UNIVERSITY OF HAWAIʻI SYSTEM
Legislative Testimony

Testimony Presented Before the
Senate Committee on Water and Land
Monday, March 25, 2019 at 1:15 p.m.
By
Cathi Ho Schar
Director, University of Hawaiʻi Community Design Center
Dr. William Chapman, Interim Dean
School of Architecture
And
Dr. Laura Lyons,
Interim Associate Vice Chancellor for Academic Affairs
University of Hawaiʻi at Mānoa

SCR 184/SR 148 – REQUESTING THE GOVERNOR TO ESTABLISH A WORKING GROUP TO EXPLORE MATTERS RELATED TO THE ALA WAI CANAL FLOOD RISK MANAGEMENT PROJECT.

Chair Kahele, Vice Chair Keith-Agaran and members of the committee:

Thank you for this opportunity to testify in **support** of SCR 184/SR 148. This resolution suggests the formation of a working group to explore matters related to the Ala Wai Canal Flood Risk Management Project, including the facilitation of public meetings and development of proposals for next steps in the project.

The University of Hawaiʻi Community Design Center (UHCDC) is a teaching practice and outreach initiative led by the University of Hawaiʻi at Mānoa School of Architecture (SOA) that provides a platform for faculty, staff, students, and partnered professionals to collaborate on interdisciplinary applied research, planning, and design projects that serve the public interest. As a hybrid program of education and practice, UHCDC aims to engage the needs of the state and region in all areas related to the quality of built environments.

UHCDC would welcome the opportunity to convene this working group, facilitate community outreach, and gather and visualize information that addresses the engineering problem in context with urban and landscape design components, natural resources, conservation, clean water act compliance, ecosystem performance and restoration, connectivity, community, place and cultural considerations. Given the short time frame, we recommend that the scope be limited to documenting possible design alternatives or modifications rather than developing new proposals or making definitive recommendations. UHCDC would be happy to produce community and stakeholder engagement materials and assist with a report to the Legislature that would help to frame next steps for the working group and project. Appropriate funding would need to be allocated.

Thank you for this opportunity to testify.

LATE

EXECUTIVE CHAMBERS

HONOLULU

DAVID Y. IGE
GOVERNOR

Testimony of **Ford Fuchigami**
Administrative Director, Office of the Governor

Before the
Senate Committee on Water and Land
March 25, 2019
1:15 p.m., Conference Room 229

In consideration of
Senate Concurrent Resolution No. 184
REQUESTING THE GOVERNOR TO ESTABLISH A WORKING GROUP TO EXPLORE MATTERS RELATED TO THE ALA WAI CANAL FLOOD RISK MANAGEMENT PROJECT

Chair Kahele, Vice Chair Keith-Agaran, and committee members:

Thank you for the opportunity to provide testimony on behalf of the executive branch in support of the intent of Senate Concurrent Resolution 184. We offer the following amendments.

We appreciate the opportunity to testify and will be available to answer your questions should you have any at this time.

THE SENATE
THIRTIETH LEGISLATURE, 2019
STATE OF HAWAII

S.C.R. NO. 184

SENATE CONCURRENT RESOLUTION

REQUESTING THE [~~GOVERNOR TO~~] ARMY CORPS OF ENGINEERS, THE STATE OF HAWAII, AND THE CITY AND COUNTY OF HONOLULU ESTABLISH A WORKING GROUP TO EXPLORE MATTERS RELATED TO THE ALA WAI [~~CANAL FLOOD RISK MANAGEMENT PROJECT~~] WATERSHED.

WHEREAS, the Ala Wai Watershed, located in the City and County of Honolulu, encompasses approximately nineteen square miles, or 12,064 acres, and extends from the ridge of the Koolau Mountains to the nearshore waters of Mamala Bay; and

WHEREAS, the Ala Wai Watershed is made up of Makiki, Manoa, and Palolo Streams, which drain into the Ala Wai Canal, a two-mile-long man-made waterway constructed during the 1920s, not for major flood control, but rather to drain coastal wetlands and allow for the development of Waikiki; and

WHEREAS, the Ala Wai Canal is owned and maintained by the State, and the United States Army Corps of Engineers (USACE) has coordinated with the State and City and County of Honolulu since 2001 to develop a plan to mitigate flooding in the Ala Wai Watershed in the event of a major, once-in-a-century storm; and

WHEREAS, an October 2004 storm that flooded Manoa Valley within the Ala Wai Watershed and was described as a twenty-five-year event caused an estimated $85,000,000 in damage; and

