Partnership Agreement with USACE to construct the Project. This agreement sets the required cost sharing of the Project between the non-Federal sponsors and the Federal government and requires that the non-Federal sponsors be solely responsible for the operation and maintenance of the Project. The sponsors are responsible for financing their local share and operation and maintenance costs.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Steve Holmes
2541 Ipulei Way
Honolulu, Hawaii 96816

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District, USACE:

1. *Upon my review of The Ala Wai Canal Project I would like to offer these observations regarding the Pukele portion of the project:*

Any site selection should be made via "boots on the ground" assessment and not only via topographical maps or aerial observations. I am aware that the Pukele project never had the advantage of a "boots on the ground" assessment.

RESPONSE: The recommendations in the DFEIS were based on information gathered and site visits conducted to the area over the past 18 years. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. In addition, while site visits were done in the past, a more thorough "boots on the ground" effort will be made to ensure we validate data and modeling. Other locations along Pukele Stream will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

2. *All effort must be made that any site selection seriously take into consideration the economic impact on those directly affected including individual land holders and the entire neighborhoods in which the projects will be constructed.*

RESPONSE: Page 1-2 of the Federal NEPA Document, as well as this HEPA FFEIS proposed action discusses the USACE Environmental Operating Principles (EOP) which requires "mutually supporting economic and environmental sustainable solutions." This occurred in the feasibility despite a 2012 shift in focus to strictly a flood control study. These same EOP will be applied during the design phase as data is updated and designs are refined.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If detention basins in the valleys are necessary, there will be explanation and data available to explain why. Land use and real estate impacts to private landowners is an unresolved issue in the HEPA FFEIS; a final real estate and land use plan will be developed in the design phase after system features are finalized using the aforementioned process of data update with community engagement.

3. *That the report states that 3 fee real estate lots will be "damaged" by the berm feature what guarantee is there that fair market and future market value be taken into consideration?*

RESPONSE: Although potential impacts to real property are described in detail in the real estate planning report in Appendix C, the impacts of land use and private property acquisition are listed as

an unresolved issue in the HEPA FFEIS. As stated in Section 5.19.5 of the Final HEPA FFEIS, during the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. A final real estate and land use plan will be developed based on the updated data. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us, the State, at the time of the study not to acquire any property until the design phase. We are required to acquire any necessary property following both federal and state laws including using federally approved appraisers to determine fair market value.

4. *That the report stated that 6 additional fee lots will be impacted by the flowage easement but the flowage will remain within the stream banks and have "limited" impact on these 6 lots relies on the engineering expertise of the USACE and the adequate maintenance of the area around the berm and upstream after the project is complete. As a resident of Hawaii it is my experience that the USACE often makes decisions that are revealed in the future to be wrong. The State and The City of Honolulu usually fails in maintaining streams and man-made features and this failure is often the cause of flood damage.*

RESPONSE: Thank you for your comments. We understand our responsibilities maintaining this and other flood projects around Hawaii. Each feature or array of features, depending on the interdependency of the features, will have its own manual that describes procedures for making sure the features function as designed. O&M requirements are further discussed in Section 3.0 Plan Formulation and Section 8.4 of the HEPA FFEIS. The Corps of Engineer's projects have been functioning as designed throughout the State and has provided a balance of both natural beauty and flood protection for decades. Two specific examples of successful partnerships on Oahu can be seen in Hoomaluhia and Kawai Nui Marsh on the windward side of Oahu.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

November 8, 2015

Honolulu District, USACE

ATTN: Ala Wai Canal Project

Building 230, CEPOH-PP-C

Fort Shafter, HI 96858

To Whom It May Concern,

My name is Winona Holmes and I am writing regarding the Ala Wai Canal project and specifically the installation of a berm on Ipulei Place affecting Pukele Stream. I think the idea of protecting Waikiki, Honolulu's crown jewel, from flooding from the Ala Wai may seem like a great idea, I personally think the concept of creating berms on the arteries leading down to the Ala Wai is too extreme.

Living up on Ipulei Way for over thirty years, this berm concept seems like overkill. The amount/output of water, even after an extremely high rainfall, doesn't warrant condemning two homes and a vacant lot on Ipulei Place from Baruch Bakar. I find it hard to believe if you monitored the amount of water volume coming from Pukele Stream throughout the year, even at its highest point wouldn't need to be controlled this drastically. Please consider other existing methods using existing structures such as controlling the drainage canal though a series of locks which runs through Palolo Avenue to slow down the water flow. For the time, effort, and federal/state dollars expended on a plan that may never really may happen (100+ year flood) for Pukele Stream it seems incredible that plans have gotten this far. Instead work with the City and County on maintaining and clearing debris from the stream to prevent what happened during the flood in 2004 in Manoa. With our tax dollars going toward prevent flooding during a time of current drought conditions seems foolish.

There should be more environmental studies done as well as site work, and community/neighborhood awareness. I would have never known this would be happening in my neighborhood had I not being a part of the Baruch Bakar partnership. Having a large berm in this neighborhood would be an eyesore, impact on reduced housing, property values, and possible issues and problems that may arise that we don't even know yet from the construction and maintenance of this berm.

Maybe you may feel the need for berms for this Ala Wai project, but I think the USACE/DLNR should really look closely to see if berms for all three streams are necessary. It's too bad places like Waihole, Waikane, and Hauula don't generate the same kind of income like Waikiki to the state – they certainly could get the attention of their flooding and property loss taken care of. Thank you for allowing me to share my opinion on this important manner. If you like to contact me, please call me at 735-5014.

Best regards,

Winona Holmes

Winona Holmes
2541 Ipulei Way
Honolulu, HI 96816

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Winona Holmes
2541 Ipulei Way
Honolulu, Hawaii 96858

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to Alternative Plan Selection.

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. Details regarding planning considerations leading to the development of alternative plans can be found in Section 3 of the FEIS.

USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins

- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Ms. Winona Holmes
2541 Ipulei Way
Honolulu, Hawaii 96816

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 8, 2015 to Honolulu District, USACE:

1. *My name is Winona Holmes and I am writing regarding the Ala Wai Canal project and specifically the installation of a berm on Ipulei Place affecting Pukele Stream. I think the idea of protecting Waikiki, Honolulu's crown jewel, from flooding from the Ala Wai may seem like a great idea, I personally think the concept of creating berms on the arteries leading down to the Ala Wai is too extreme.*

   RESPONSE: Thank you for your comments and participation. Balancing engineering solutions with community impacts is important to deliver this project for the community throughout the watershed.

2. *Living up on Ipulei Way for over thirty years, this berm concept seems like overkill. The amount/output of water, even after an extremely high rainfall, doesn't warrant condemning two homes and a vacant lot on Ipulei Place from Baruch Bakar.*

   RESPONSE: Land use and real estate impacts to privately owned properties remains an unresolved issue in this HEPA FFEIS, see section 5.19.5. Hawaii is different than many states in that private homeowners own the streams that run through their property. While this has many benefits, it also comes with challenges for developing flood control projects that seek to reduce the risk to the community. Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. There may be opportunities to further reduce impacts to private properties during the design phase. However, it is unlikely that all private property impacts will be removed due to the fact that landowners own the stream. There may be a need to purchase flowage easements with homeowners and potentially make property adjustments for access easements to allow for the City and County of Honolulu to perform maintenance. These impacts on private property are much less intrusive on the property owner than property acquisition but are still considered an impact. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. The real estate and land use plan will be evaluated with the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

3. *I find it hard to believe if you monitored the amount of water volume coming from Pukele Stream throughout the year, even at its highest point wouldn't need to be controlled this drastically.*

   RESPONSE: We base our design on engineering data, modeling, data from other Agencies, as well as community outreach and participation. Although Palolo Valley and Pukele Stream has

never experienced a 1% AEP event, neighboring valleys and areas have recently experienced such events. Hahaione and Kuliouou Valleys in Hawaii Kai received 10" of rain in 5 hours during a single rain bomb on April 17, 2018. That event was not associated with a named storm but just a single event. Damages impacted several homes in Hawaii Kai, as well as on the island of Kauai. Although Palolo Valley has never seen such an event, this is an opportunity to be proactive in building community resilience. We do agree that there must be a balance in engineering solutions to reduce flood risk and community impacts, which is an issue we will address further in the design phase with the Corps of Engineers when we update our data and modeling for the project.

4. *Please consider other existing methods using existing structures such as controlling the drainage canal though a series of locks which runs through Palolo Avenue to slow down the water flow.*

RESPONSE: The bridges themselves already serve as a controlling structure through the Palolo Canal. They serve as the existing hydraulic constriction to slow the water down. However, when water is slowed down, it will back up. When the water backs up, it must either have sufficient storage, or it will overflow and inundate the surrounding areas.

5. *For the time, effort, and federal/state dollars expended on a plan that may never really may happen (100+ year flood) for Pukele Stream it seems incredible that plans have gotten this far.*

RESPONSE: Thank you for your comment. Public safety, preparation, and capital improvements to help build resiliency into the community is a priority for us. This project is in line with those priorities.

6. *Instead work with the City and County on maintaining and clearing debris from the stream to prevent what happened during the flood in 2004 in Manoa.*

RESPONSE: The City and County is responsible for maintaining some reaches of the streams. However, landowners in Hawaii own the stream through their property. Landowners have a responsibility to ensure their individual reaches remain free and clear of debris to help prevent them from going downstream. Even after the City and County obtains all permits necessary, they still have to gain access to the Streams to maintain it; this requires permission from homeowners.

7. *With our tax dollars going toward prevent flooding during a time of current drought conditions seems foolish.*

RESPONSE: This project looks beyond the current situation and seeks to build resilience into the community.

8. *There should be more environmental studies done as well as site work, and community/neighborhood awareness. I would have never known this would be happening in my neighborhood had I not being a part of the Baruch Bakar partnership.*

RESPONSE: The full outline of environmental studies and public involvement can be viewed respectively in Appendix E and Appendix G of this HEPA FFEIS. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Part of this evaluation will be a cost evaluation to ensure that the final design is both economically acceptable, but also environmentally acceptable. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

9. *Having a large berm in this neighborhood would be an eyesore, impact on reduced housing, property values, and possible issues and problems that may arise that we don't even know yet from the construction and maintenance of this berm.*

RESPONSE: During the design phase of the project additional community engagement will occur to help identify design concerns, considerations, and requirements. If a berm is identified as being necessary in close proximity to a residential area, efforts will be made to ensure that it is not an attractive nuisance, as well as to ensure it does not adversely impact property values.

Furthermore, the proposed project may have beneficial impacts on homeowners in the project areas, in the form of a reduction in cost for flood insurance, as well as potentially increased property value if it is no longer in a floodplain. These are opportunities and not objectives of the project, which are potential additional benefits to the overall reduction of flood risk in the project area.

10. *Maybe you may feel the need for berms for this Ala Wai project, but I think the USACE/DLNR should really look closely to see if berms for all three streams are necessary.*

RESPONSE: See Response #8.

11. *It's too bad places like Waihole, Waikane, and Hauula don't generate the same kind of income like Waikiki to the state - they certainly could get the attention of their flooding and property loss taken care of.*

RESPONSE: Waihole, Waikane, and Hauula are not within the scope of this HEPA FFEIS.

12. *Thank you for allowing me to share my opinion on this important manner. If you like to contact me, please call me at 735-5014.*

RESPONSE: We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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Goro Sulijoadikusumo
3810 Claudine St.
Honolulu, Hawaii 96816

November 9, 2015

Gayson Ching
Engineering Division
State of Hawaii
Department of Land and Natural Resources (DLNR)
P.O. Box 373
Honolulu, HI 96809

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

Dear Messrs. Gayson Ching et alia:

Subject: Ala Wai Canal Project EIS

The EIS and proposed solutions do not seem to adequately study and address the project's impacts from the brown water discharges of the Ala Wai canal on the Waikiki ocean water quality and particularly the long term impacts on the adjacent reef from the resulting flocculation of the fine sediments distributed there by the project over the long term. I would appreciate a formal determination as to whether it is required by Department of Land and Natural Resources (DLNR) or federal rules to do the water quality assessments/monitoring and have some best practices approved or any other state approvals/permits for the water quality prior to constructing proposed improvements.

The University of Hawaii has done many studies and produced many papers over the years that show the kind of flocculation induced by the proposed project improvements is harmful to the reef over the long term and can have some toxic impacts to the overall environment. Relevant facts are provided in the first two attachments to this letter.

As shown in Article 1, the team of Wolanski et al. at UH Kewalo found and state in part that: "It is suggested that successful management of fringing coral reefs

adjacent to volcanic islands may not be possible without proper land use management in the surrounding catchment."

As shown in Article 2, Banner of UH HIMB on Coconut island in Kaneohe Bay found that flocculation could provide an environment suitable for the spread of ciguatera.

The study seems incomplete as also not all of the pertinent environment and in turn their alternatives was assessed. Most of the proposed solutions involve building mostly up and above ground with retention ponds and higher levee walls; however, there does not seem to be an adequate assessment and consideration of the underground environment for storing and helping prevent excessive brown water and flocculation impacts on the nearby ocean reef environment. This is even though it has been documented and studied that the area around the University of Hawaii has many underground caves and lava tubes such as in the quarry and Puck's Alley area that may have the potential to help handle and alleviate some of the surface runoff, etc.

Furthermore, building underground multi-use structures through public-private partnerships has recently been shown to be a successful strategy used by citys with complex problems similar to ours. For example, Santiago, Chile has built some very successful private tollways under the rivers that goes through the center of town to the airport. Since there is no direct connection from Waikiki to the freeway or airport and with 80,000 tourists in Waikiki every day, a public-private partnership for a multiuse tunnel could be a potential way to improve the project and make it sustainable for the long term.

As shown in Attachment 3, the City of Kuala Lumpur in Malaysia successfully built a private-publice multi-use tunnel to address both its needs in traffic and emergency flooding events. I would like the EIS to also address some of these alternatives to make the project both more successful and sustainable for the long term.

Sincerely,

Goro Sulijoadikusumo

Attachments

Available online at www.sciencedirect.com
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Estuarine, Coastal and Shelf Science 56 (2003) 1029–1040
ESTUARINE COASTAL AND SHELF SCIENCE

Water and fine sediment dynamics in transient river plumes in a small, reef-fringed bay, Guam

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Abstract

Fouha Bay is a 400-m-long funnel-shaped, 10-m-deep, coral-fringed embayment on the southwest coast of Guam. It drains a small catchment area (5 km^2) of steeply sloping, highly erodible lateritic soils. River floods are short-lived and the sediment load is very large, with suspended sediment concentration (SSC) exceeding 1000 $mg\,l^{-1}$. The resulting river plume is about 1 m thick and is pulsing in a series of 1–2 h-long events, with outflow velocity peaking at 0.05 $m\,s^{-1}$. Turbulent entrainment results in an oceanic inflow at depth into the bay. As soon as river flow stops, the plume floats passively and takes 5 days to be flushed out of Fouha Bay. The suspended fine sediment flocculates in 5 min and aggregates on ambient transparent exopolymer particles to form muddy marine snow flocs. In calm weather, about 75% of the riverine mud settles out of the river plume into the underlying oceanic water where it forms a transient nepheloid layer. This mud ultimately settles and is trapped in Fouha Bay. Under typhoon-driven, swell waves, the surface plume is at least 7 m thick and bottom entrainment of mud results in SSC exceeding 1000 $mg\,l^{-1}$ for several days. It is suggested that successful management of fringing coral reefs adjacent to volcanic islands may not be possible without proper land use management in the surrounding catchment.

Keywords: river plume; fine sediment; flocculation; sedimentation; muddy marine snow; coral; Guam

1. Introduction

The impact of sediment-laden river runoff on fringing coral reefs has been the subject of intensive research (see reviews in Fortes, 2001; McCook, Wolanski, & Spagnol, 2001; McManus, Menez, Reyes, Vergara, & Ablan, 2000), yet knowledge of the effects remains qualitative. This is because much of the research to date has focused on studying the changes in coral and algae cover on impacted reefs while little quantitative data have been collected on the quantity and quality of suspended sediments impacting the fringing coral reefs. Quantity is important because sediment can literally bury coral; sedimentation is a major cause of mortality in the initial life stages of hard corals (Cnidaria: Scleractinia). It can locally reduce recruitment rates (Gilmour, 1999; Sato, 1985) and at higher concentrations affects a range of life history parameters in juvenile and adult corals (Richmond, 1994; Rogers, 1990). Quality is also important because the sediment can contain substances harmful to corals such as pesticides and nutrients (Peters, Gassman, Firman, Richmond, & Power, 1997; Richmond, 1993). Additionally, the level of effect also depends on whether or not the suspended sediment is aggregated into marine snow (Fabricius & Wolanski, 2000). Because of increasing levels of reef degradation in coastal waters worldwide, a predictive, quantitative model for this impact is needed to facilitate appropriate coastal zone management.

To develop such a model, a detailed study of the dynamics of fine sediments in a fringing coral reef environment was carried out at Fouha Bay, Guam (143°39′E, 13°17′N; Fig. 1). Fouha Bay is reef-fringed, funnel-shaped, about 400 m wide at the mouth, and 10 m deep on average with a depth varying between

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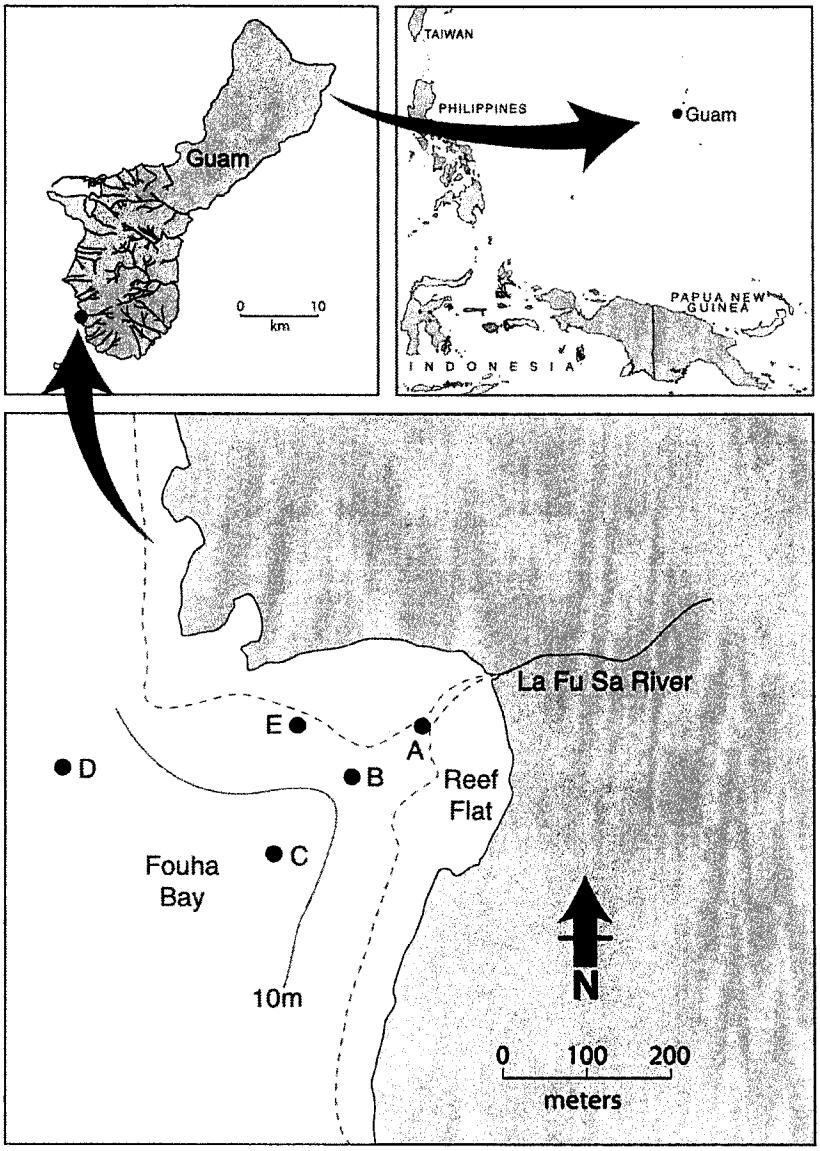

Fig. 1. Map of Fouha Bay in Guam showing the mooring sites and general location maps.