WHEREAS, the likelihood of flooding all of Waikiki and the canal's tributaries is approximately one percent, considered a one-hundred-year event, with potential estimated damage to three thousand structures and requiring more than $1,000,000,000 in repairs; and

WHEREAS, the USACE is currently negotiating terms of an agreement with the State and City and County of Honolulu to proceed with the Ala Wai Canal Flood Risk Management Project,

which received approximately $345,000,000 in federal appropriations in July 2018; and

WHEREAS, the appropriation requires local matching funds in the amount of $125,000,000 and a local government sponsor in order to proceed with the project; and

WHEREAS, structural elements of the USACE proposal includes six debris/detention basins in the upper reaches of the watershed's three major streams, one in-stream debris catchment structure, three multi-purpose detention basins, and flood control elements along the Ala Wai Canal including a three- to five-foot tall wall; and

WHEREAS, elements of the USACE proposal would directly affect properties in the watershed, impacting and in some cases displacing individuals and organizations that own or operate on such properties; and

WHEREAS, Oahu neighborhood boards were established by the City and County of Honolulu to increase and assure effective citizen participation in the decisions of government, and several neighborhood boards with boundaries within the Ala Wai Watershed and affected areas have expressed concerns over the proposed project through meetings and adopted resolutions; and

WHEREAS, issues related to the project have been brought to the forefront and have now become a major area of concern to members of the public, community stakeholders, and other interested parties; and

WHEREAS, while there have been opportunities for public input and engagement in the past regarding the Ala Wai Canal Flood Risk Management Project Draft Feasibility Study and Environmental Impact Statement, this body finds that further public engagement is warranted in order to consider those concerns; now, therefore,

BE IT RESOLVED by the Senate of the Thirtieth Legislature of the State of Hawaii, Regular Session of 2019, the House of Representatives concurring, that the [~~Governor~~] Army Corps of Engineers, the State of Hawaii, and the City and County of Honolulu is requested to establish a working group to explore matters related to the Ala Wai watershed and, in particular, the Ala Wai Canal Flood Risk Management Project; and

BE IT FURTHER RESOLVED that the working group is requested to:

(1) Facilitate public meetings to encourage dialogue among members of the public, community stakeholders, representatives from the State, City and County of Honolulu, and United States Army Corps of Engineers, and other interested parties;

(2) Record and compile concerns submitted to the working group; and

(3) Develop and assess good design options to address community concerns, including but not limited to mitigating disruption to schools and institutions that have cultural or historical significance, minimizing adverse impacts on private property owners, and implementing appropriate traditional land management practices for ecosystem preservation and restoration including strategies for floodable development in lieu of hard structures and barriers; and

BE IT FURTHER RESOLVED that the working group is requested to include the following:

(1) A representative of the Mayor of the City and County of Honolulu's administration as Chair of the working group;

(2) A representative or representatives of the Governor's administration;

(3) A representative or representatives of the USACE;

(4) A member or members of the Honolulu City Council;

(5) A member or members of the Hawaii State Senate;

(6) A member or members of the Hawaii State House of Representatives;

[~~(1) A representative or representatives of the USACE;~~

~~(2) A representative or representatives of the Governor's administration;~~

~~(3) A member or members of the Hawaii State Senate;~~

~~(4) A member or members of the Hawaii State House of Representatives;~~

~~(5) A representative or representatives of the Mayor of the City and County of Honolulu's administration;~~

~~(6) A member or members of the Honolulu City Council;~~]

(7) Researchers from the University of Hawaii, including a representative of the Community Design Center and other experts knowledgeable in flood risk management or watershed and ecosystem restoration; and

(8) Other persons as may be invited by the working group; and

BE IT FURTHER RESOLVED that the working group is requested to submit a report of its findings and recommendations, including any other actions taken pursuant to this measure, to the Legislature no later than twenty days prior to the convening of the Regular Session of 2020; and

BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be transmitted to the Commander and District Engineer of the United States Army Corps of Engineers Honolulu District, Governor, President of the University of Hawaii System, Mayor of the City and County of Honolulu, Chairperson of the Honolulu City Council, and Director of the University of Hawaii Community Design Center.

OFFERED BY: _____

KA LĀHUI HAWAIʻI
POLITICAL ACTION COMMITTEE

LATE

BEFORE THE SENATE COMMITTEE ON WATER AND LAND
March 25, 2019

Senate Concurrent Resolution 184/Senate Resolution 148
Relating to the Ala Wai Canal Flood Risk Management Project

Aloha Chair Kahele, Vice-Chair Agaran, and Members of the Committee,

Ka Lāhui Hawaiʻi Political Action Committee submits the following testimony in **SUPPORT** of SCR 184/SR 148 requesting the Governor to establish a working group to discuss matters related to the Ala Wai Canal Flood Risk Management Project with suggestions for amendments.