8 m at the base of the reef flat to about 11 m at the mouth of the bay. The adjoining La Sa Fua River catchment area is 5 km^2 and much of it is composed of volcanic, steeply sloping, highly erodible lateritic soils. Annual rainfall is about 2.5 m. The dry season extends from December to June, while the wet season usually lasts from July through November with August to October as the wettest months having a mean rainfall of 35 cm $month^{-1}$. Much of this rainfall occurs in a few days from local storms or the passage of a typhoon. This causes short, transient river floods, because the La Sa Fua River catchment is small. Minimum and maximum river discharges measured over a 5-year period were, respectively, 0.008 and 29.7 $m^3 s^{-1}$ (Randall & Birkeland, 1978). The La Sa Fua River discharges into Fouha Bay through a small canyon cut through the reef flat. This canyon is about 20–30 m wide with depth varying between 0.5 m at the shore and about 7 m at the reef edge. The canyon is studded with coral outcrops, the tops of which are emergent at low tide. Several other coral outcrops are scattered around Fouha Bay. The coral reef over the reef flat and the coral outcrops were still healthy in 1978 (Birkeland, Tsuda, Lassuy, & Hedlund, 1978; Randall & Birkeland, 1978). Much of the coral died after being buried by sediment in between 1988 and 1990 as a result of sediment-laden runoff following land clearing and road construction (Richmond, 1993). Algal overgrowth followed soon after.

Eleven years later, in 2001, we found that the reef was still heavily overgrown with an algae mat. These algae trapped a large amount of fine sediment that was readily

released as a muddy plume when the algal mat was manually shaken. In 2001, hard coral cover in the bay on the outcrops and reef areas along the canyon edge was only 30% with the greatest coral cover found in the inner half of the bay. Total species richness for the bay included 102 hard corals, with the greatest species richness found in the outer half of the bay. Coral cover on the surrounding fringe reef outside the bay was 5%. Species richness on the surrounding fringe reef included 77 hard corals. Substrate in the bay and on the surrounding fringe reef that was not living coral was predominantly covered with turf algae, however, seasonal blooms of *Padina* sp. and cyanobacteria can overgrow the turf algae and dominate the benthos. In 2001, the bottom of Fouha Bay between the opposing reef flats was muddy.

This article reports on a study of the hydrodynamics and fine sediment dynamics in Fouha Bay, during the wet season of July to September 2001. The fresh water/sediment plume has an active and a passive stage. In the active stage, river water forms a jet about 1 m thick and with a velocity of about $0.05\,m\,s^{-1}$. This jet lasts only as long as the river floods, typically a few hours. As soon as significant river runoff stops, the plume floats passively over the underlying oceanic water. The plume thickness is typically 1 m in calm weather and up to 7 m under typhoon-driven swell. In both weather conditions, salinity values seldom are less than 30 in the plume. The riverine suspended sediment concentration (SSC) varies between 1000 and $5000\,mg\,l^{-1}$.

2. Methods

Two field experiments were carried out in Fouha Bay. In the first experiment, five oceanographic moorings were deployed at sites A–E (see location map in Fig. 1) for 2 weeks in July–August 2001. Sites A–D formed an along-bay transect while sites D and E measured the across-bay variability. Salinity, temperature and SSC were measured using self-logging Analite nephelometers, DataFlow salinometers and a YSI self-logging CTD-cum nephelometer. The Analite nephelometers and YSI instrument were equipped with wipers that cleaned the sensor every 30 and 10 min, respectively. The instruments logged data at 10 min intervals. The data were sampled at 0.5 s intervals and averaged over 1 min for all sensors except the YSI, which logged data continuously without averaging. The salinometers and nephelometers were deployed at nominal depths of 1.5 and 2 m, respectively. At site C, the vertical profiles of horizontal currents were measured using a bottom-mounted Workhorse ADCP. Sites A and B were coral outcrops and the instruments were attached onto star pickets (rebar) driven into the carbonate substratum. At the other sites, the instruments were attached onto mooring lines kept taut by a subsurface buoy. In addition, the vertical profile of salinity, temperature and SSC was measured at intervals of 2–5 days from a ship-born YSI CTD profiler-cum nephelometer.

In the second experiment, the self-logging YSI CTD-cum nephelometer was deployed at site A at 3 m depth. Also at site A, a Dataflow salinometer was deployed at 7 m depth, which was 1 m above the bottom. The vertical profile of salinity, temperature and SSC was measured at deployment.

The nephelometers were calibrated in situ using water samples brought to the laboratory and filtered on 0.45 μm filters. These were dried and weighed. The SSC in riverine water during flood periods was also occasionally measured by this method.

Samples for microscopic observations of suspended matter were obtained using the modified technique of Ayukai and Wolanski (1997). Briefly, water samples were collected using a 2.5-cm diameter tube moored at the sampling sites for 10 min. The tube was then capped and the suspended matter settled onto a microscope slide with a 3-mm-deep well. A cover glass was then pushed over the microscope slide. The seal between the slide and cover glass was made water tight, so that settling particles intercepted into the well were recovered without being physically disturbed. The sample was immediately examined under an Olympus inverted microscope with a Sony CCD video camera. The images were captured on an IBM-compatible PC with an interface video card. Riverine water collected during a flood was also examined using this method.

The microscope and image capture facility was also used in a laboratory experiment to determine the speed of flocculation. Turbid freshwater sampled during a local flood of the La Sa Fua River was diluted with unfiltered reef seawater to reach a salinity of 17 and the size of the suspended matter was monitored at 5 min intervals over 1 h.

La Sa Fua River hourly discharge and SSC data were provided by the United States Geological Survey. Discharge was measured at a gaging station located approximately 1 km upstream from the bay and gages just over 50% of the watershed. Reliable river SSC data were obtained from only one flood event.

3. Results

3.1. Calm weather—ship born observations

River runoff was minimal ($\approx 0.1\,m^3\,s^{-1}$) on July 27, 2001, when calm weather prevailed. Fouha Bay waters were vertically fairly well mixed in salinity and SSC (Fig. 2a); the surface river plume was only 0.5 m thick

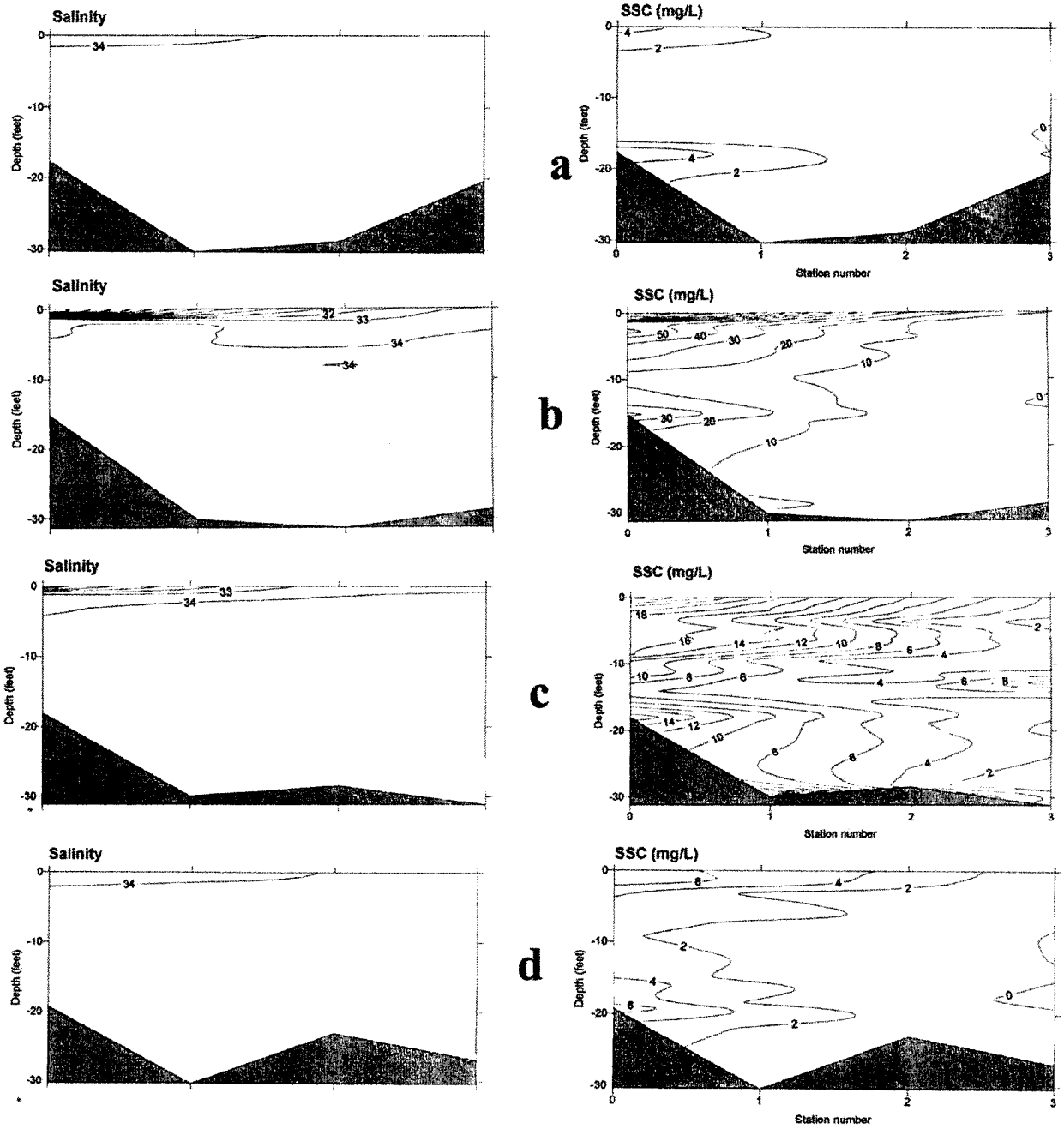

Fig. 2. Along-bay transect of (left) salinity and (right) SSC on (a) 27 July 2001, (b) 30 July 2001, (c) 1 August 2001 and (d) 3 August 2001. Stations 0–3 are labelled A, B, C and D in Fig. 1.

and the minimum salinity about 34. SSC values peaked at $4\,mg\,l^{-1}$ in the river plume near the surface and near the bottom while the mid-waters SSC were less than $2\,mg\,l^{-1}$.

Intense rainfall on July 28, 2001, generated a rapid, short-lived, rise of the discharge of the La Sa Fua River, peaking at $2\,m^3\,s^{-1}$ (Fig. 3). On July 30, 2001, a flood plume was present in Fouha Bay (Fig. 2b). This flood plume was about 1.5 m thick with a minimum surface salinity of 22 at site A and 33 at site D, indicating vertical mixing as river water moved offshore. The isohalines were practically horizontal, indicating that the vertical mixing between fresh and salt water was compensated by radial spreading of the plume made possible by the funnel-shape of Fouha Bay. No major temperature plume was observed. At the same time, the SSC distribution (Fig. 2b) showed no measurable increase of SSC offshore (site D), indicating that much of the riverine sediment remained trapped in Fouha Bay. Within the Fouha Bay there was a 2-m-thick,

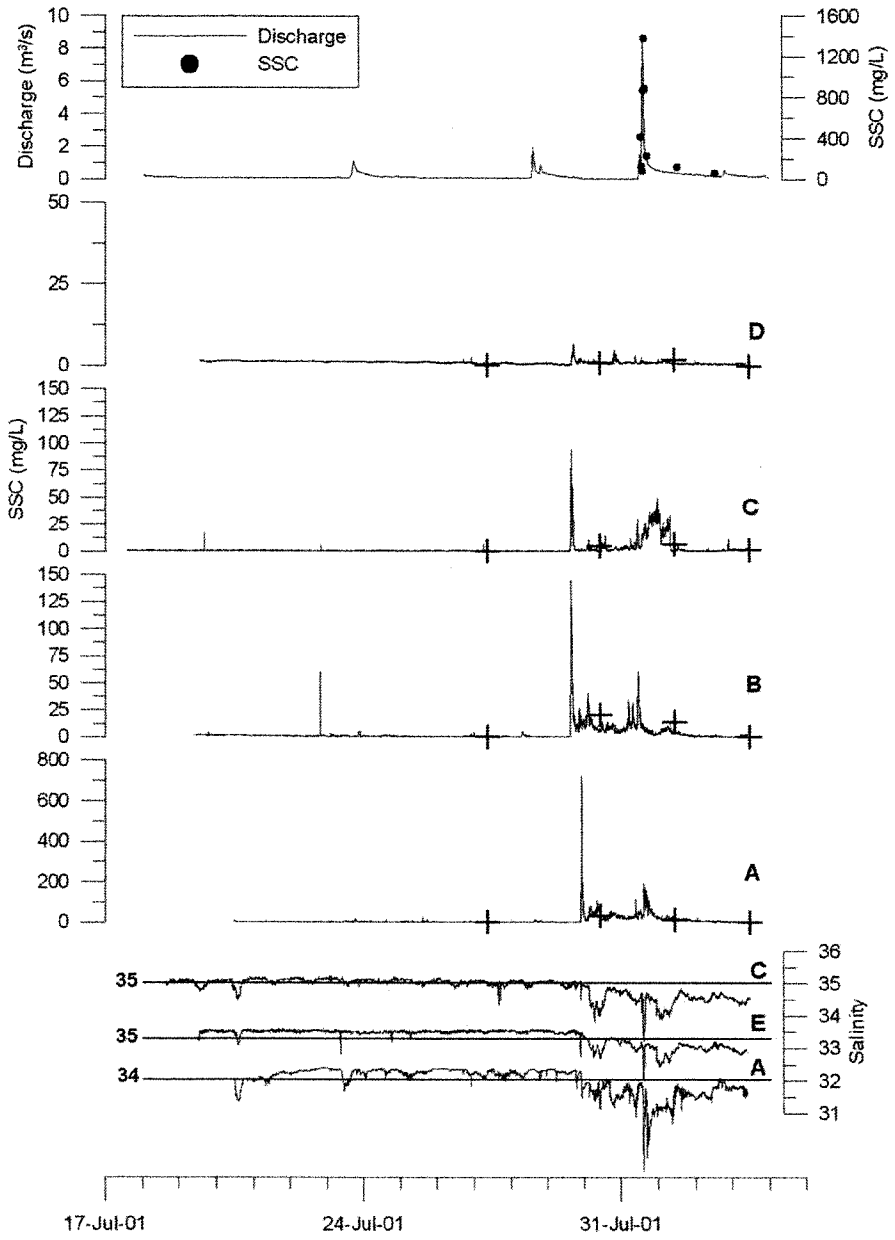

Fig. 3. Time series plot of the discharge ($m^3 s^{-1}$) and SSC of the La Sa Fua River, and the SSC ($mg l^{-1}$) and salinity at the mooring sites A–D in July 18–August 3, when calm weather prevailed. Depth is shown in feet (1 ft = 0.3048 m). The crosses indicate independent SSC measurements made using the ship-born YSI nephelometer.

turbidity plume, with SSC peaking at $100 mg l^{-1}$ at site A and $20 mg l^{-1}$ at site C. Contrary to the isohalines, which were nearly horizontal, the SSC contour lines sloped upward with increasing distance offshore, indicating that the suspended matter was settling out of the river plume. The settling, riverine sediment was found throughout the water column below the river plume, with SSC values in the range $10–50 mg l^{-1}$ and decreasing with increasing depth. The settling sediment formed a nepheloid layer with SSC values of about $30 mg l^{-1}$ at 5 m depth between sites A and B.

As shown in Fig. 3, the La Sa Fua River flooded with a peak discharge of about $8 m^3 s^{-1}$ on July 31, 2001; this flood was very short-lived. Indeed, the river discharge was ten times smaller 3 h later. River SSC values peaked at $1382 mg l^{-1}$ for this flood with a mean SSC of $528 mg l^{-1}$ during the event. On August 1, 2001 (Fig. 2c), the salinity plume was 1 m thick, with a minimum salinity of 29 at site A and 34 at site D (Fig. 2c). The SSC values were maximum near the surface, peaking at $28 mg l^{-1}$ at site A and $6 mg l^{-1}$ at site C. A second maximum in SSC occurred in the near-bottom nepheloid

layer, which covered the sea floor over the whole bay with a peak SSC of 20 mg l^{-1}.

Another 2 days later, on August 3, 2001 (Fig. 2d), the bulk of the salinity plume was flushed out of Fouha Bay and the minimum salinity was about 34. Much of the suspended sediment had been removed based on the maximum values of SSC that peaked at 6 mg l^{-1}. These maximum SSC values occurred both near the surface and near the bottom at site A.

3.2. Calm weather—mooring observations

Semi-diurnal tides prevailed with an amplitude usually less than 0.6 m (see Fig. 5 discussed later).

Three small river floods were experienced peaking at about 1, 2 and 8 m^3 s^{-1} on, respectively, July 23, July 28, and July 31, 2001 (Fig. 3). All these floods were short-lived; the river discharge increased to peak values in 2 h and decreased to baseflow values about 10 h later. There was no significant decrease in salinity at the mooring sites until July 29, after which time the salinity fluctuated widely (see Fig. 3). The fluctuations were highly coherent at all sites in Fouha Bay, indicating that the plume affected the whole bay more or less simultaneously. Minimum salinity was about 31 at the instrument depth (1.5 m) and this agreed closely with that from the ship-born CTD.

The SSC time series at the mooring sites shows a very different pattern than that of the salinity (Fig. 3). The river flood caused no measurable SSC increase at site D (offshore), the maximum SSC increase was about 5 mg l^{-1}, and this was short-lived and occurred immediately following a river flood. Large and rapid SSC fluctuations occurred throughout Fouha Bay following river floods. The largest SSC fluctuations occurred on July 29, 2001 (day 210) immediately following the river flood, peak SSC was about 700 mg l^{-1} at site A (inshore), 150 mg l^{-1} at site B (mid-bay) and 100 mg l^{-1} at site C (mouth of Fouha Bay). This peak presumably corresponds to the initial river plume forming and spreading throughout Fouha Bay, the initial pulse of freshwater containing most of the eroded soil. The salinity time series shows little freshening of the water at the time of peak SSC, implying that this peak was due to sediment that had settled out of the surface plume into the underlying oceanic water. For the next 2 days, SSC fluctuated widely with peak values of 200 mg l^{-1} at site A and about 50 mg l^{-1} at both sites B and C. These peaks occurred during a period of decreased salinity in Fouha Bay, however, there was no apparent correlation between SSC and salinity fluctuations. This observation suggests that riverine sediment reached the instruments both directly with the river plume and by settling from the overlying river plume.

Before the river flood, the currents peaked at 0.02 m s^{-1}, fluctuated with the tides, and were fairly uniform with depth (Fig. 4a). In Fig. 4 the data appear noisy, this is because these small velocities are only slightly above the resolution ($\approx$0.01 m s^{-1}) of the ADCP.

During the river flood starting in the early hours of day 210, the currents fluctuated rapidly (Fig. 4b). From day 210 to 210.5, the mid-water and surface currents were small (<0.02 m s^{-1}) and uniform with depth. Near the surface the currents were different during most of the day, as there were several events (marked O, P, Q, R and S), each lasting 1–2 h, of outflow of water from Fouha Bay with velocities peaking at 0.05 m s^{-1}. This outflow is due to the buoyant jet formed by the river discharge exiting Fouha Bay. During the periods of surface outflow, there was also an inflow into Fouha Bay in the bottom half of the water column (Fig. 4b). This flow is interpreted as a return flow of oceanic water entrained into the surface buoyant jet. Hence, there was an outflow of freshwater at the surface and an inflow of saline water underneath the plume. There were also occasional events of inflow in Fouha Bay at the surface (e.g. between events R and S in Fig. 4b), suggesting that internal waves were generated on the pycnocline.

On day 211, the currents were once more fairly uniform with depth, suggesting that the river discharge was small again and the freshwater plume seen in our CTD casts (Fig. 3c) had become passive.

3.3. Typhoon swell—mooring observations

The La Sa Fua River flooded several times between August 11 and 17, 2001, and once on August 21, 2001 (Fig. 5).

The time series of the depth, as measured by the YSI instrument, shows tidal fluctuations with a normal range less than 0.6 m (Fig. 5). From August 13 to 20, 2001, the depth sensor also recorded wide fluctuations, up to 4 m peak to trough, due to swell waves driven by the passage of a typhoon. There was a second, smaller, typhoon between August 26 and 29, 2001.

There were small differences in temperature (up to 0.4 °C; the top waters being warmer) between top and bottom waters before the typhoon passed nearby, and no differences during and after the typhoon (Fig. 5). There were small differences in salinity (up to 0.7; the top waters being fresher) between top and bottom waters before the typhoon, and no differences during the typhoon. This indicates that the swell waves were able to vertically mix the river plume to at least 7 m depth. During the typhoon, which was accompanied by several river floods, minimum salinity was 30 for about 3 h on August 13, 2001. A second, major low salinity event occurred on August 21, when the minimum salinity was about 24 and this lasted about an hour. The salinity data (Fig. 5) show that freshwater was

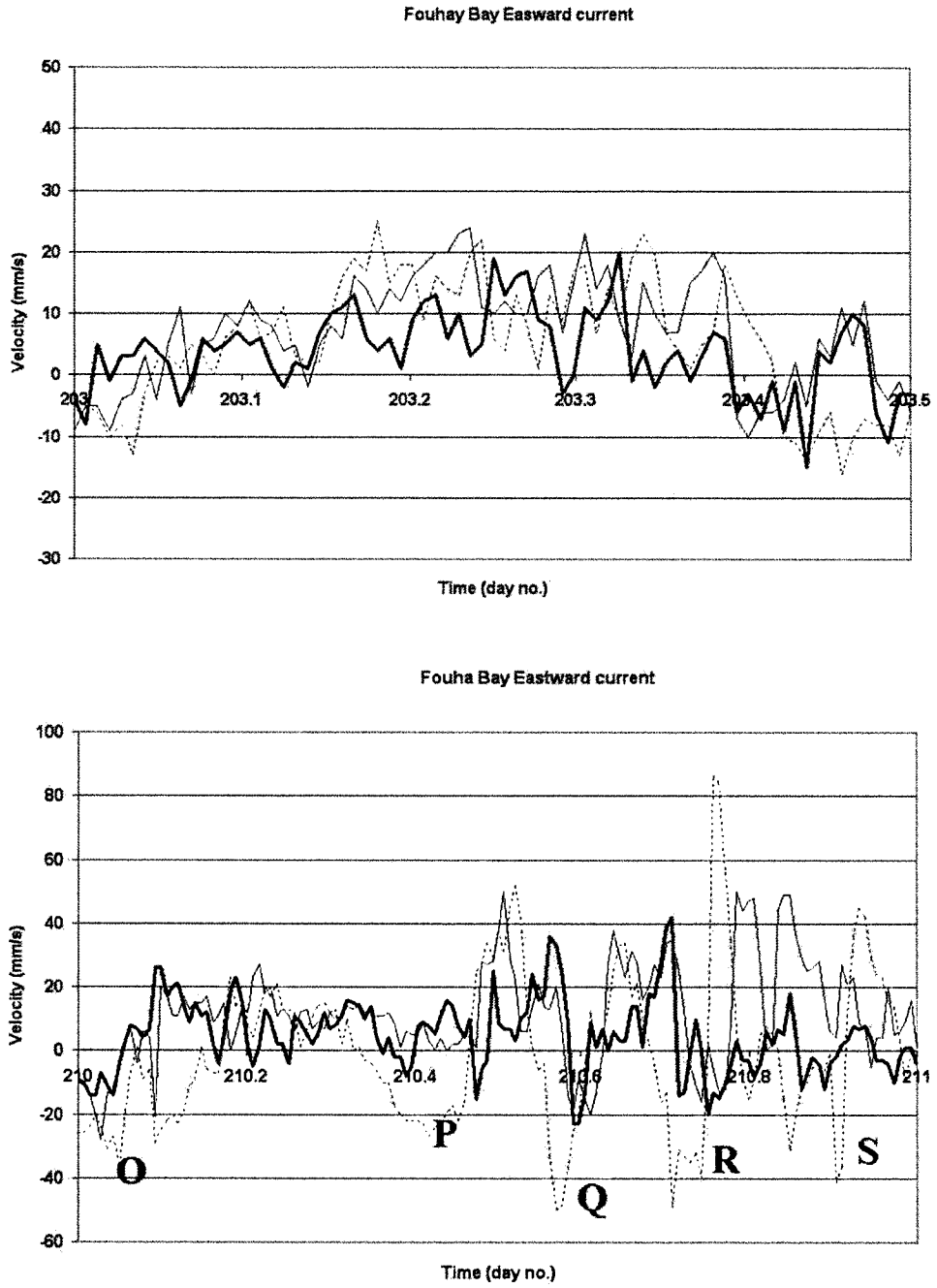

Fig. 4. (a) Time series plot of the along-axis (positive for eastward, i.e. shoreward) current at site C at (thick line) 1 m off the bottom, (thin line) mid-depth and (dotted line) 1 m off the surface during day 203 when calm weather prevailed and river runoff was negligible. (b) Same as (a) for day 210 when calm weather prevailed and the La Sa Fua River was in flood. The symbols O, P, Q, R and S indicate pulses of freshwater outflow (see text).

flushed out in 2 days from Fouha Bay under the typhoon-generated swell.

During the typhoon, SSC values at 3 m depth peaked at 2000 mg l^{-1} (Fig. 5) and this peak occurred at the same time as the minimum salinity, suggesting this sediment pulse was a river-driven event. From August 15 to 19, SSC values at 3 m depth frequently exceeded 1000 mg l^{-1}, with a maximum value of 2000 mg l^{-1}. These high SSC values were due both to mud resuspension from the bottom and runoff (the latter mainly on August 15 and 16).

There was a second period of high SSC during the period 27–28 August 2001, when no significant salinity decrease was observed (Fig. 5). This period also corresponds to high wave activity. This suggests that waves resuspended the bottom. There was also a small flood on the 27th but no SSC reported from the river.

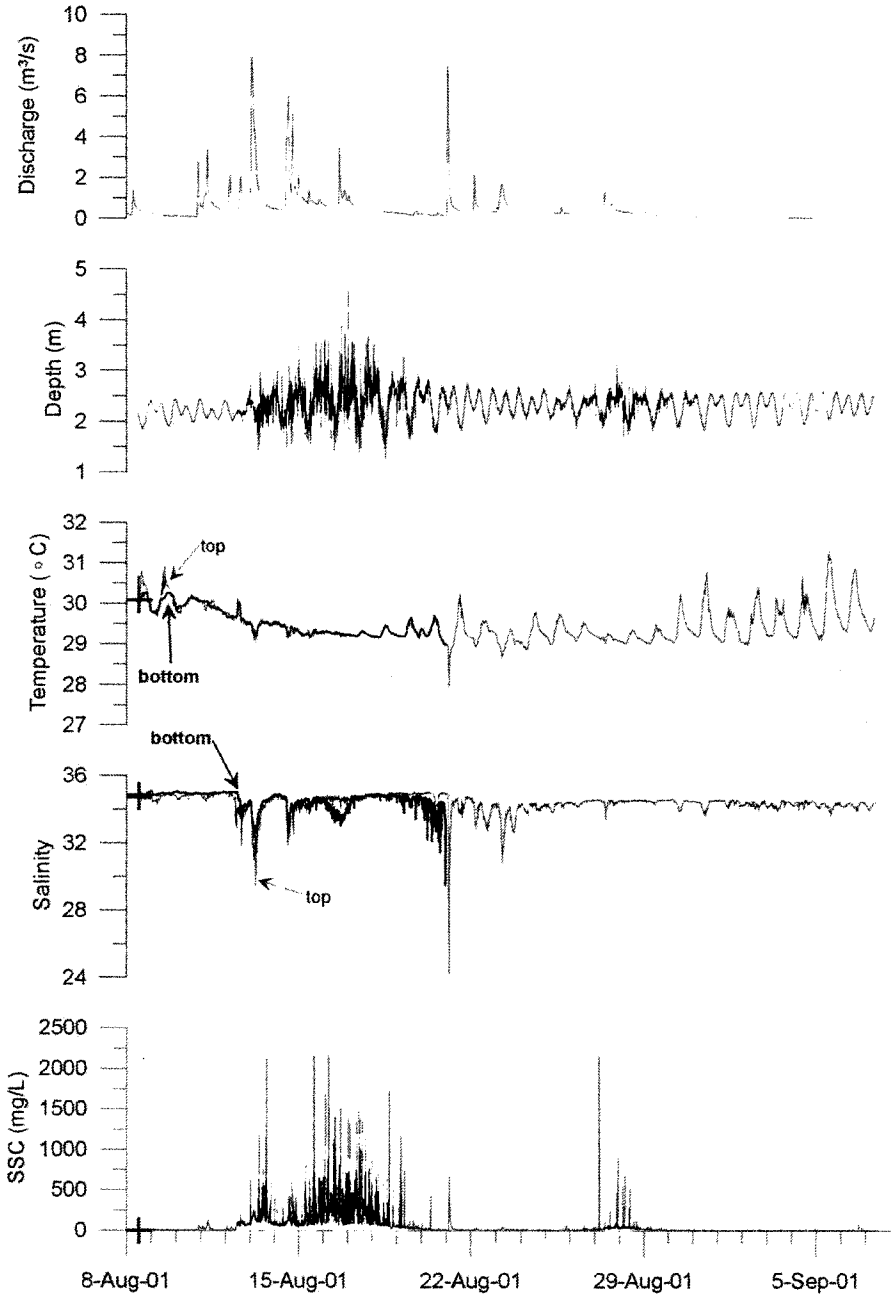

Fig. 5. Time series plot from August 8, 2001 to September 12, 2001, of the discharge of the La Sa Fua River ($m^3 s^{-1}$) and the water depth (m), temperature (°C), salinity and SSC ($mg l^{-1}$) at mooring site A. Water depth and SSC were measured by the YSI CTD attached to a coral outcrop at a nominal depth of 2 m; salinity and temperature were measured both by (top) the YSI CTD at 2 m depth and by (bottom) a DataFlow salinometer attached to the same coral outcrop at 7 m depth which was 1 m off the bottom.

3.4. Flocculation

The suspended matter in Fouha Bay underneath the river plume was observed to be composed of muddy marine snow flocs (Fig. 6), that is, aggregates of mud and transparent exopolymer particles (TEP). These flocs were similar in size and appearance to those described by Ayukai and Wolanski (1997) and Wolanski, Spagnol, and Ayukai (1998). Water containing such flocs was sampled in tubes and allowed to settle in quiet conditions. The floc settling velocity was found to be typically 0.5–1 $mm s^{-1}$, according to the size and shape of the floc and the mud content. Typical floc size was 200–700 μm before the river flood (Fig. 6). In the river flood plume, the floc size was similar and the settling velocity appeared higher, peaking at 3 $mm s^{-1}$. Visual

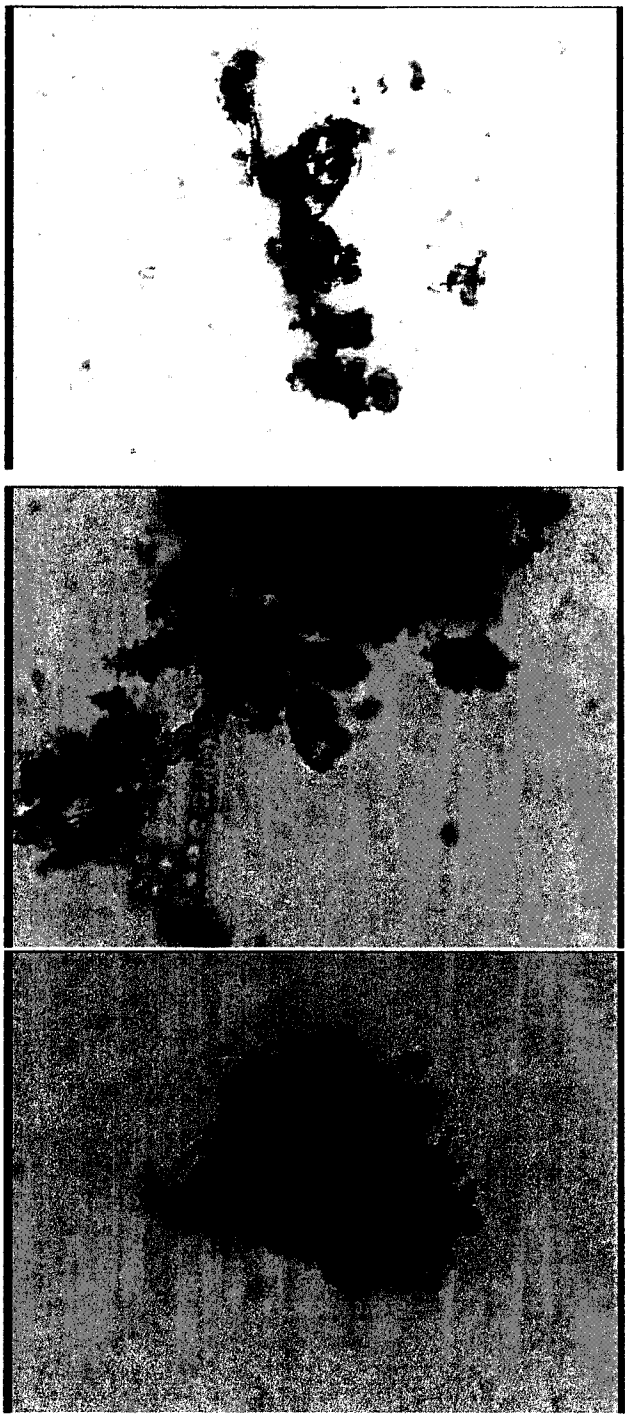

Fig. 6. Microphotographs of typical muddy marine snow in Fouha Bay (top and middle) below the river plume and (bottom) in the river plume. The width of the photograph is 1 mm.

observations using a microscope suggest that this higher settling velocity may be due to the higher mud concentration on the flocs, the mud behaving like a ballast for the marine snow. During river floods the flocs were observed to host numerous zooplankton that were feeding on organic matter, similarly as reported by Ayukai and Wolanski (1997).

The suspended sediment in the river was observed (not shown) to be largely unflocculated. No flocs greater than 50 μm were observed and flocs greater than 30 μm were rare. After this water was mixed in a ratio of 1 : 1 with clear, unfiltered reef seawater, the sediment was observed to flocculate rapidly, with flocs of 300 μm formed in 5 min. Floc size reached 1000 μm in 10 min and did not increase thereafter (not shown).

4. Discussion

River runoff is minimal in fall, winter and spring. In summer, the wet season, rainfall often results from local storms as well as from typhoons. Because of the small catchment, the river floods are short-lived, typically lasting less than 12 h. Several such events were sampled in July–September, 2001. Our study showed that the dynamics of river runoff and suspended sediment dynamics fluctuated at time scales of hours. These short time scales may invalidate the conclusions from previous studies of salinity and suspended sediment in Fouha Bay, since these were carried out at monthly intervals (Randall & Birkeland, 1978).

The field data highlight the key processes controlling the fate of river runoff for small rivers in coastal waters in poorly flushed embayments such as Fouha Bay; these are sketched in Fig. 7. When the river flood occurred in calm weather, i.e. when rainfall results from local, short-lived storms, the river plume was less than 1 m thick with a minimum salinity of about 30. The active stage of the river plume, i.e. the period when brackish water formed a surface jet, occurred in a series of events, each lasting about 1–2 h for a total of about 8 h. This pulsing of the jet outflow, at few hourly periods, may be due to non-linear dynamics of the buoyant jet (Garvine, 1995). After cessation of the river discharge, the plume floated passively at the surface. The maximum along-bay flow velocity in the plume peaked at $0.05\,m\,s^{-1}$ during an outflow event; the mean velocity during an outflow event was about $0.025\,m\,s^{-1}$. Outflow events were accompanied by a return flow of oceanic water, due to turbulent entrainment into the jet. After the flood, the surface freshwater plume was passive and negligible net currents resulted. Flushing was thus very slow; the salinity data revealed that it took 5 days for the plume to be flushed out from Fouha Bay after a river flood.

When the river flood occurred accompanied by a 4-m typhoon-driven swell, vertical mixing was enhanced and the plume reached 7 m in thickness, with minimum salinity of 25, but more commonly 30. The salinity data revealed that in such cases flushing is much more rapid, with time scales of 1–2 days.

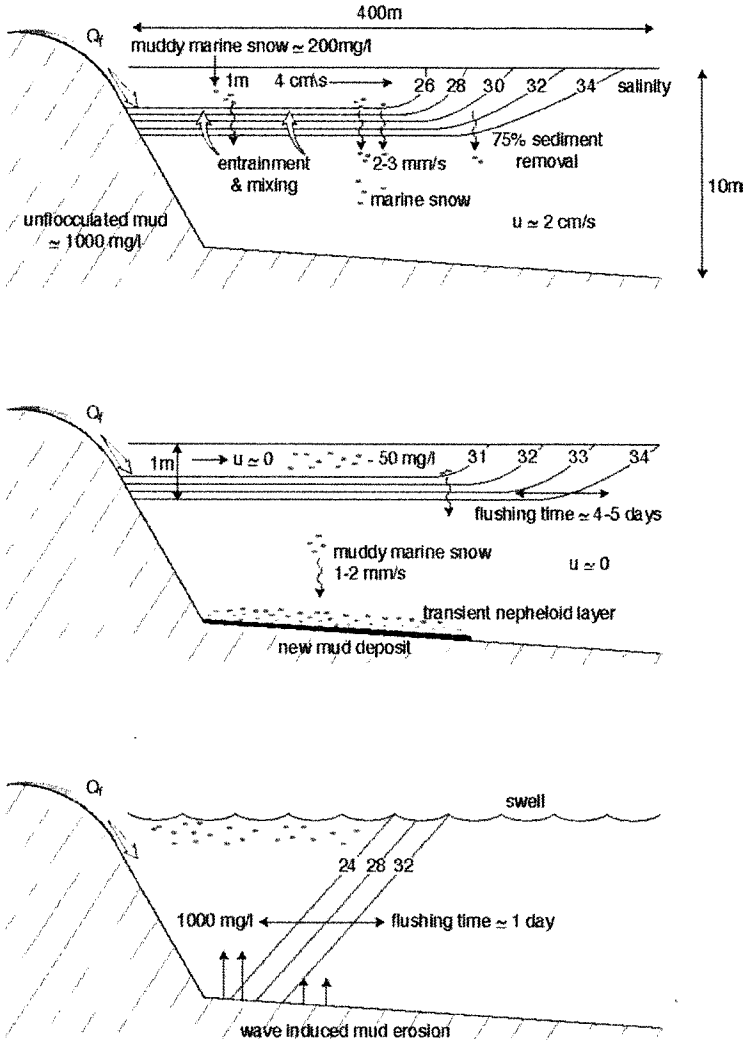

Fig. 7. Sketch of the dynamics of river and fine sediment in the transient river plume in Fouha Bay (top) during the river flood in calm weather, (middle) after the river flood in calm weather, and (bottom) during the river flood under a typhoon-driven swell.