The Ala Wai Canal Flood Risk Management Project will adversely affect residents, cultural practitioners (kalo farmers, paddlers, gatherers, etc.), the general public (especially who access public spaces), schools, and organizations who operate, reside or rely on the areas affected by this project. For this reason on the third "Be It Resolved" an attempt at listing a comprehensive list of stakeholders should be made.

Please include Hālau Kū Māna Hawaiian Focused Charter school as one of the main stake holders who should be represented on this working group. Hālau Kū Māna has taken up the pono stewardship of Makīkī Stream by leading many community stream clean up days, studying and monitoring the stream and the organisms that live in the stream as part of their curriculum, and planting around the stream to eliminate erosion and other adverse affects.

Respectfully submitted,

M. Healani Sonoda-Pale
Chair, KPAC

SCR-184
Submitted on: 3/25/2019 9:47:06 AM
Testimony for WTL on 3/25/2019 1:15:00 PM

LATE

Submitted By	Organization	Testifier Position	Present at Hearing
Melodie Aduja	Testifying for O`ahu County Democrats Committee on Legislative Priorities	Support	No

Comments:

LATE

SCR-184
Submitted on: 3/25/2019 9:59:05 AM
Testimony for WTL on 3/25/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Trevor Atkins	Testifying for Halau Ku Mana	Support	No

Comments:

Aloha mai kakou,

HÄ• lau KÅ« MÄ• na Public Charter School is a key stakeholder in the plans for flood mitigation in WaikÄ«kÄ« because:

1) Our campus is located along Makiki stream at the proposed location for one of the USACE "Debris Retention Dams", and

2) Our school has been building a network of schools, private organizations, and public partners toward stream health, restoration, monitoring, food production, and flood mitigation. It is funded and named NÄ• Wai Ekolu.

We have already collected ideas for flood control and look forward to participating in a Working Group. This would be the first efforts by any entity to listen to our ideas, which we have been developing for 19 years +.

Mahalo,

Trevor Atkins, Upland Resource Teacher at HÄ• lau KÅ« MÄ• na

LATE

SCR-184
Submitted on: 3/25/2019 12:37:48 PM
Testimony for WTL on 3/25/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
andrea charuk	Testifying for SEEQS Public Charter School	Support	No

Comments:

After witnessing the atitudes held by project managers at last week's Community townhall in Manoa hosted by the Army Corps and its City and State partners, I feel it is imperative that the proposed USACE project is slowed by any means necessary to force this project to consider possible amemndments and make space for community involvement towrads a more community oriented, long term, systemic and ecosystemic approach to stormwater management, flood mitigation and climate resiliency planning. Jeff Herzog (army corps) spoke words about how he wanted to hear feedback and then continuously made excuses for why this feedback was impossible, was dismissive of indigenous voices, and past the buck of blame onto the city when it suited his agenda of stating that the project could be better. In recognizing that money is a defining factors guiding design of structures, we mist find more money to do this right instead of doublign down on centuries old mismanagment of storm water by the City and State.

ISSUES: ALA WAI CANAL FLOOD WALL
â—• Floodwall proposal is designed only for a 50-year life cycle.
â—• Does not address flooding by storm surge or sea level rise.
â—• To function, the wall will require over 50 independent backwater pumps where each stormwater outlet enters the canal. This is energy inefficient and prone to failure.
â—• Previous army corps proposals explored a pump system but excluded the study of a pump-and-lock system that needs further exploration.

As a committed group of educators at SEEQS Public Charter school we engage our students in daily practices of investigating and learning to care for our precious fresh water resources. We partner with 22 other schools and organizations doing this same work in our waterhsed. Our group of educators operates under the title "Na Wai Ekolu" and is housed under 'Iolani Schools public outreach programming. As students will be the generation to inherit these problems they deserve a voice as stakeholders, and teachers can be the catylyst for systemic community change to prepare our citizens for climate change and resiliency training. Having teacher and student voice on this working group who act as maka'ainana- eyes of our land, feels integral to the success of any plan that will be implemented and it is time that we start being utilized powerfully in these decisions.

We are in support of project amendment suggestions and visions proposed by architect, Sean Connelly through his Ala Wai Centennial Project.