The river inflow was extremely muddy, with SSC in the range of 1000–5000 mg l^{-1}. In reaching Fouha Bay, the fine sediment in suspension coagulated on the existing marine snow and formed muddy marine snow. In calm weather, this material settled out of the plume to mix in the bulk of the coral-containing seawater underneath the plume (Fig. 7). It formed a transient, near-bottom nepheloid layer.

It is possible to estimate the riverine sediment budget in calm weather for the river flood of July 29, 2001. The ADCP data suggest that during the active stage of the plume, freshwater took about 8 h to exit Fouha Bay. With a typical settling velocity of 2 mm s^{-1}, the bulk of the suspended sediment settled out of the river plume in 6 h into the oceanic waters of Fouha Bay which has negligible flushing in calm weather, as shown by the ADCP data. Thus, about 75% of the riverine sediment exited the plume and mixed in the underlying oceanic water of Fouha Bay in calm weather. Because these waters are little-flushed, and indeed are entrained shoreward during a surface outflow event, this sediment is effectively trapped in Fouha Bay.

SSC values were even higher under a typhoon-driven swell, reaching 2500 mg l^{-1} in hours-long events that were frequently repeated during a week. Such high SSC values were probably caused by bottom sediment resuspension by the 4-m typhoon-driven swell. At such high SSC the corals in the bay lived in complete darkness for a week.

On September 16, 2001 a flood occurred in Fouha Bay from which river SSC data were obtained (not shown). River SSC peaked at 3759 mg l^{-1} with a mean value of 1497 mg l^{-1} for the event. Based on two flood events recorded by the USGS, a mean river SSC value of 1000 mg l^{-1} during flood events is a reasonable assumption.

The La Sa Fua River has a mean discharge of $0.125\,m^3\,s^{-1}$, 70% occurring in the wet season. During the wet season, the bulk of the flow is made up of about 10 river floods, each lasting 10 h, with a peak discharge of about $8\,m^3\,s^{-1}$. These floods bring eroded, fine sediment in Fouha Bay at a mean concentration of about $1000\,mg\,l^{-1}$. If the bay has a sediment trapping efficiency of 75%, the annual sedimentation rate in Fouha Bay is about $1.8 \times 10^6\,kg\,year^{-1}$. With a surface area of about $4 \times 10^4\,m^2$, Fouha Bay sedimentation rate is about $2.2\,cm\,year^{-1}$. Some of this sediment may be removed by wave action associated with passing typhoons. The typhoon of August 2001, kept $4 \times 10^5\,kg$ of fine sediment in suspension during 7 days. During those 7 days there were four periods when the SSC values decreased to values less than $50\,mg\,l^{-1}$ while the rest of the time SSC values were larger than $500\,mg\,l^{-1}$. This suggests that the bay was cleared of suspended sediment four times, i.e. a total of $1.6 \times 10^6\,kg$ of mud either settled or was exported out of Fouha Bay during this typhoon. Settling appears unlikely because swell was experienced throughout. Thus, the data suggest that 7 days of typhoon-driven swell may flush out the annual riverine sediment inflow.

Observations by divers suggest that the central part of Fouha Bay is covered by 0.5 m of mud, corresponding to a deposit of $7 \times 10^6\,kg$ of mud. The mean residence time of riverine fine sediment in Fouha Bay is thus 4.3 years. In the absence of any additional riverine sediment inflow, this sediment could be exported after 30 days of typhoon-driven waves, for a similar typhoon strength as the one in August 2001. Such flushing of a bay was observed at a nearby site, Facpi Point, following a relatively dry typhoon in 1992 (Richmond, 1993).

In calm weather, freshwater runoff probably had no major impact on coral because it floated on the ocean surface. Only during typhoons could brackish water impact the corals below 1 m depth. Riverine sediment may, however, strongly impact coral in Fouha Bay. The data show that much of the terrigenous mud was trapped and settled in Fouha Bay. A key reason for that was the formation of muddy marine snow. The unconsolidated clay particles in riverine water have a settling velocity of about $0.001\,mm\,s^{-1}$ (Gibbs, 1985), thus they are readily carried by the turbulent river flow to the coast. There they coagulated within 5 min—as our laboratory experiments showed—into ambient TEP (or marine snow; Alldredge, Passow, & Logan, 1993; Passow & Alldredge, 1994), forming muddy marine snow. This muddy marine snow had a settling velocity of typically $0.05–3\,mm\,s^{-1}$. Such high settling velocities have been observed in other muddy, organic-rich coastal environments (e.g. Eisma, 1986). The origin of TEP may be due to microbes, diatoms and metazoans such as appendicularians, that exude dissolved mucopolysaccharides that may become particulate through the formation of cation bridges (Alldredge, Cole, & Caron, 1986; Hansen, Kiørboe, & Alldredge, 1996; Logan, Passow, Alldredge, Grossart, & Simon, 1995). They also serve as substrate for microbes (Alldredge et al., 1986) and as particulate food for grazing plankton (our observations).

In Fouha Bay, the formation of muddy marine snow may be the key process leading to reef degradation for a number of reasons. Firstly, it leads to rapid settling of the suspended mud out of the river plume, thereby preventing the export of this material out of Fouha Bay. About 75% of the riverine sediment inflow may be trapped in the bay. This sedimentation occurs during the wet season, which is also when juvenile corals of many, but not all, species have just settled on the substrate, and these juveniles are particularly susceptible to sedimentation even if they are spared freshwater impacts if the river plume floats on top of them. Secondly, since Fouha Bay is a fine sediment trap, mud has presumably accumulated in quantity since the adjoining land was cleared. This mud resuspends under typhoon-driven swell. This may occur few times a year. In each such event, high SSCs ($\approx 1000\,mg\,l^{-1}$) essentially shuts off all light at a few meter depth for several days. When the weather calms down after the typhoon leaves, this sediment settles on both adult and juvenile corals. Thirdly, high turbidity may lead, in the nepheloid layer, to oxygen consumption exceeding production (Richmond, 1987); if this lasts several days in calm weather, significant dissolved oxygen may result that will further stress the juvenile corals.

5. Conclusions

It appears thus that terrigenous mud, and not freshwater, may be responsible for the failure of coral to recover in Fouha Bay. The implication is that coral conservation and management may not be possible in fringing reefs facing volcanic islands without simultaneously preventing soil erosion in the surrounding catchment.

The data suggest that Fouha Bay is flushed annually by waves generated from typhoons passing to the south of Guam. If sediment input can be substantially reduced through improved land-use practices, water and substratum quality should improve and provide the conditions for reef regeneration to occur.

Acknowledgements

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May 18, 1978

ON A CULTURE OF MIXED ALGAE PRODUCING CIGUATOXIN IN HAWAII

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University of Hawaii

As is known, Hawaii has had and continues to have sporadic outbreaks of ciguatera, usually mild, and these attacks have continued. In the last decade cases have come from two fishes: Most came from the large carnivore, *Seriola dumerilii* or amberjack (*kahala* in Hawaiian); these cases are so random that one is tempted to suggest that these fish, which are known to migrate, have come to the waters of the main Hawaiian Islands from the leeward Hawaiian chain where many fishes are known to be toxic. However, some cases of ciguatera caused by the pisciverous *Chelinus rhodochrous* (*po'ou* in Hawaiian); this fish may reach the length of 60 cm, but is usually much smaller and it is not migratory. Therefore it must be presumed that the Hawaiian reef ecosystem is producing ciguatoxin, albeit in small amounts.

Therefore, after Dr. Yasumoto announced in February, 1977 the association of the yet unnamed dinoflagellate with ciguatoxin production in the Gambier Islands, and spoke of its benthic habits and association with the alga *Turbinaria* we made an initial exploratory survey of *Turbinaria* on various reefs of the island of Oahu. No dinoflagellates were found and the search was discontinued.

In early January, 1978 I was searching at the Hawaii Institute of Marine Biology for some tanaids, a near-microscopic crustacean living in bottom debris. I looked in an unused water-table where an experiment had been abandoned some months before but the running sea water from the Institute's system had been left on. The source of this water was the shallow water from the reef immediately adjacent to the laboratory. The table is about 0.6 by 1.4 m and the water is 14 cm deep. The bottom of the table was covered with a brown flocculant film which at times would cover small tufts of a red alga a centimeter or more high. Macroscopic life consisted of one xanthid crab, several small tubeworms under small sheets of transite abandoned from the previous experiment, and some amphipods a few millimeters long. Where the currents accumulated the fine debris, the bottom of these deposits were black from anaerobic decomposition.

It should be remembered that Kaneohe Bay has been subject to high levels of plant nutrients from a municipal sewage discharge and has become quite eutrophic. While the sewage outlet was abandoned in mid-December 1977, the nitrate and phosphate levels in the open bay waters have not markedly decreased due to the leaching of the nutrient ions from the organically-rich bottom deposits.

When I examined the bottom crud under the binocular dissecting scope I discovered it to be largely an amorphous grey flocculant material pierced by strands of a blue-green alga - I have later determined that the flocculant material is the "sheath material" produced by the alga. This deposit would

almost engulf the tufts of red alga, leaving only the growing tips bare. Living on - actually "sitting" on - the flocculant material was a biconvex thecate dinoflagellate; examination under ultraviolet microscopy showed it carried chlorophyll a and that it was therefore autotrophic. The behavior of the dinoflagellate was strange: very seldom would it swim into the water column above the deposit, but at times it would slowly move from one place to another and at times it would turn the sulcus down as if it were actually feeding on the deposit. The culture was literally teeming with the flagellate, with at times a hundred or more in the field of a dissecting microscope at 50 diameters magnification.

There were other plants and animals in the wild culture: almost as abundant as the dinoflagellate was a flattened ciliate of about the same size (about 70 µm), also carrying chlorophyll. There were diatoms and a few naked green flagellates. Other animals included a few nematode worms, some harpaticoid copepods but little else.

Upon the discovery of the dinoflagellate-blue-green algal culture I was struck with how parallel this was to Dr. Yasumoto's report of another dinoflagellate (as I then thought) in association with another species of alga. I immediately wrote about it to both Dr. Yasumoto and Dr. F. J. R. Taylor of the University of British Columbia who is the specialist in tropical dinoflatellates to whom Dr. Yasumoto had sent some of his specimens. Dr. Taylor soon replied that he thought from the sketch I had enclosed that the dinoflagellate might be the same as Dr. Yasumoto had found in the Gambiers. I immediately sent him some specimens for confirmation and gave some of the culture to Dr. Hokama for preliminary testing.

Dr. Taylor replied that the dinoflagellate was the same as that found by Dr. Yasumoto, and that it would be described as a new genus, new species. Dr. Hokama applied his ELISA test (enzyme linked immunological sensitivity assay) and found a strong positive for ciguatoxin.

At that point my interest in the culture markedly increased and I hired a technician to help me explore the cultural requirements for ciguatoxin production. I also had the major components identified: as I said, the dinoflagellate will be described as a new genus and species; the blue-green was identified as *Microcoelous lyngbyaceous* - it is the form previously known as *Lyngbya majescula*, a known toxigenic form; the two red algae were identified as *Centroceras clavulatum* and *Ceranium* sp., and a less common fine brown algae as *Giffordia mitchelliae*; I have the common ciliate in the hands of an expert but he has not yet given me the identification.

One of the first things we did was to spot check other algae in the vicinity of the laboratory in Kaneohe Bay. We found the dinoflagellate in many places but not in the abundance found on the water-table.

In our study of the cultures we have had and are having numerous difficulties. For example, while we have been able to separate the blue-green alga and raise it in uni-algal culture, we have not yet been able to grow the isolated dinoflagellate, although the individual cells remain alive for some time. Because of the sessil habits of the dinoflagellate and its spotty distribution, we have been unable to quantify our results except by such subjective methods as "few" or "many." Therefore we are unable to tabulate any firm results.

In general, however, our original wild culture, our sub-cultures in running sea water on tables, and our enriched static cultures, both in flasks and in tanks similar in size to the water-tables, all produce products that give positive tests for ciguatoxin by the radioimmunoassay, in counts per minute per gram of material. Some of these are higher and some are lower, reflecting in part, our crude estimates of dinoflagellate abundance. We have tried enrichment of the sea water with four different media recommended for dinoflagellate culture and all seem to stimulate initially the bloom of the other algal components. It is only when the peak of the bloom of the other algae passes that the dinoflagellates appear to greatly increase in numbers. We have also tried the addition of soil extracts, both in the Erdschreiber medium and with a standard enrichment medium to which soil extract has been added, and found them both to stimulate growth of the dinoflagellates. However, in a series of six test cultures which were harvested in early May, the highest count by the RIA in any of the six experimental cultures was equalled by the control which contained only Kaneohe Bay water with nothing added.

We have not yet been able to obtain a confirmatory test for ciguatoxin by Dr. Rayner's pharmacological test for he needs amounts in the hundreds of grams for extraction, while Dr. Hokama is happy with milligram amounts. However, we have about 100 g of the mixed culture now being extracted under Dr. Scheuer's supervision and we expect that the pharmacological test will be run soon.

If we presume that our dinoflagellate behaves the same as Dr. Yasumoto's dinoflagellate, the cultures present us with an interesting biological problem. Dr. Yasumoto's wild material from the Gambiers and our wild culture is producing ciguatoxin by our tests and if our dinoflagellate like Dr. Yasumoto's produces only maitotoxin in axenic culture, then we have a far more complex situation that is found in the other toxigenic dinoflagellates such as *Gonyaulax*. Four hypotheses suggest themselves:

I. That the dinoflagellate has the capability of producing either maitotoxin or ciguatoxin and the toxin production is switched from one to the other by some regulatory substance given off by another member of the mixed culture.

II. That the dinoflagellate continues to produce maitotoxin but some other component of the mixture, possibly some bacterium, is converting it to ciguatoxin; this would presume that maitotoxin is chemically related to ciguatoxin.

III. That some other member of the mixture is producing a precursor - possibly non-toxic - of ciguatoxin that is modified to ciguatoxin by the dinoflagellate.

IV. That the dinoflagellate has nothing to do with ciguatoxin production but some other member of the mixture is producing the ciguatoxin independently; here the blue-green would be most suspect.

Our plans for the summer include the continuation of our experimental rearing of the mixed culture and the attempts to raise the dinoflagellate in an uni-algal culture. To assist us in the last, we hope to have two dinoflagellate experts join us separately for periods of two to three weeks.

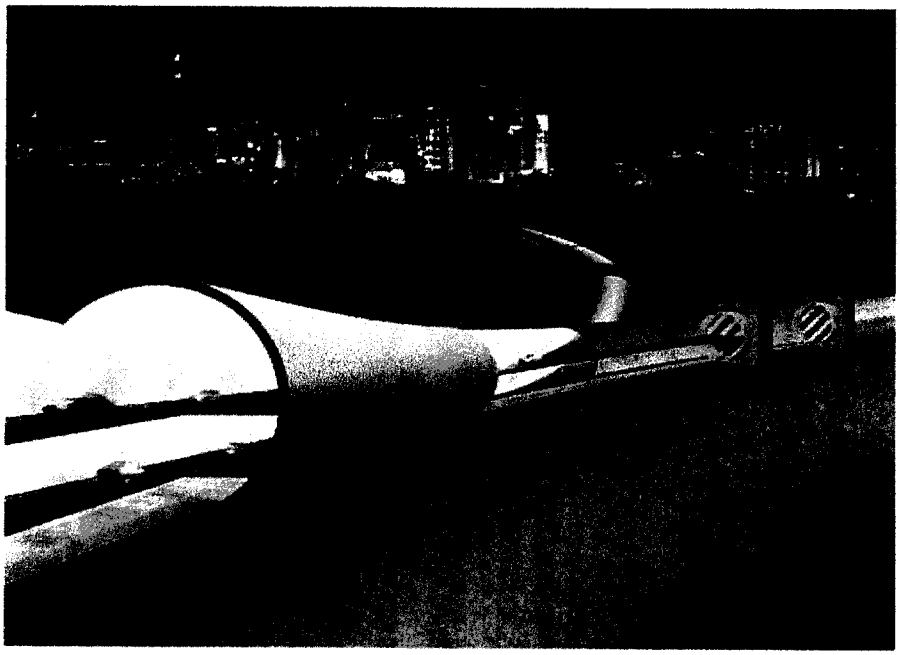
When we have enough favorable data accumulated to warrant a request for research aid, we plan to submit a grant proposal to some agency of the National Institute of Health or the Food and Drug Administration. I now have two preliminary letters of inquiry in the mail. When we submit, we will give two aims: First, to determine the ecological requirements of ciguatoxin production in the laboratory so that the information can be applied to field situations, possibly to prevent or even to reduce epidemics of ciguatera. Second, to develop mass culture techniques so that ciguatoxin can be cheaply and abundantly produced for further studies on the molecular structure of the toxin and for further deliniation of its pharmacological effects. I envision a basic biological staff of one person at the doctoral level experienced in dinoflagellate culture, aided by one or more technicians, and the collateral support of technicians in immunology, chemistry and pharmacology. Our group will again be working as a multidisciplinary team.

ITS International

Success of Kuala Lumpur's dual purpose tunnel

First published in ITS International July August 2012 as Two issues, one solution

Malaysia's capital boasts a unique piece of



infrastructure; a combined stormwater and motorway tunnel, the longest multi-purpose tunnel in the world.

Kuala Lumpur's Stormwater Management and Road Tunnel (Smart) was conceived as a project under the Malaysian Federal Government to alleviate the flooding problem in the city centre. Although a booming city and the nerve centre for Malaysia's economy, KL was built along the flood plains of the Klang River and, since its earliest days has been subjected to flooding.

In 1971, for instance, a serious flood lasted for five days; inundated some 445 hectares of land in the centre of the city, and resulted in extensive damage. Incidences of flooding have become more frequent in recent years.

The Smart project was implemented through a joint venture pact between MMC Corp Berhad and Gamuda Berhad with the Department of Irrigation And Drainage Malaysia and the Malaysian Highway Authority as the executing government agencies.

It was at the beginning of the design stage of a dedicated stormwater tunnel that the dual purpose concept was born – one which would simultaneously address

both the Malaysian capital's flooding and traffic management problems.

The MMC-Gamuda Joint Venture presented the idea of incorporating two major infrastructure components into one mega structure to the Government of Malaysia which gave the project the go-ahead in 2003.