SCR-184
Submitted on: 3/23/2019 5:46:23 AM
Testimony for WTL on 3/25/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Sidney Lynch	Individual	Support	No

Comments:

Support forming a committee to explore alternatives to the wall and flood basins. 4 areas mauka of the Ala Wai will flood almost as much as if this project is not built. Perhaps a lock and gate on the mouth of the Ala Wai will keep Waikiki dry and other methods of flood mitigation can be explored for the flooding of the areas mauka of the canal. Grave concerns about the safety of these earthenware 30'h x 75' wide x 110' thick basins & ripping out natural streambeds above the dams in residential or so near to residential areas in the upper watershed .For next 50 years basin safety totally dependent on timely and ongoing maintenace on the part of the city or possible failure. City already has enough on it's plate. Only 220 million from the feds, the other 125 million HI taxpayers have to repay. Spend that 125 million on existing infrastructure projects. https://www.des.nh.gov/organization/commissioner/pip/factsheets/db/documents/db-4.pdf

SCR-184
Submitted on: 3/23/2019 8:47:05 AM
Testimony for WTL on 3/25/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Mary Mitsuda	Individual	Support	No

Comments:

SCR184: YES. A working group is necessary to assess the Ala Wai Canal Flood Risk Management Project. Will this project create more failure points and crises than it mitigates? Let‘s not be so eager to get “free” Federal funding for part of construction. We do need flood control but it needs to be realistic and to effectively balance safeguards for the whole project area, from mauka to makai, from upland streams down to urban flatlands and the ocean. The real cost of the project will be in the maintenance once it is finished. We must be sure that our flood strategy is one that is worth supporting for decades after it is completed.
Respectfully submitted,
Mary Mitsuda

SCR-184
Submitted on: 3/23/2019 6:31:42 AM
Testimony for WTL on 3/25/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Drew T Matsumoto	Individual	Support	No

Comments:

I strongly support forming a working group to look into better alternatives to the current plan .

LATE

Peter S. Adler, PhD
The *ACCORD3.0* Network
2471 Manoa Road Honolulu, Hawaii 96822
Email: padleraccord@gmail.com Web: www.accord3.com

March 24, 2019

TO: Committees Considering CR 184/SR 148

FR: Peter S. Adler

RE: Requesting the Governor to Establish a Working Group to Explore Matters Related to the Ala Wai Flood Risk Management Project

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Dear Legislators.

Forgive me that I am not able to join you in person and please accept my testimony. I whole-heartedly support this measure. Public meetings, while useful for informational purposes, tend not to be good forums for issue clarification, data analysis, information exchange, and solution seeking.

I have helped establish, implement, and manage numerous local, national, and international working groups on projects equally if not more challenging than this including efforts on greening America's supply chains, resolving compensation claims for one of the world's worst mine disasters in Papua New Guinea, and others.

I am not pandering for work but do urge you to move forward with this measure, ensure it is set up correctly, and impeccably facilitated to produce real results.

With best wishes for a productive session.

All best!

Peter S. Adler

PETER S. ADLER, PhD

LATE

SCR-184
Submitted on: 3/25/2019 11:54:19 AM
Testimony for WTL on 3/25/2019 1:15:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Doris Lam	Individual	Support	No

Comments:

Dear Chair Kahele and members of the Committe on Water and Land,

I write in strong support of SCR184 Requesting the Governor to Establish a Working Group to Explore Matters related to the Ala Wai Canal Flood Risk Management Project. I live on Coolidge Street and will be one of many houses that will be underwater if this project does not proceed however I am also a parent of 3 children who have and is still attending Hokulani Elementary School.

My daughter and son are both 17 and 14 years old respectfully. Both attended and graduated from Hokulani Elementary and I have never heard of any study that was conducted for this project until the past couple of months. My youngest who is 6 years old is currently in kindergarten at Hokulani Elementary.

When I attended the Town Hall meeting that was held at the Manoa Valley District Park on 3/19/19, I was appalled to see all the green space on Kanewai Field and the Koali Parking Lot behind Hokulani designed to be taken over by this basin leaving the school structure standing on its own. The school structure on its own without the Kanewai Field or the Koali Parking Lot as an extension of its function renders the school useless.