Smart is a dual purpose tunnel, incorporating a double deck motorway within the middle section of a stormwater tunnel. It was completed on 30 June, 2007.

Kuala Lumpur's Stormwater Management and Road Tunnel (Smart)

Cost: US$515 million

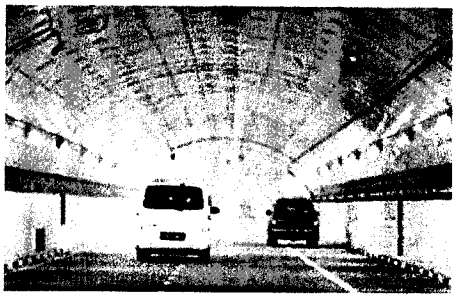
Benefits: (over 30 year concession period):

- US$1.58 billion of possible flood damage prevented
- Up to $1.26 billion savings from traffic congestion

Smart operations

Smart tunnel is designed first and foremost for flood control and this role will always over ride its other role as a congestion relieving motorway. To ensure this protocol is maintained, the decision to close the motorway section for flood operation has been retained by the Government through its agency, the Department of Irrigation and Drainage, Malaysia (DID).

There are three modes of operation of the tunnel. In Mode I (for most of the time) there is no storm or low rainfall, which means there is no discharge of water into the tunnel in this mode.



The road section operates normally and traffic is able to use the tunnel from Kuala Lumpur city centre - Seremban Highway and vice versa.

Mode 2 - minor storm. When there are moderate or minor storms and the river flow at the confluence exceeds 70 cumsec (cubic meter per second), the Stormwater tunnel is activated to "semi-open" status by allowing diversion of water flow from the confluence of Klang and Ampang rivers through the lowest channel of the road tunnel section. The motorway section operates normally and there is no traffic disruption since only the lowest channel is being used at this juncture.

Mode 3 - major storm. When the FDS detects a reading at the river confluence of more than 150 cumsec and predicts a heavy and prolonged downpour, the Stormwater tunnel is activated to "fully open" status. The radial gates at the diversion weir are lowered to divert water flow in full capacity from the confluence of two rivers into the holding pond. At the same time, the entrances to the motorway section are closed to traffic while all vehicles in the tunnel are evacuated and the entire structure checked, a process that takes less than an hour.

Once the FDS indicates that the Mode 3 status is over and the weather is back to normal, flood water is pumped out of the tunnel and the tunnel is cleaned of mud and small debris.

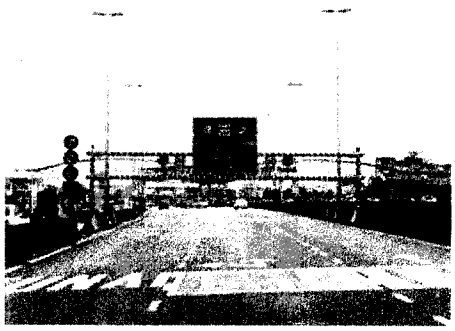
In normal process of cleaning and inspection of the tunnel condition, **Smart tunnel** is reinstated within 48 hours after the water channelisation is made and traffic for the motorway section is allowed back for usage as normal thereafter.

Smart cost benefits

Smart tunnel has proven to be a success in meeting its primary and secondary objectives. Because of this infrastructure, areas such as Masjid Jamek area, Dataran Merdeka, Leboh Ampang and Jalan Melaka have witnessed no flooding incidents since Smart opened in 2007.

In May this year, DID (Department of Irrigation and Drainage) released the findings of a survey carried out on the first five years of operation of Smart.

Mode 3 operation was activated to prevent potentially severe flooding of Kuala Lumpur city centre a total of seven times: two times each in 2007, 2008, and 2012 (up to May) and once in 2011. Mode 2 operation, which does not affect use the road tunnel was activated dozens of time in the period.



In terms of its role in traffic relief, Smart has minimised the journey for cars into KL city centre from the southern gateway from the normal 20 minutes when using the federal road to only eight minutes when using Smart. Around 38,000 vehicles use the double deck motorway each day.

Putting a financial value these benefits, the DID survey concluded that, within the concession period spanning three decades, Smart is expected to prevent US$1.58 billion of possible flood damage and up to $1.26 billion savings from traffic congestion. The savings are likely to be significantly more, since these estimates are only for the duration of the concession – the tunnel has a design life of some 100 years.

A MATTER OF LIFE AND DEATH

Monitoring and safety systems in any road tunnel anywhere are of vital importance and in KL's Smart these systems are even more critical; were anyone to be anywhere inside the road tunnel section when it is activated for stormwater relief, they would face certain death. So the SCADA monitoring and surveillance system has additional features that are unique in normal motorway tunnel operation. From a central control room which is manned 24/7, over 200 CCTV cameras, linked to an advanced automatic incident detection (AID) system keep watch on every section and can intervene when necessary – through the use of variable message signs or activation of first responder vehicles and personnel which are on permanent stand-by.

The control centre also monitors and operates the 38 sets of air quality monitoring equipment that analyses carbon monoxide, nitrogen monoxide, and particulate matter deployed throughout the upper and lower motorway decks. Depending on the equipment returns, four ventilation shafts, each containing eight sets of fans, can be activated. Control for the automated flood control gates is also incorporated within the SCADA system.

While Smart bristles with CCTV, when Mode 3 to flood the motorway decks is activated, barriers prevent any further traffic entering the tunnel. For safety reasons, cross-passage decks inside the motorway section placed at 250m intervals to act as emergency exits, have to be manually checked by personnel, along with ventilation/escape shafts which are placed at 1km intervals. The entire process, to ensure that there is no possibility that anyone could be inside the facility, takes from 45-60 minutes before the flood control gates are activated.

Re-opening the tunnel after an incident typically takes 48 hours. Although booms, barriers and filtration ponds prevent debris from entering the tunnel and causing damage to the fabric of the motorway section and its sensitive equipment, sediment carried with the water coats the entire surface. As a result, the installation needs to be pressure washed and all equipment checked.

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New system to prevent Hazchem and over-height vehicles entering tunnel

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Location based systems

Parking & access control

Sections...

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Goro Sulijoadikusumo
3810 Claudine Street
Honolulu, HI 96816

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Consideration of sub-surface storage for flood risk management
- Improvement to water quality within Ala Wai Canal

Table 3 of the report details a number of different management measures considered in the initial array. This includes sub-surface storage of stormwater for the purposes of managing stream flows. This idea was eliminated from further consideration due to the limited storage capacity and high implementation costs.

Unfortunately, the issue of water quality improvement is not a topic addressed by the FEIS nor does USACE have the authorization to study that issue. It is suggested that you contact the State of Hawaii Department of Health for information related to water quality.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

P.O. Box 10564
Honolulu, Hawaii 96816-0564
November 9, 2015

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, Hawaii 96858

SENT BY CERTIFIED/
RETURN RECEIPT REQUESTED
7015 0640 0006 3395 1598

Dear Sir or Madam:

On behalf of Baruch Bakar, I am writing to you to express opposition to the proposed berm in Pukele Stream as part of the Ala Wai Canal Project. Baruch Bakar, a family limited partnership, is the owner of parcels 1-3-4-019-010, 1-3-4-019-009, and 1-3-4-019-008. These parcels would be damaged by and forced to be sold for the construction of said berm.

We recognize that the USACE has spent years and a great deal of resources to compile the Draft Feasibility Report and Environmental Impact Statement (EIS). However, we take issue with the fact that while potential adverse impacts related to "biological resources, cultural resources, recreation, and visual resources" were considered, no consideration was made for potential adverse impacts to the health and lives of the greater Carlos Long/Waiomao residents who would be affected by the proposed berm.

The berm would require the loss of three residential properties, depriving the neighborhood of a duplex residence, a single-family residence, and a prospective fourth residence. No amount of compensation will enable our partnership to purchase replacement properties comparable in natural beauty and proximity to town. Moreover, any connection the berm may afford to La'I Road across the stream would provide another entry into Ipulei Place and is strongly opposed by the greater Carlos Long neighborhood (see included petition). Our Neighborhood Watch works hard to keep intruders out of the neighborhood and sees the berm as a threat to our efforts.

The proposed Pukele Stream berm will likely create a number of other problems that do not currently exist:

1) The berm fails to address one of the specific flood-related problems defined by your flood-risk management goal: "Stream channel capacities are diminished due to debris and sediment" -- see ES-5 Objectives & Constraints. Events from the past illustrate the very problem that the berm would create. On March 24, 1994, "*flooding in Manoa (occurred) when a tree lodged itself at the* Woodlawn Drive *bridge*." "And *when debris washed down and choked two bridges*, at Lowry Avenue and Woodlawn Drive, *Manoa Stream had no place to go but onto the streets, into homes and across the campus of*

the University of Hawai'i" during the October 30, 2004 flood. (See http://the.honoluluadvertiser.com/article/2004/Nov/02/ln/ln27p.html -- emphasis added). The USACE representatives at the Manoa meeting confirmed that the USACE will not be responsible for the clearance of debris and maintenance of the berm once it is built. Whereas Pukele Stream has not ever flooded its banks in the over 45 years that we have owned the subject parcels, we believe that a berm will cause debris to collect and obstruct water flow, causing flooding to adjacent homes and the neighborhood, just as debris clogged the bridges in Manoa and caused the flooding and massive damage in Manoa and at the University of Hawai'i.

2) With debris obstruction, the collection of stagnant water in the detention basin will provide a prime breeding ground for mosquitoes and may promote the spread of dengue fever. The Ala Wai Canal project seeks to save Waikiki from massive flooding, but dengue fever will cause many visitors to take pause before booking their trips.

3) Also of concern is the over-saturation of nearby land while water sits in the detention basin. Could this compromise the foundation of homes built along Pukele Stream?

4) A detention basin filled with water can pose a drowning hazard as well. Any fencing to prevent accidental falls or drownings will likely prevent or make difficult access for maintenance purposes and the removal of any debris/obstructions. There are many young children in the neighborhood and this is a real concern for residents on Ipulei Place. Fencing for safety measures will have a negative visual impact that will be difficult to mitigate.

As Mr. Derek Chow stated at the public hearing on September 30, 2015, the Ala Wai Canal Project has spanned the course of several years. Indeed, Section ES-7 states that Alternatives 2A and 3A, which include the construction of berms and detention basins in the upper watershed, were chosen based on a process that "incorporated agency and public input obtained through scoping efforts and other stakeholder engagement activities." Baruch Bakar is a "stakeholder" that stands to lose much in this Project as proposed, yet we were not notified of our involvement until one month prior to the above-mentioned hearing. The placards that presented the Project's Impact and Mitigation at the public hearing failed to make any mention of the loss of private land required for the proposed berms and detention basins in Manoa, Palolo, and Waiomao. While we have been assured by representatives of the USACE and the DLNR that this Project is in its very early, developmental stages, we understandably feel that there has been much behind-the-scenes maneuvering and our input is being solicited very late in the process.

We, therefore, now ask why the obvious and possibly most cost-effective options that were omitted from the feasibility study were not considered first. Section ES-5 states: "Other opportunities that were identified, but were determined to be outside the scope of the study include reducing runoff and improving the storm drainage system, routine dredging of the Canal, and addressing ownership boundaries and maintenance responsibilities." Instead of proposing the disruption of the natural flow of upper

watershed streams, depriving private citizens the ownership and use of their property, and creating hazards to neighborhoods, clearly the USACE and the DLNR should consider the other obvious, viable options available. While not engineers, a number of residents that stand to be affected by the Pukele Stream berm offer the following suggestions:

1) Devise a method of slowing water flow in existing Palolo Stream channels. In this day of advanced technology, surely the USACE can create a series of low dams to function as "speed bumps" instead of displacing households and creating problems in the upper watershed areas. This would also meet the objective of slowing the water flow as far downstream as possible, allowing as much rain and water flow from the contributing streams to be absorbed upstream.

2) The end of Ahe street where Pukele and Waiomao streams feed into Palolo Stream should be considered as a point of intervention in the water flow.

3) This Project is meant to prepare for a 100-year flood with a 1% annual chance of occurring. A large area of public land, such as Palolo Valley District Park, could provide a detention basin that would be utilized only in the event of such a flood. That land could continue to be used for its original purpose until the 100-year flood occurs, instead of using private land to create potential problems that residents would have to live with 100% of the time, every year.

In short, the residents of Ipulei Place and the greater Carlos Long/Waiomao neighborhood oppose the construction of the Pukele Stream berm and detention basin. The two enclosed petitions were circulated by different individuals at different times, so some residents signed both petitions. However, each petition contains some signatures of residents not contained in the other. Together, the petitions reflect the unanimous opposition of Ipulei Place residents to the proposed berm and detention basin. The petitions with original signatures are being sent to the USACE with copies to the DLNR.

I appreciate the opportunity to voice community concerns and look forward to receiving your response.

Yours truly,

Wilma Youtz
President
Baruch Bakar Management Corp,
General Partner
Baruch Bakar

Enclosures

Petition to the USACE and the DLNR

November 7, 2015

Nextdoor Carlos Long/Waiomao

Save Pukele Stream (SPS)

c/o (808) 368-5240

We, the undersigned, petition the USACE and the DLNR to revise the Ala Wai Project to delete the proposed berm in Pukele Stream which would require the loss of housing and private use of land on Ipulei Place or anywhere in the Carlos Long neighborhod and to consider alternative measures for flood risk management.

Name	Address	Signature
Eric Yoshimoto	2662 Ipulei PL.	
Mark Lindbeg	2649 Ipulei Pl	
Wataru Kumagai	2649A Ipulei Place	
Eva Morales	2649A Ipulei PL	
Gordean Hanatani	2643 Ipulei PL	
Joseph Cantos	2640 Ipulei PL	
Mark Cantos	2640 Ipulei PL	
Branson Atkins	2636 Ipulei Pl.	
Donna Au	2632 Ipulei Pl.	
Erika Tanuvasa	2635 Ipulei Pl.	
Jordan Tanuvasa	2635 Ipulei PL.	
Alicia Bawbridge	2640 Ipulei PL.	
Ashlynn Duncan	2646 Ipulei Pl.	
Number of signatures on page		13

We, the undersigned, petition the USACE and the DLNR to revise the Ala Wai Project to delete the proposed berm in Pukele Stream which would require the loss of housing and private use of land on Ipulei Place or anywhere in the Carlos Long neighborhod and to consider alternative measures for flood risk management.

Name	Address	Signature
Jeanette Clark	2646 Ipulei Pl	
TIANYA MALAMA	2650 Ipulei Pl	
CHOKO YAMAGUCHI	2660 IPULEI PL	
ALBERT MULFORD	2668 IPULEI PL	
Danika Hazard	2664 Ipulei pl	
RICHARD SEARS	2695 Ipulei Pl.	
Fernando Murguia	2690 Ipulei pl	
Martin Martensen	2682 Ipulei pl	
Millard Wong	2680 Ipulei Pl.	
Tiani Joaquin-Foster	2678 Ipulei PL	
Jordan Wong	2677 Ipulei Pl.	
Jennifer Wong	2677 Ipulei Place.	
Todd Toney	2696 Ipulei Place	
[illegible]	2685 Ipulei Pl.	
Rachelle Wa	94-1241 Waipahu St	
Sean L. Nagao	2529 Gardenia St.	
Wendy Yamaguchi	2539 Gardenia St.	
MARVIN YAMAGUCHI	2539 GARDENIA ST	
DARRIN AU	2632 IPULEI PL	
	Number of signatures on page	19

We, the undersigned, petition the USACE and the DLNR to revise the Ala Wai Project to delete the proposed berm in Pukele Stream which would require the loss of housing and private use of land on Ipulei Place or anywhere in the Carlos Long neighborhod and to consider alternative measures for flood risk management.

Name	Address	Signature
Madge Nicolas	3184 Holly Pl. Hon. HI. 96816	[signature]
Denelle Chang	2635 Gardenia St Hon 96816	[signature]
Hom Colner	3170 Holly 96816	[signature]
Wilma Youtz	2671 Ipulei Place Honolulu, HI 96816	[signature]

Number of signatures on page 4

We, the undersigned, petition the USACE and the DLNR to revise the Ala Wai Project to delete the proposed berm in Pukele Stream which would require the loss of housing and private use of land on Ipulei Place or anywhere in the Carlos Long neighborhod and to consider alternative measures for flood risk management.

Name	Address	Signature
David Youtz	2671 Ipulei Place	
	Number of signatures on page	7

We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ Purchasing ~~6~~ 3 lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood

Date	Printed Name	Signature	Address	Email
9/27/15	R Mori		2676 Ipulei Pl	
9/27/15	Eric Yoshimoto			
9/27/15	Danika Hazard		2678 Ipulei Pl	danika.hazard@gmail.com
9/27/15	Briana Rowe	Briana Rowe	" "	rowe7@hawaii.edu
9/27/15	Reina yamaguchi		26660 Ipulei Pl	
9/27/15	AKIO YAMAGUCHI		26660 Ipulei Pl	
9/27/15	CHOKO YAMAGUCHI		" "	
9/27/15	Stephan Balogh		2676 Ipulei Pl	
9/27/15	ALBERT MULFORD		2631 Ipulei Pl	
9/27/15	Micah McCaughin		2649 Ipulei Pl	

We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ Purchasing 3 ~~6~~ lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood

Date	Printed Name	Signature	~~Phone Number~~ Address	Email
9/27/15	Todd Toney		2696 Ipulei Place	totoney9878gmail.com
"	Joey Blankman		2696 Ipulei Pl.	JMBlankman@gmail.com
"	David Kashege		2696 Ipulei Pl	dkashege@gmail.com
"	Mark Jimenez		2696 Ipulei Pl	mjimenez601@gmail.com
"	Jonathan Jimenez		2696 Ipulei Pl	
"	Christina Yan		2696 Ipulei Pl	~~efgeh~~
"	Ashlynn Duncan		2696 Ipulei Pl	
"	Mason Rodriguez		2696 Ipulei Pl	
"	Celeste Olivera		=	
"	Jessica Thawley		=	

We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ Purchasing 3 6 lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood

Date	Printed Name	Signature	Address ~~Phone Number~~	~~Email~~
9/24/15	JUNO GALANG		2640 IPU LEI PL. Hon. HI 96816	junogalangstudio@mac.com
"	Johnny Matarazzi		2595 IPU LEI Way Hon HI 96816	~~grantcarter~~
"	Cameron Hoffer		2544 Ipulei Way Honolulu 96816	cameron.hoffer@gmail.com
"	Napuakoli Nicholas		2544 Ipulei Way Hon HI 96816	
"	Kawanola Tamanaha		2544 A-Ipulei Way Hon., HI 96816	
"	Chelsea Gonsalves		2544 A-Ipulei Way Honolulu, HI 96816	
"	Brea Caley		2560-A Ipulei Way Honolulu, HI 96816	
"	Martin Mortensen		2682 Ipulei Pl Honolulu, HI 96816	
"	Jennifer Mortensen		2682 Ipulei Pl Honolulu, HI 96816	
"				

We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ purchasing ~~6~~ 2 lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood

Date	Printed Name	Signature	Address	Email
9/27/2015	PAUL NELSON	[signature]		paulkalikokou@gmail.com
"	Gordon Hanohano	[signature]		kehauhanohano@yahoo.com
"	Dan Kirhan	[signature]	2569 Ipulei Wy	
"	Sean Zosimo	[signature]		
"	Liz King Selz	[signature]	2560 Ipulei Way	
"	Winona Holmes	[signature]	2541 Ipulei Wy	nonaholmes@hotmail.com
"	M. Evan Tector	[signature]	2547 Ipulei Wy	ev@keucom.com
"	Ginger Long	[signature]	268 Ipulei Pl	
"	Tiani Joaquin-Foster	[signature]	"	
"				

We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ Purchasing ~~6~~ 3 lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood

Date	Printed Name	Signature	~~Phone Number~~ Address	Email
9/27/15	HEEJOON I. SEARS		2695 Ipulei Pl	rsears@hawaii.edu
"	OLIVIA WOOD		2690 IPULEI	
"	WATARU KUMAGAI		2649 IPULEI PLACE	watarukumagai@doh.hawaii.gov
"	Eva Morales		2649 Ipulei Place	eva.p.morales@gmail.com
"	Deborah Garzona		2649 Ipulei place	dg36@hawaii.edu
"	Mason Rodriguez		2646 Ipuki Pl	MRodriguez12@
"	JESSICA THRAWLEY		2646 IPULEI PL	jthrawley@hawaii.edu
"	CHRISTOPHER COOK		2611b IPULEI PL	
"	LIV WHEELER		2646 IPULEI PL	
"	Jennie Kobata		2648 Ipulei Pl	jckobata1@gmail.com

We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ purchase 3 lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood

Date	Printed Name	Signature	Phone Number	Email
5/30/15	JEAN Scanlan		277-7577	2625 Ipulei Pl. 96816

Subject: 1 new message from your neighbors today
From: "Nextdoor Carlos Long / Waiomao" <nextdoor@nextdoor.com>
Date: 11/8/2015 2:06 PM
To: wilmayoutz@hawaii.rr.com

Nextdoor Carlos Long / Waiomao
Daily Digest

Help Carlos Long / Waiomao get to 200 members!
Invite your neighbors »

New Replies

Re: Sign Petition to Save Pukele Stream

1 new reply:

Sharon Young-Nakaue, Carlos Long / Waiomao
I vote No! to berm in the Pukele Stream bed because of history in the above article, If built it needs to be maintained. No more Flooding... Read more

Upcoming Events

- Neighborhood board meeting · Nov 11
- Noelani School's 26th annual Craft & Children's Fair · Nov 14
- 2015 Holiday Plant & Craft Sale · Nov 21
- Mayor's Annual Craft & Country Fair 2015 · Nov 21

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Wilma Youtz
2671 Ipulei Place
Honolulu, Hawaii 96816

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Alternative Plan Selection
- Concerns of affected landowners regarding real estate acquisition
- Operations, maintenance and public safety of the project features
- Connecting La'I Road to Ipulei Place via the Pukele Debris and Detention Structure
- Concerns regarding sub-surface saturation of soils due to impoundment of water
- Mosquito control

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed. USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints. Criteria considered is provided in Table 2 which includes the availability of land, the degree to which people or existing uses would be displaced and the consistency with applicable laws and regulations.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS

includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

Implementation of the recommended plan will require the acquisition of private property. The exact timing of land acquisition is unknown at this time. The Ala Wai Canal Flood Risk Management Study is only in the feasibility stage, and land acquisitions are contingent upon Congress authorizing and funding the project. Designs associated with the FEIS are developed to a 35% level adequately assess effectiveness, estimate costs, and consider environmental impacts. If approved, the elements of the FEIS will be carried forward to the design phase of the study where site specific surveys and investigations will be conducted for each element of the recommended plan to further refine the level of detail of the proposed feature, including any necessary amendments for public safety. The specific location and scale of project features may change as additional information is acquired from the site during the design phase. A property by property assessment will be conducted in coordination with the non-Federal sponsor after project authorization, if the project is authorized by Congress.

The process of acquiring property for a project is highly regulated. The Fifth Amendment of the Constitution states that private property shall not be taken for public use without just compensation. To address what constitutes just compensation, Congress passed the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 ("Uniform Act"). The non-federal sponsors will be required to follow the Uniform Act in acquiring any lands. USACE will work with the non-Federal sponsors to ensure the correct process and procedures are adhered to throughout the process.

Generally speaking the value of land acquired is the fair market value of the property. The fair market value includes many aspects of the property in question. Earning potential is one of those aspects to be addressed in developing a fair market value. Regardless of the value determined, Public Law 91-646 outlines the requirements that must be followed to ensure a homeowner/landowner is compensated justly.

Part of the process will be an appraisal, which determines the fair market value of the property. Fair market value is an estimate of the market value of a property based upon what a knowledgeable, willing, and unpressured buyer would pay. The appraisal will attempt to take all objective property features into account when determining fair market value. The fair market value is determined without consideration for the effect the project has had on the value of the land. For more information on the process for acquisitions please go to: http://www.fhwa.dot.gov/realestate

Attached is the 35% design for the Pukele Debris and Detention Structure. The top of the structure is intended to serve as an overflow spillway, not a structure utilized for public access. Section C-C shows that the top of the structure is 441' in elevation whereas the spillway elevation is located at 437' with vertical side slopes on the furthest lateral extent of the spillway. The assumed four foot elevation difference would not be conducive to either vehicle or pedestrian traffic across the structure. If

constructed, ownership, operations and maintenance of the structure would be the responsibility of the non-Federal sponsor.

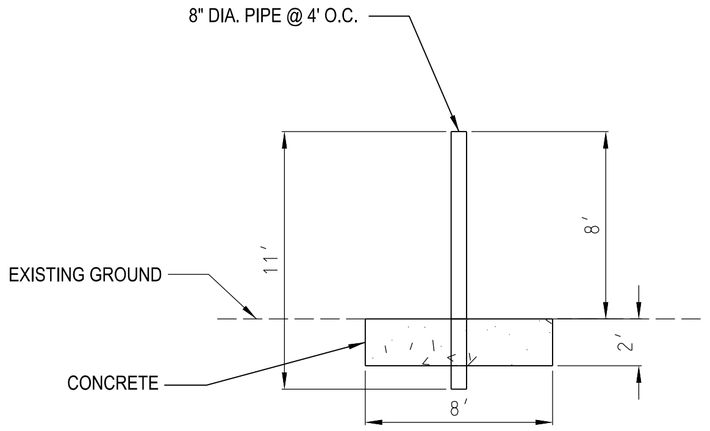
Table 9, page 3-22 of the draft FEIS (page 3-23 of the final) details cursory operations and maintenance requirements based on project feature. These obligations are identified during the feasibility phase for the purpose of developing initial cost estimates. If approved, a detailed operations and maintenance plan will be developed during the design phase of the study. Debris and detention structures are intended to pass normal stream flows without impounding water. The structure are designed to function only during storm events, therefore, no impoundment of water is anticipated outside of such storm events.

The non-Federal sponsors must enter into a Project Partnership Agreement with USACE to construct the Project. This agreement sets the required cost sharing of the Project between the non-Federal sponsors and the Federal government and requires that the non-Federal sponsors be solely responsible for the operation and maintenance of the Project. The sponsors are responsible for financing their local share and operation and maintenance costs.

Unfortunately, the issue of mosquito control is not a topic addressed by the FEIS nor does USACE have the authorization to study that issue. Mosquitoes live in riparian environments and it is not anticipated that the availability of habitat will change as result of the recommended plan. For concerns regarding mosquitoes as disease vectors, it is suggested that you contact the State of Hawaii Department of Health.

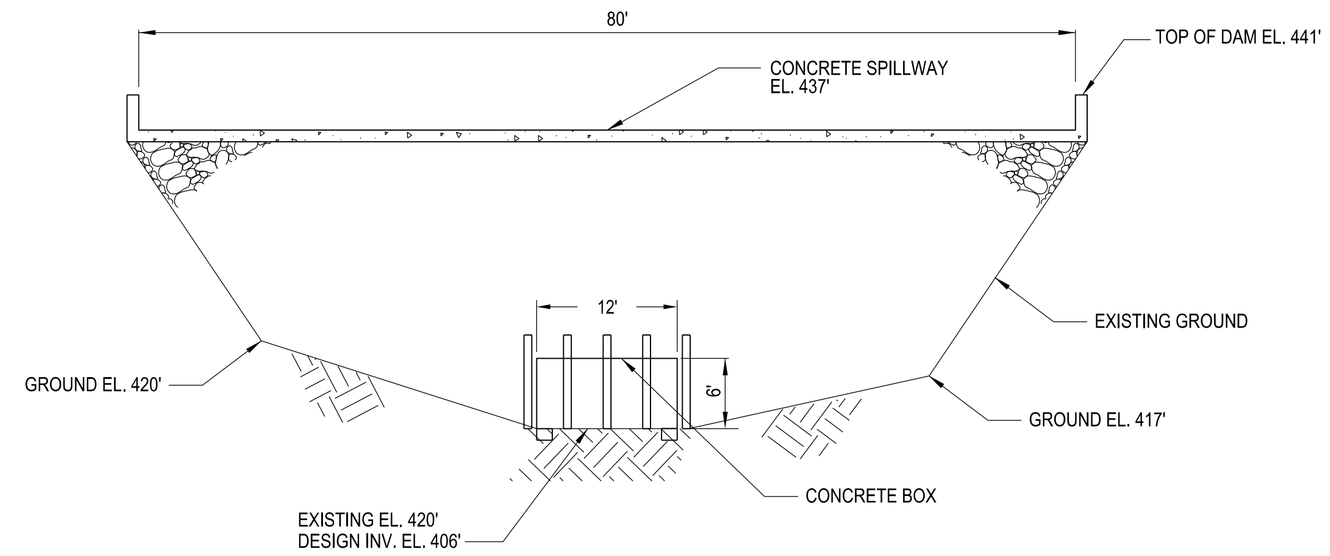
Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx



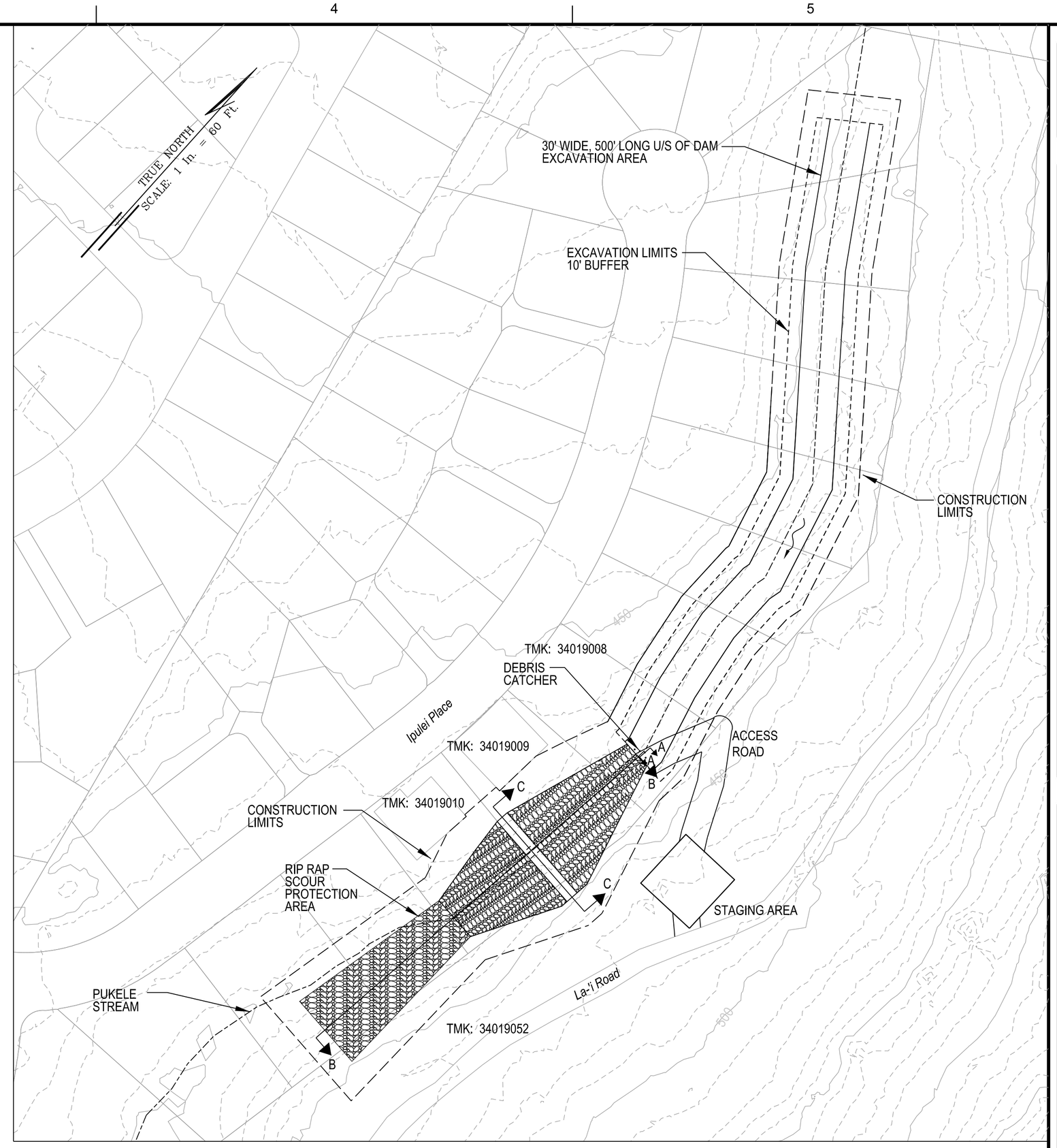
PUKELE DEBRIS AND DETENTION BASIN SECTION A-A

SCALE: 1"=5'



PUKELE DEBRIS AND DETENTION BASIN SECTION C-C

SCALE: 1"=5'



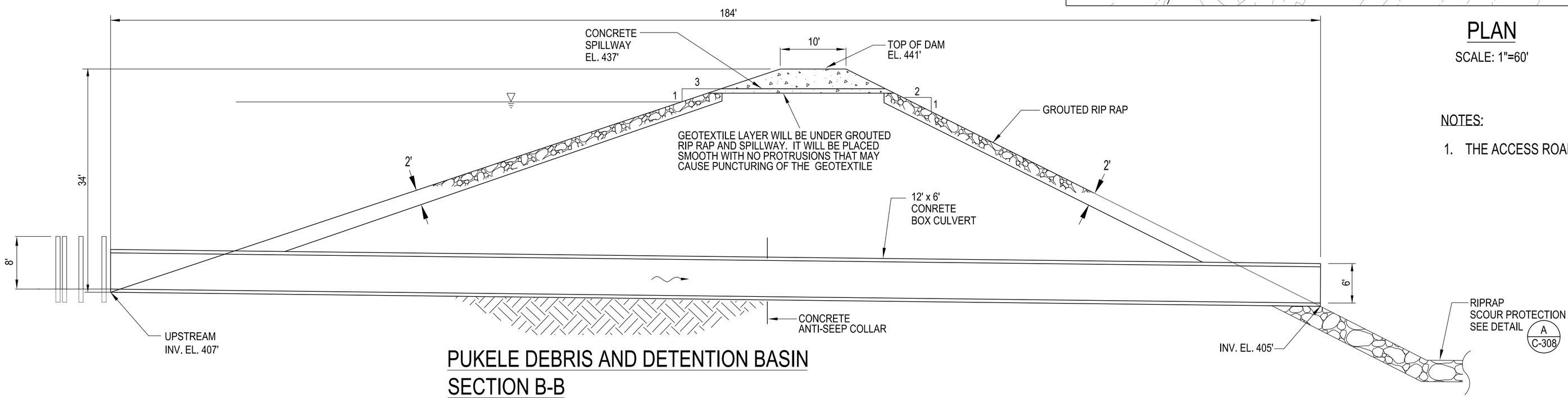
PLAN

SCALE: 1"=60'

SOLID LINE = 50' CONTOURS
DOTTED LINE = 10' CONTOURS

NOTES:

1. THE ACCESS ROAD WILL ALSO BE USED FOR MAINTENANCE.



PUKELE DEBRIS AND DETENTION BASIN SECTION B-B

SCALE: 1"=5'

5 2.5' 0 5 10

SCALE: 1" = 5'

Note: All elevations are feet MSL

US Army Corps of Engineers®
Honolulu District

35% DESIGN

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: JHH	DRAWN BY:	CHECKED BY:	SUBMITTED BY:	PLOT SCALE:	PLOT DATE:
SIZE: ANSI D	FILE NAME: Ala_Wai_C-313xxx				

US ARMY CORPS OF ENGINEERS
HONOLULU DISTRICT
HONOLULU, HAWAII

REVISION:
DATE:
SOLICIT / CONTRACT NO.:
LOCATION CODE
DRAWING NUMBER:

ALA WAI CANAL PROJECT

PUKELE DEBRIS AND DETENTION BASIN
PLAN AND SECTIONS

SHEET IDENTIFICATION
C-313
SHEET 18 OF 31

FILE: pw:\\COE-POHPWP08FTS.poh.ds.usace.army.mil:coe-pohpwp08fts.poh.ds.usace.army.mil\Documents\11 Other Locations\2 - O'ahu\Civil Works\Ala Wai Canal Project\01-Drawings\Civil\Final\NEW TSP\Ala_Wai_C-313xxx
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DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
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FORESTRY AND WILDLIFE
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Mr. Baruch Bakar
Ms. Wilma Youtz
2671 Ipulei Way
Honolulu, Hawaii 96816

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the specific concerns raised in your letter dated November 9, 2015 to Honolulu District, USACE:

1. *On behalf of Baruch Bakar, I am writing to you to express opposition to the proposed berm in Pukele Stream as part of the Ala Wai Canal Project. Baruch Bakar, a family limited partnership, is the owner of parcels 1-3-4-019-010, 1-3-4-0·19-009, and 1-3-4-019-008. These parcels would be damaged by and forced to be sold for the construction of said berm.*

RESPONSE: The impacts of land use and private property acquisition are listed as an unresolved issue in the HEPA FFEIS. During the Design Phase of the project modeling will be updated, engineering data will be refined, community engagements will occur, all leading to a final real estate and land use plan. The real estate plan and proposed action developed in the Feasibility Study was based on information available at the time, with an awareness that information and the plan would require refinement after Congressional authorization to proceed. The Corps of Engineers advised us at the time of the study not to acquire any property until the design phase. They advised that there is always the possibility that updated data, modeling, or community engagements may require either the elimination or relocation of proposed features from the feasibility study. If modifications are made to the system they will be evaluated for environmental and community impacts such as real estate. Supplemental documentation will be developed commensurate with the impacts identified during Design.

2. *We recognize that the USACE has spent years and a great deal of resources to compile the Draft Feasibility Report and Environmental Impact Statement (EIS). However, we take issue with the fact that while potential adverse impacts related to "biological resources, cultural resources, recreation, and visual resources" were considered, no consideration was made for potential adverse impacts to the health and lives of the greater Carlos Long/Waiomao residents who would be affected by the proposed berm.*

RESPONSE: Page 1-2 of the Federal NEPA Document, as well as this HEPA FFEIS proposed action discusses the USACE Environmental Operating Principles (EOP) which requires “mutually supporting economic and environmental sustainable solutions.” This occurred in the feasibility despite a 2012 shift in focus to strictly a flood control study. These same EOP will be applied during the design phase as data is updated and designs are refined.

During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If detention basins in the valleys are necessary there will be explanation and data available to explain why. Land use and real estate impacts to private landowners is still an unresolved issue in the HEPA FFEIS; a final real estate and land use plan will be developed in the design phase after system features are finalized using the aforementioned process of data update with community engagement.

3. *The berm would require the loss of three residential properties, depriving the neighborhood of a duplex residence, a single-family residence, and a prospective fourth residence. No amount of compensation will enable our partnership to purchase replacement properties comparable in natural beauty and proximity to town.*

RESPONSE: We understand your concern that there is not enough compensation for the Baruch Bakar Partnership to relocate to comparable areas on Oahu. In addition to the response above regarding private property impacts, the acquisition process is also important to understand. Whomever is the non-Federal sponsor, whether it is us or the City and County, they are responsible to acquire property in accordance with State and Federal laws. It would be pre-decisional to start assessing values, compensation, or other potential acquisition alternatives without a final real estate plan. We were advised by the Corps not to acquire any property until the Design phase is further along.

4. *Moreover, any connection the berm may afford to La'i Road across the stream would provide another entry into Ipulei Place and is strongly opposed by the greater Carlos Long neighborhood (see included petition). Our Neighborhood Watch works hard to keep intruders out of the neighborhood and sees the berm as a threat to our efforts.*

RESPONSE: Although crime statistical analysis as a direct factor is not within the authorization of the feasibility study or this HEPA FFEIS proposed action, the undertaking of connecting Lai Road to Ipulei Place is a reasonable request for clarification. Under the proposed action which will be further refined in the Design Phase, there is no plan to connect Lai Road and Ipulei Place. The feature that is proposed would be secured to keep pedestrian and or vehicular traffic from traversing the feature. In addition to the approximate 4' elevation difference between the ground and the spillway on the feature, there would be other measures for the safety of the community and the security of the feature. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

5. *The proposed Pukele Stream berm will likely create a number of other problems that do not currently exist:*

1) *The berm fails to address one of the specific flood-related problems defined by your flood-risk management goal: "Stream channel capacities are diminished due to debris and sediment" -- see ES-5 Objectives & Constraints. Events from the past illustrate the very problem that the berm would create. On March 24, 1994, "flooding in Manoa (occurred) when a tree lodged itself at the Woodlawn Drive bridge." "And when debris washed down and choked two bridges, at Lowry Avenue and Woodlawn Drive, Manoa Stream had no place to go but onto the streets, into homes*

and across the campus of the University of Hawai'i' during the October 30, 2004 flood. (See http://the.honoluluadvertiser.com/article/2004/Nov/02/ln/ln27p.html -- emphasis added).

RESPONSE: We understand your concern to be creating new problems with the current implementation plan. To address this, it is important to understand that during the design phase of the project, modeling, data and community concerns will be updated to inform the design features. Included in the design phase will be community engagement and several levels of review and risk analyses. Reviews and risk analyses include USACE Agency Technical review; USACE Safety Assurance Reviews, USACE Quantitative Risk Analysis Reviews; our own State of Hawaii Safety Assurance Reviews; as well as an Independent External Peer Review conducted by a team of experts not associated with the Corps of Engineers. Your concerns of creating new risk are understood, and we will continue to inform the community of our progress throughout the review process to mitigate those concerns.

6. *The USACE representatives at the Manoa meeting confirmed that the USACE will not be responsible for the clearance of debris and maintenance of the berm once it is built.*

RESPONSE: The City and County is responsible as the non-Federal Sponsor for maintenance. The Corps of Engineers will conduct routine, periodic, and emergency inspections of the system features and prepare reports for the City and County to ensure that deficiencies or maintenance requirements are known. Provided the system features are maintained, they will be eligible for federal funding in the event they are damaged or require significant rehabilitation.

7. *Whereas Pukele Stream has not ever flooded its banks in the over 45 years that we have owned the subject parcels, we believe that a berm will cause debris to collect and obstruct water flow, causing flooding to adjacent homes and the neighborhood, just as debris clogged the bridges in Manoa and caused the flooding and massive damage in Manoa and at the University of Hawai'i.*

RESPONSE: We understand your concern is that the berm will be blocked by debris and cause a dam like situation, which would then threaten the community along Ipulei Way where the Pukele Stream has never overtopped. The design proposed in the feasibility phase (see Sheet C-313 in Appendix I of the HEPA FFEIS) placed a debris catch structure upstream from the berm to prevent the outflow culvert from being blocked. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

8. *With debris obstruction, the collection of stagnant water in the detention basin will provide a prime breeding ground for mosquitoes and may promote the spread of dengue fever. The Ala Wai Canal*

project seeks to save Waikiki from massive flooding, but dengue fever will cause many visitors to take pause before booking their trips.

RESPONSE: There will not be a permanent pool of water in these catchment or detention basins. The debris and detention basins in the project area will have a large culvert that remains open to allow typical stream flows and even some storm events to continue passing through. These are commonly referred to as low flow outlets. Water will begin to back up when flows exceed culvert capacity, which will be determined during the design phase based on feature location, geography, and function. Even still, the culvert will continue to flow, however, excess water will be detained for a temporary time.

9. *Also of concern is the over-saturation of nearby land while water sits in the detention basin. Could this compromise the foundation of homes built along Pukele Stream?*

RESPONSE: As stated in the response to #8, there is no permanent detention of water in any of our proposed features, however, to your question about saturation and seepage; there will be sufficient seepage protection designed into all of the features to mitigate the risk of seepage in the event of temporary detention of water from a storm.

10. *A detention basin filled with water can pose a drowning hazard as well.*

RESPONSE: As stated in the response to #8, there is no permanent detention of water. However, there will be adequate safety and security features designed in all of our final design features to help mitigate the risk of drowning, described as IMP SAF-4 in Table ES-6 and Section 5.16.2.2 of the HEPA FFEIS.

11. *Any fencing to prevent accidental falls or drownings will likely prevent or make difficult access for maintenance purposes and the removal of any debris/obstructions. There are many young children in the neighborhood and this is a real concern for residents on Ipulei Place. Fencing for safety measures will have a negative visual impact that will be difficult to mitigate.*

RESPONSE: Thank you for your concern. Security measures such as fencing will be further evaluated in the design phase of the project. The visual effects of what the fence looks like or where the fencing will be placed will be determined in the final recommended design.

12. *As Mr. Derek Chow stated at the public hearing on September 30, 2015, the Ala Wai Canal Project has spanned the course of several years. Indeed, Section ES-7 states that Alternatives 2A and 3A, which include the construction of berms and detention basins in the upper watershed, were chosen based on a process that "incorporated agency and public input obtained through scoping efforts and other stakeholder engagement activities." Baruch Bakar is a "stakeholder" that stands to lose much in*

this Project as proposed, yet we were not notified of our involvement until one month prior to the above-mentioned hearing. The placards that presented the Project's Impact and Mitigation at the public hearing failed to make any mention of the loss of private land required for the proposed berms and detention basins in Manoa, Palolo, and Waiomao. While we have been assured by representatives of the USACE and the DLNR that this project is in its very early, developmental stages, we understandably feel that there has been much behind-the-scenes maneuvering and our input is being solicited very late in the process.

RESPONSE: See Response #2.

As stated in the 2017 response letters in Appendix G, "Public involvement and agency coordination is summarized in Section 6 of the FEIS. Initial scoping of the EIS was conducted in 2004 with a supplemental scoping meeting conducted in 2008. Table 38 details public and agency coordination that has been undertaken since the re-scoping of the study in 2012. This includes over forty separate outreach measures. A public meeting to review the FEIS during the public review period was conducted in September 2015 along with multiple follow-up meetings with legislators, interested stakeholders, neighborhood commissions and property owners directly affected by the recommended plan."

Land use and real estate impacts to privately owned properties remains an unresolved issue in this HEPA FFEIS. Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. A more detailed real estate plan will be developed in the Design Plan after the final design of System Features are complete and evaluated for environmental and community impacts. If there are new environmental impacts supplemental documentation will be developed commensurate with the level of impacts. Community outreach and engagement will serve a critical role in the design of a final system of features.

13. *We, therefore, now ask why the obvious and possibly most cost-effective options that were omitted from the feasibility study were not considered first. Section ES-5 states:*
"Other opportunities that were identified, but were determined to be outside the scope of the study include reducing runoff and improving the storm drainage system, routine dredging of the Canal, and addressing ownership boundaries and maintenance responsibilities." Instead of proposing the disruption of the natural flow of upper watershed streams, depriving private citizens the ownership and use of their property, and creating hazards to neighborhoods, clearly the USACE and the DLNR should consider the other obvious, viable options available.

RESPONSE: This project authority from Congress does not authorize the Corps of Engineers to address runoff, or storm drainage improvements. However, the opportunities and benefits of this

project to reduce the risk of riverine flooding in the watershed opens up opportunities for the City and us to work on other efforts such as ecosystem restoration and storm drainage improvements.

Land use and real estate impacts to privately owned properties remains an unresolved issue in this HEPA FFEIS. Hawaii is different than many states in that private homeowners own the streams that run through their property. While this has many benefits, it also comes with challenges for developing flood control projects that seek to reduce the risk to the community. Alternative locations, footprints and types will be evaluated in the Design Phase of the project based on updated modeling and refined engineering data. Balancing engineering solutions and community impacts requires engagement with the community and an understanding of the options for reducing the risk to the level authorized by Congress. There may be opportunities to further reduce impacts to private properties during the design phase. However, it is unlikely that all private property impacts will be removed due to the fact that landowners own the stream. There may be a need to purchase flowage easements with homeowners and potentially make property adjustments for access easements to allow for the City and County of Honolulu to perform maintenance. These impacts on private property are much less intrusive on the property owner than property acquisition but are still considered an impact. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. The real estate and land use plan will be evaluated with the updated information. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

14. *While not engineers, a number of residents that stand to be affected by the Pukele Stream berm offer the following suggestions:*

1) Devise a method of slowing water flow in existing Palolo Stream channels. In this day of advanced technology, surely the USACE can create a series of low dams to function as "speed bumps" instead of displacing households and creating problems in the upper watershed areas. This would also meet the objective of slowing the water flow as far downstream as possible, allowing as much rain and water flow from the contributing streams to be absorbed upstream.

RESPONSE: During the DFEIS comment period, the Corps and DLNR received several suggested alternative site suggestions ranging in nature from Ka'au Crater in the upper Palolo Valley to Kaimuki High School fields by the golf course. To list them all in this response would be voluminous, and some are more feasible than others. There are a couple of points to assure you and others that as the project progresses, alternative locations will be evaluated against updated modeling, revised engineering data, and community concerns. First, Corps of Engineers is authorized by Congress to deliver a System of Features that reduces flood risk in the Ala Wai Watershed; the final designed System must achieve that authorized risk reduction. Second, the Corps of Engineers will conduct a value engineering study in the design phase to ensure that the most cost-effective use of Federal funds to deliver the level of risk reduction as authorized by Congress. During the design phase of this project, updated modeling, engineering data, and

community input will be used to refine or change the system features. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

15. *2) The end of Ahe street where Pukele and Waiomao streams feed into Palolo Stream should be considered as a point of intervention in the water flow.*

RESPONSE: See response #14.

16. *3) This Project is meant to prepare for a 100-year flood with a 1 % annual chance of occurring. A large area of public land, such as Palolo Valley District Park, could provide a detention basin that would be utilized only in the event of such a flood. That land could continue to be used for its original purpose until the 100-year flood occurs, instead of using private land to create potential problems that residents would have to live with 100% of the time, every year.*

RESPONSE: Palolo Valley District Park itself is not a feasible option. The park sits too high to effectively use it for storage. The only way to use the park would be to excavate the park an exponential amount and use it for underground storage which is an exorbitant amount of money for one feature. In addition to cost, underground storage also poses additional risks such as environmental and geotechnical issues, as well as ability to maintain and operate.

17. *In short, the residents of Ipulei Place and the greater Carlos Long/Waiomao neighborhood oppose the construction of the Pukele Stream berm and detention basin. The two enclosed petitions were circulated by different individuals at different times, so some residents signed both petitions. However, each petition contains some signatures of residents not contained in the other. Together, the petitions reflect the unanimous opposition of Ipulei Place residents to the proposed berm and detention basin. The petitions with original signatures are being sent to the USACE with copies to the DLNR.*

I appreciate the opportunity to voice community concerns and look forward to receiving your response.

RESPONSE: Thank you for the petitions and voicing the community's concerns.

18. *Petition to the USACE and the DLNR*
November 7, 2015
Nextdoor Carlos Long/Waiomao
Save Pukele Stream (SPS)
c/o (808) 368-5240

We, the undersigned, petition the USACE and the DLNR to revise the Ala Wai Project to delete the proposed berm in Pukele Stream which would require the loss of housing and private use of land on Ipulei Place or anywhere in the Carlos Long neighborhod and to consider alternative measures for flood risk management.

RESPONSE: Alternatives will be evaluated as part of the Design phase when modeling, engineering data, and additional community engagements occur.

19. *We are against the DLNR and the US Army Corps of Engineers ~~Confiscating~~ Purchasing ~~6~~ 3 lots on Ipulei Place to build a Berm Dam across Pukele Stream connecting La'i Rd and Ipulei Place potentially increasing foot traffic/access to our neighborhood.*

RESPONSE: We understand you are against the project features anywhere along Pukele Stream and Ipulei Place.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

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BA/G

November 6, 2015

Honolulu District, USACE
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

Subject: Ala Wai Canal Project – Chapter 343, Hawaii Revised Statutes Draft Feasibility Report and Integrated Environmental Impact Statement (EIS)

Thank you for the opportunity to comment on the subject project. Hawaiian Electric Company has no objection to the project. It is noted that Hawaiian Electric's project is referred to as "Cable Protection Project" in the Draft Feasibility Report and EIS. Hawaiian Electric would like the project to be referred to as "Ala Wai 46kV Underground Cable Relocation Project". Also, should Hawaiian Electric have existing easements and facilities on the subject properties, we will need continued access for maintenance of our facilities.

We appreciate your efforts to keep us apprised of the subject project in the planning process. As the proposed Ala Wai Canal Project comes to fruition, please continue to keep us informed. Further along in the design, we will be better able to evaluate the effects on our system facilities.

If you have any questions, please call me at (808) 543-7902.

Sincerely,

Jayson K. Shibata
Project Manager

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Jayson Shibata
Hawaiian Electric Company
PO Box 2750
Honolulu, HI 96840-0001

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you and/or your organization has no objections to the recommendations of the FEIS. Temporary and permanent relocation of utilities have been evaluated and are included in Appendix I3 of the final FEIS. Relocation of utilities will be revisited in detail during the design phase of the study and will be the responsibility of the non-Federal sponsor.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

ALA WAI CANAL PROJECT DRAFT FEASIBILITY REPORT / EIS
PUBLIC MEETING - COMMENT SHEET

September 30, 2015

Pls. see attached pp 1-4.

Thank you for participating in the Public Meeting on the ALA WAI CANAL PROJECT DRAFT FEASIBILITY REPORT/ENVIRONMENTAL IMPACT STATEMENT. Please use this form to submit any questions or comments you may have on the Draft Feasibility Report/EIS. Completed forms may be submitted to a project team member or mailed by **November 9, 2015**. Comments may be also emailed to: AlaWaiCanalProject@USACE.Army.mil. Please note that comments must include a name and physical address to receive a written response. To review the Draft Feasibility Report/EIS, visit www.AlaWaiCanalProject.com.

TAKE LAURA RUBY, COMMUNITY EXPERT SERIOUSLY.
BLUE STONE IS THE APPROPRIATE STONE TO USE.
PUT ALL PUMPING STATIONS UNDERGROUND. PLS. INVITE HER TO BE A MEMBER OF A SERIOUR REVIEW PANEL.
WHAT CAN THE AGENCIES DO TO ENSURE NO MORE SEWAGE GETS DUMPED INTO THE ALA WAI BY ANY AGENGIES OR MAN KIND? BY FOOLISHNESS, BAD DECISIONS OR JUST DUMB LUCK?
ANY MORE POLLUTION OF THE ALA WAI CANAL SHOULD NOT BE TOLERATED AND THIS EVENT COULD GO ALONG WAY TO PREVENT SUCH TRAGEDIES.
ALA WAI CANAL IS A HISTORIC SITE (REGISTERED) 3 PUMPING STATIONS ARE 4 STORIES HIGH. WALLS AROUND ARE 3'. THIS IS UNACCEPTABLE. THE WALLS AT THE EWA DEAD END OF KALAKAUA AV ARE ON A BERM. BERMS AND LOW WALLS WITH SEMI CIRCLE HOLES ARE GOOD IDEAS.
WHAT ARE THE NOISE MIDIGATION SERVICES, ESPECIALLY IN THE DIAMOND HEAD AREA, ALSO: THE TIME FRAME WITH POSSIBLE OVERRUNS OF TIME AND MONEY.

CONTACT INFORMATION

Please note that comments must include a name and physical address to receive a written response.

Name: LINDA WONG

Address: 3071 PUALEI CIRCLE #203
HON. HI 96815

Phone: (808) 923-7484

Email: leighi@me.com

ALA WAI CANAL PROJECT DRAFT FEASIBILITY REPORT/EIS
PUBLIC MEETING – COMMENT SHEET
November 30, 2015

Page 2

To the Ala Wai Canal Project members and the Army Corps of Engineers,

I am a resident of Diamond Head and the Vice Chair and past Chair of the Diamond Head, Kapahulu, St. Louis Heights Neighborhood Board although I am not representing them at this time. I have also been a member of the Ala Wai Watershed Committee plus almost countless other community groups. I have been living in these communities for over 30 years. I worked with Laura Ruby during the "Oral History of Mo'ili'ili" during my career at Kuhio Elementary School. I agree with her of the following points and ask you to consider them seriously.

Linda Wong
3071 Pualei Circle #203
Honolulu HI 96815
808-923-7484
leiahi@me.com

Letter from Laura Ruby:

To the Ala Wai Canal Project members and the Army Corps of Engineers,

I am a resident of Moiliili and the editor and writer of the book *Moiliili–The Life of a Community,* and I have been observing the community, and especially the water patterns, for over 35 years.

I was also one of the community "experts/consultants" queried at the outset of this project. I told of the high water incidents that I had witnessed and the mitigation steps that might be taken to protect the community–and the Waikiki economic engine. Unfortunately, the Army Corp of Engineers took very little of what I, or others, said seriously.

Further, at the more recent meeting presenting the ACE plans I made comments on the mistaken proposals with specifics for mitigation. And, now the 2015 version of the ACE's plans show no evidence that it has listened to the community experts/consultants. I wish to testify before all committees hearing this Ala Wai Watershed re-formation.

This email will not be exhaustive so I will present a few bullet points:

ALA WAI CANAL PROJECT DRAFT FEASIBILITY REPORT/EIS
PUBLIC MEETING – COMMENT SHEET
November 30, 2015

To the Ala Wai Canal Project members and the Army Corps of Engineers,

" multi-purpose detention basins in open space areas in the urbanized portion of the watershed"

- Add 3 more "detention basins," that is open field areas to contain and slow storm waters– 1) Kaimuki High School field; 2) the Ala Wai Park area Ewa of the juncture of the Manoa stream and the Ala Wai Canal (with low berm around the edges of Ala Wai School, as well as berms at Hokulani School and Iolani School); 3) the entire Ala Wai Park area between the Ala Wai School and the Ala Wai Clubhouse. (2) and 3) already have captured previous storm waters–with water dissipating naturally after a storm event.)

"Floodwalls along the Ala Wai Canal (including 3 associated pump stations)"

- The only floodwalls that might be appropriate to "save" the Waikiki economic engine are on the Waikiki side of the canal. Unfortunately, the ACE's solutions are overkill, visually off-putting, difficult, and scary to navigate. Instead hide the floodwall inside the berm and a raised-up canal wall and build the railing/parapet with blue stone (moss rock is not appropriate, nor as it ever been used for canals, bridges, or walls). Please see the example of the open (though it could be closed) parapet/railing located closer to Kalakaua. And put the pedestrian and bike paths on top of the berm (with the "protection" for the parapet/railing). Floodwalls do not need to be installed elsewhere in Moiliili.

- I'm not sure about pumping stations–they appear huge and ugly with a gable roof topknot. Put the whole pumping station underground. The sewage spill remediation dug a huge hole between the canal and community gardens. And please look to Tokyo's solutions.

"In-stream improvements to restore passage for native aquatic species as compensatory mitigation for impacts to aquatic habitat"

- This is something of a mystery: has the ACE looked closely at the aquatic species in the Manoa Stream, let alone the canal? Is the ACE suggesting that it remove all the invasive species such as tilapia and armored catfish and restore the fresh and brackish native species? Further, where are the ACE plans to more fully remediate the polluted water with such riparian plants as *akulikuli*? An experimental test has already been done.

ALA WAI CANAL PROJECT DRAFT FEASIBILITY REPORT/EIS
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To the Ala Wai Canal Project members and the Army Corps of Engineers,

One other point, has the ACE designed the "sluice gates" (I assume these are backflow preventers) as a way to keep the waters from backing up and popping many storm drain covers on higher ground? This water surge does happen in hurricanes and other fierce storms.

Again, please invite me to be a member of a serious review panel. Thank you,

Laura Ruby
509 University Ave. #902
947-3641
lruby@hawaii.edu

HONOLULU HI 968

09 NOV 2015 PM 1 L

ALA WAI CANAL PROJECT, O'ahu, Hawai'i

Honolulu District, U.S. Army Corps of Engineers
ATTN: Ala Wai Canal Project
Building 230, CEPOH-PP-C
Fort Shafter, HI 96858

96858

US Army Corps of Engineers
BUILDING STRONG

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review
of the Draft Feasibility Report
02 May 2017

ATTN: Linda Wong
3071 Pualei Circle, #203
Honolulu, Hawaii 96815

This letter is written in response to the receipt of your comments submitted to the U.S. Army Corps of Engineers (USACE) and/or the State of Hawaii Department of Lands and Natural Resources (DLNR) during the public review of the Ala Wai Canal Flood Risk Management Feasibility Study and Integrated Environmental Impact Statement (FEIS) which occurred from 20 AUG 2015-09 NOV 2015. Thank you for taking the time to review the draft FEIS and submit comments. It is noted that you have submitted comments pertaining to the following issues:

- Selection of alternative plans for managing flood risk
- Aesthetics of the floodwalls and pump stations
- Concerns regarding the compensatory mitigation
- Backwater flooding in the existing (without project) condition
- Effects of noise as a result of the recommended plan

The strategy towards managing the flood risk utilized in the plan formulation contained within the FEIS is the dual approach of detention of flood flows in the upper watershed combined with line of protection features (i.e. floodwalls and levees) in the lower watershed. This approach provides benefits for those within the upper watershed, but also reduces the scale of the features necessary for flood risk management in the lower watershed.

USACE conducts planning efforts in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, established by the Water Resources Council in 1983. This study has been guided by this planning process though each phase. The general problems and opportunities are stated as specific planning objectives and constraints to provide focus for the formulation of alternatives. These objectives and constraints have been documented since 2012 when the study was rescoped to focus exclusively on flood risk management. The formulation of alternatives is an iterative process and plans are evaluated and compared to determine which alternative achieves the study objectives and avoids study constraints in the most effective and efficient manner. Objectives and constraints are detailed in Section 2 of the FEIS, and Section 3 includes details of the process by which alternatives were selected and eliminated, leading to a final array of viable alternative plans. Each of the alternative plans in this final array was a valid plan that achieved planning objectives and avoided planning constraints to some degree. These plans were screened against multiple criteria and compared to determine which plan was most effective and efficient in achieving study objectives and avoiding study constraints.

All flood risk management alternatives considered for the study have a variety of impacts; there is no alternative that has no impacts, and there is no alternative that has only positive impacts. USACE policy requires a recommendation consistent with the alternative plan that reasonably maximizes the net economic benefits with consideration to the environmental impacts. Sections 4 and 5 of the FEIS includes an evaluation and comparison of these alternative plans. Section 8 outlines the recommended plan. This plan includes:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One stand-alone debris catchment structure
- Three multi-purpose detention basins
- Floodwalls along the Ala Wai Canal (including two pump stations); a levee on the outer perimeter of the Ala Wai Golf Course
- A flood warning system
- Fish passage environmental mitigation features at two locations

The design of project features is focused on the most economical design that will provide the needed function while observing compliance with applicable Federal law. Pump stations are above ground to avoid costs associated with sub-surface placement and must contain maintenance features which will allow for annual remove and inspection of pumps. The design of floodwalls and the pump stations must meet the criteria set forth in Section 106 of the Historic Preservation Act. This design will be coordinated with the State Historic Preservation Office to ensure appropriate design aspects are integrated into the project to ensure preservation of the historic value of the area.

Backwater flooding in the streets from the canal will be reduced through the use of flap gates at storm sewer outfalls entering the canal. These features are proposed to be installed along with the implementation of the floodwall. Environmental mitigation measures are described in Section 3.13 of the report. Implementation of these features involves the removal of barriers to fish passage on the Manoa stream.

The effects of noise created by the recommended plan are documented in Section 5.14 of the FEIS. Permissible standards are established by the State of Hawaii and vary between allowable daytime and nighttime noise levels. Permissible noise levels will likely be exceeded temporarily within areas of close proximately to the constructed features. Several best management practices are proposed within the FEIS including proper tuning and balancing of construction equipment, use of noise barriers and/or mufflers on engines, restriction of construction activities to typical working days/hours, and keeping unnecessary noise to a minimum during the construction period.

Thank you for your interest in the study. Your written comments and this response are included as an appendix to the final FEIS. An electronic copy of this document is currently available to the public at the following location:

http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/AlaWaiCanal.aspx

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 23, 2020

Ms. Linda Wong
3071 Pualei Circle #203
Honolulu, Hawaii 96815

Ala Wai Canal Flood Risk Management Study
Response to Public Comments Received from Review of the Draft Feasibility Report

This letter is a follow-up on correspondence to a letter sent to you by the U.S. Army Corps of Engineers (USACE) and the Hawaii Department of Land and Natural Resources (DLNR) on May 2, 2017. That letter responded to your comments submitted during the review period for the Ala Wai Canal Flood Risk Management Draft Feasibility Study and Integrated Environmental Impact Statement (DFEIS), which started on August 21, 2015 (Federal) and August 23, 2015 (State) and ended November 9, 2015.

The 2017 letter you received from the USACE and DLNR fully satisfied the requirements of the Federal National Environmental Policy Act (NEPA) as evidenced in the signed Record of Decision (ROD) by the Assistant Secretary of the Army for Civil Works on September 18, 2018.

The State of Hawaii received the NEPA Final FEIS (NEPA FFEIS) with ROD from USACE in October 2018 for review and acceptance by the State in compliance with the requirements of Hawaii Revised Statutes (HRS) Chapter 343, commonly referred to as the Hawaii Environmental Policy Act (HEPA). By letter dated September 20, 2019, the Governor designated the Mayor of Honolulu to accept the HEPA Final FEIS (HEPA FFEIS) as the Governor's representative.

After reviewing the document and ensuring its acceptability under the HEPA rules, we are providing an additional response to your comments commensurate with the requirements of HRS 343 and Hawaii Administrative Rules (HAR) 11-200. This letter does not replace or change the letter you received in 2017, but provides you with additional information to answer questions and concerns that you raised, which are addressed in the NEPA FFEIS, and/or in the HEPA FFEIS.

Please note that this HEPA FFEIS evaluates the same action and impacts that were reviewed in the NEPA FFEIS completed in 2017. During the design phase, project information will continue to be updated to address unresolved issues and community concerns identified in the EIS. Community engagement is a critical aspect of the design process and identifying environmental impacts. Any changes to the design after the completion of both the NEPA and HEPA FFEISs will be evaluated for environmental impacts and, if necessary, supplemental documentation will be developed commensurate with the environmental impacts identified.

This letter will provide additional information on the following:

- Specific Concerns raised in your Comment Sheet submitted at the Ala Wai Project DFEIS Public Meeting dated September 30, 2015

- Specific Concerns raised in your letter dated November 30, 2015 to Ala Wai Canal Project members and the Army Corps of Engineers

1. *TAKE LAURA RUBY, COMMUNITY EXPERT SERIOUSLY.*

   RESPONSE: Ms. Ruby is an excellent source of information in the Community, she submitted comments to the DFEIS and our responses can be found in Appendix G of the HEPA FFEIS. She is identified as a vital source for information and during the Design Phase of this project, we will absolutely discuss the project with her.

2. *BLUESTONE IS THE APPROPRIATE STONE TO USE.*

   RESPONSE: Thank you for the suggestion. Design considerations and construction materials will be identified in the Design Phase. Many people have also suggested using bluestone, and it will be evaluated with the final design.

3. *PUT ALL PUMPING STATIONS UNDERGROUND.*

   RESPONSE: Pumping stations themselves would not go underground, however, there are submersible pumps which is what we surmise you are requesting further investigation on. During the Design phase modeling, and engineering data will be revised to determine the final volume of water that requires evacuating through a pump system. The volume of water will determine the type of pump options. Generally, submersible pump systems are only associated with small volumes of flows. Section 5.5 in Appendix A of this HEPA FFEIS indicate peak flow discharges in excess of 15,000 cubic feet per second (cfs) at the junction directly upstream the confluence of the Manoa-Palolo and Ala Wai Canals.

   During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and pump locations will be part of that evaluation based on updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

4. *PLS. INVITE HER TO BE A MEMBER OF A SERIOUR REVIEW PANEL.*

   RESPONSE: Ms. Ruby is an excellent source of information in the Community, she submitted comments to this DFEIS and our responses can be found in Appendix G of the HEPA FFEIS.

During the Design Phase of this project, she is identified as a vital information source and we will absolutely discuss the project with her.

5. *WHAT CAN THE AGENCIES DO TO ENSURE NO MORE SEWAGE GETS DUMPED INTO THE ALA WAI BY ANY AGENCIES OR MAN KIND? BY FOOLISHNESS, BAD DECISIONS OR JUST DUMB LUCK?*

RESPONSE: Sewage disposal is not within the scope of this HEPA FFEIS.

6. *ANYMORE POLLUTION OF THE ALA WAI CANAL SHOULD NOT BE TOLERATED AND THIS EVENT COULD GO ALONG WAY TO PREVENT SUCH TRAGEDIES.*

RESPONSE: Sewage disposal is not within the scope of this HEPA FFEIS.

7. *ALA WAI CANAL IS A HISTORIC SITE (REGISTERED)*

RESPONSE: We concur that the Ala Wai Canal is a registered historic site.

8. *3 PUMPING STATIONS ARE 4 STORIES HIGH. WALLS AROUND ARE 3'. THIS IS UNACCPETABLE.*

RESPONSE: With regards to pump stations, please see response to #3 above.
Regarding your comments about walls, there are two key differences between a flood wall and berm, one is the cost and the other is the required space. Generally speaking, berms are a much more cost-effective way to channel flows and reduce the risk of inundation risks. One factor is the cost of constructing a foundation for a flood wall and the amount of concrete that is necessary, another factor is that in most cases earthen material is readily available whereas concrete requires batch plants and manufacturing. In the case of Ala Wai and the Island of Oahu, there may be less of a cost advantage due to less availability of the silty clay materials that are usually used in berm or levee construction. The second factor in determining wall versus berm or levee is the space factor. A wall is advantageous in areas where there is not space available for an earthen berm. A wall generally requires twice the wall height for foundation, so a five-foot wall would require ten feet of space for foundation. For an earthen berm or levee the slope is determined by the crest elevation of the berm, so a 5 foot crest elevation with a crest width of 48" (wide enough for a walkway) would slope down each side of the crest at a 2:1 ratio, requiring significantly more space. While this detailed explanation is not included in the HEPA FFEIS, it is because analysis will be done in the Design phase to determine final barriers such as walls, berms, levees, or hybrids. There may be a request for a wall due to space constrictions with earth fill on one or both sides to disguise it as a berm. The wall maintains its structural integrity without needing the amount of space required for a structural earthen berm.

We understand you are concerned with the size of pump stations and height of the walls. During the design phase of this project, updated modeling, engineering data, and community input will be used to refine or change the system features. Pump stations and wall heights and type will be part of that evaluation based on the updated data. If the system features change in location, type, size, function, or are eliminated, the changes will be evaluated for both environmental and community impacts. Supplemental environmental documentation will be developed commensurate with the level of impacts, if necessary.

There is a lot more evaluation to be done before a final design of these features is identified. Community engagement and outreach will be included in that evaluation.

9. *THE WALLS AT THE EWA DEAD END OF KALAKAUA AV ARE ON A BERM. BERMS AND LOW WALLS WITH SEMI CIRCLE HOLES ARE GOOD IDEAS.*

RESPONSE: Thank you for your suggestion of using berms to lower the height of walls. Berms are a great alternative and more cost effective; however, they take up more space, see response to #8 above. Depending on space availability updated design may be able to replace some of the recommended walls with berms, however, we don't have the information available right now to make that determination. It will occur in the Design Phase. The same answer applies to low walls with semi circles for drainage.

10. *WHAT ARE THE NOISE MIDIGATION SERVICES, ESPECIALLY IN THE DIAMOND HEAD AREA.*

RESPONSE: Please refer to Table 30 in this HEPA FFEIS (formerly Table 31 in the Draft) Ambient Noise Conditions at Proposed Measure Locations, as well as the surrounding content to better understand noise conditions.

11. *ALSO, THE TIME FRAME WITH POSSIBLE OVERRUNS OF TIME AND MONEY.*

RESPONSE: It is too early to give a detailed schedule and actual construction cost, however, the Proposed Action within this HEPA FFEIS is two years for design and four years for construction at a cost of approximately $345,076,000.

12. *I am a resident of Diamond Head and the Vice Chair and past Chair of the Diamond Head, Kapahulu, St. Louis Heights Neighborhood Board although I am not representing them at this time. I have also been a member of the Ala Wai Watershed Committee plus almost countless other community groups. I have been living in these communities for over 30 years. I worked with Laura Ruby during the "Oral History of Mo'ili'ili" during my career at Kuhio Elementary School. I agree with her of the following points and ask you to consider them seriously.*

[attached Letter from Laura Ruby]

RESPONSE: Thank you for your interest and participation in this project. This process does not end with the feasibility study, it will continue during the design and construction phase and we encourage your feedback and participation. Community engagement is a critical part of making this a successful project.

The letter from Ms. Laura Ruby was also received by the project team during the review period for the DFEIS. A copy of our response can be found in Appendix G-9 of this HEPA FFEIS.

We appreciate your participation in the project process. Community engagement will be a critical piece of this project moving forward in design and construction, and we hope you remain engaged.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

NOV 9 2015

Ala Wai Canal Project
U.S. Army Corps of Engineers
Honolulu District
ATTN: Mr. Derek Chow
Chief, Civil and Public Works Branch
Building 230 (CEPOH-PP-C)
Fort Shafter, HI 96858-5440

Subject: Ala Wai Canal Project Draft Feasibility Study with Integrated Environmental Impact Statement, Oahu, Hawaii [CEQ# 20150273]

Dear Mr. Chow:

The U.S. Environmental Protection Agency has reviewed the Draft Feasibility Study with Integrated Environmental Impact Statement (DFS/EIS) for the Ala Wai Canal Project, Oahu, Hawaii. Our review and comments are pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The EPA supports the U.S. Army Corps of Engineers' goal of reducing flood risk in the Ala Wai Watershed. According to the DFS/EIS, a high risk of flooding exists within the watershed because of natural geography, coupled with aging and undersized flood conveyance infrastructure. The Notices of Intent for this project, published on June 14, 2004 and October 2, 2008, indicated dual goals of flood hazard reduction and ecosystem restoration. The feasibility study has since been re-scoped to focus on flood risk management, with ecosystem restoration eliminated as an objective.

The DFS/EIS identifies Alternative 3A-2.2 as the tentatively selected plan, and as the least environmentally damaging practicable alternative (LEDPA) for the project. Alternative 3A-2.2 would reduce flood risks by improving the flood warning system, and constructing six in-stream debris and detention basins in the upper reaches of Makiki, Manoa, and Palolo streams, one stand-alone debris catchment feature, three multi-purpose detention areas in open spaces in the developed watershed, and concrete floodwalls up to four feet tall along the Ala Wai Canal (including three pump stations). Given the extent of development within the watershed, and the fact that flooding is likely to be exacerbated by climate change and associated projected increases in sea level rise in the future, we recognize the need for improved flood risk management. Investing in a suite of management measures, as described in Alternative 3A-2.2, should be helpful in reducing flood risk and property damage within the watershed.

Although we reviewed all of the alternatives evaluated in the DFS/EIS, our rating is based on our evaluation of Alternative 3A-2.2. We have rated Alternative 3A-2.2 and the DFS/EIS document as *Environmental Concerns – Insufficient Information* (EC-2). Please see the enclosed "Summary of EPA

Rating Definitions." We understand that a formal jurisdictional delineation of Waters of the U.S. has not yet been completed for the project area and the full extent of impacts to jurisdictional waters, including *special aquatic sites*, is not known. We recommend that the Final Feasibility Study/Environmental Impact Statement (FFS/EIS) include the verified jurisdictional delineation and demonstrate more clearly that the preferred alternative is the LEDPA.

We understand that the endangered blackline Hawaiian damselfly has been identified within the proposed footprint of the Waihi debris and detention basin, a component of Alternative 3A-2.2, and that the Corps intends to consult with the U.S. Fish and Wildlife Service regarding this species. EPA is concerned about potential impacts to this species, and the possibility that it may be present at other locations. Options to avoid known populations of this endangered species should be considered, including locating the Waihi debris and detention basin at an alternative site, or eliminating this component altogether. EPA is also concerned that the proposed project may result in increased dispersal of contaminated sediment that may impact water quality and fish and wildlife resources. We recommend that the FFS/EIS include an update on the Corps' consultation with the FWS.

Although the Ala Wai Canal Project incorporated several strategies to reduce flood risk, some actions, such as improving the storm drainage system and routine dredging of the canal, were determined to be outside the scope of the study. Understanding the current condition of the stormwater management system and how dredging the Canal could affect flood risk, as well as water quality, are intrinsically important in understanding how the watershed functions. We recommend that the FFS/EIS discuss these topics in greater detail. We also recommend that the FFS/EIS provide additional information on proposed maintenance of the detention basins, critical infrastructure remaining in the floodplain, and flood risk associated with tsunamis and hurricane storm surge. Please see the enclosed detailed comments for additional concerns and recommendations.

We appreciate the opportunity to review and comment on this DFS/EIS, and are available to discuss the recommendations provided. When the FFS/EIS is released for public review, please send one hard copy and one CD to the address above (Mail Code: ENF 4-2). Should you have any questions, please contact me at (415) 972-3521, or contact Ann McPherson, the lead reviewer for the project. Ann can be reached at (415) 972-3545 or mcpherson.ann@epa.gov.

Sincerely,

Kathleen Martyn Goforth, Manager
Environmental Review Section

Enclosures: Summary of EPA Rating Definitions
EPA Detailed Comments

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.