If the field is completely taken over, the school will no longer be able to have May Day programs, no more 1st grade family picnics, no more recess, no more fun run, in essence no more physical activity. Even though Hokulani Elementary may be a smaller school, it has approximately 300-400 students so whenever we have Spring Fling, graduation ceremony, assembly awards ceremony, end of year performances, reading night, STEM night - parents, grandparents, aunties, uncles, cousins, and the whole ohana come together to celebrate the achievement of our students and by taking away the Koali Parking Lot right behind the school, you have taken away the opportunity for ohana to be present as such important events because there will not be adequate parking around the neighborhood or at the UH Hawaiian Studies parking lot to accommodate all of us.

I know for a fact that the Kanewai Field does not serve Hokulani Elementary exclusively because there are many sports programs that take place at the Fields. Many Hokulani

parents and students sign up for sports activities organized by Department of Parks and Recreation because it is right by the school.

Therefore, I urge the Governor, State Legislators and City Councilmembers to meet with USACE to include community stakeholders in the design of this project so that community concerns are adequately addressed. The current design does not take into consideration the make-up of the neighborhood where the basins are designed to be situated.

Thank you.

Doris Lam

Testimony for SCR 184
March 25, 2019
Time 1:15 PM
Conference Room 229

My name is Dave Watase I oppose the Ala Wai Canal Project and I am against the State funding any portion of the existing design elements in the Final EIS. I oppose SB77 and I am support SCR184. However, it should be noted that the USACE at all these hearings and at the recent Town Hall meeting on March 19, 2019 at the Manoa District Park has avoided any statements that would indicate major changes to their existing design. It sounds to me like a take it or leave it kind of deal. They say that they want to partner with us, they say that they want to hear from us but don't say what they will do with the input we provide to them. The only thing that they have said is that they will do aesthetic type of changes. This is unacceptable to our community. My greatest fear is that you will give them the keys to the car and they will hit the pedal to the metal and run us all over. This has all the marking of a mini RAIL project and the major motivation is to secure the Federal Funding.

These are my concerns and why I support SCR184:

1. It is not a comprehensive flood plan and many areas remain flooded in the USACE flood modeling (McCully to McKinley HS, Makiki, Iolani School to Puck's Alley, and Kapahulu to Safeway appear flooded);

2. To the left and right side of the Makiki Stream confluence at the Ala Wai Canal are the 4' concrete wall but no wall or flood gate over Makiki Stream;

3. The USACE determined that it was unfeasible to place a wall around Iolani School because it would require the wall around Waikiki to be higher and would impact the functionality of the Ala Wai Golf Course detention basin;

4. The Ala Wai Canal has over 50 storm drainage inlets that require mechanical capping to prevent backflow flooding. The EIS studies only show capping on 18" or larger outlets. Study does not address mechanical failure of the caps and dozens of mechanical gates that are required to be closed during a storm. All these elements require proper maintenance, testing, and cleaning to ensure reliability (what if a piece of garbage is blocking the outlet from being capped);

5. The EIS studies show Waikiki interior flooding for a 10-year storm when the interior storm drain outlets are capped and the interior flood drainage system in not functional. The flooding is understated because it was not done with the 100-year storm modeling;

6. While the 4' concrete wall (as high as 4.5') is designed to handle an overall much larger storm than the 100-year storm in the resiliency study they warn that because of the flashy and peaky nature of the storms that the wall can be overtopped and flooding occur in Waikiki;

7. There are concerns with the 4' reinforced concrete wall to be built around the Ala Wai Canal. It is not a simple wall easily built. Instead it will require steel pilings in front of the wall to prevent water infiltration through the porous coral substrate. It requires dewatering sub-pumps. It will require steel pilings underneath the footing because of concerns of the coral substrate liquefying. Concerns of building around the storm drainage outlets, trees, and other utilities without affecting the foundational key which prevents tipping and sliding of the wall. Concerns of damaging the historic Ala Wai Canal wall. No mention of traffic concerns during construction or of views blocked;

8. A major portion of the wall and levee around the Ala Wai Canal is to be built over the 72" force sewer main serving all of Waikiki. Concerns that the construction and vibrations could break the sewer main are mentioned and that it will be the contractor's liability (is this even a good idea to mess with and how will this impact the cost for construction when the contractor has to get insurance if even possible to protect him);

9. The earth levees and berm around the Ala Wai do not have scour protection and if breached will erode away and lead to catastrophic failure;

10. It should be noted that earthen berms, levees, and detention basins can become saturated during repetitive storms like the 40-days of storm in the 2006 and liquefy and lose strength;

11. The communities were not engaged in the Draft EIS stage between 2012-2015 and generally most are against large detention basins and concrete walls (6 Neighborhood Boards have passed Resolutions calling for the USACE to hold off from advancing the designs of the Project and for the State not to fund their portion);

12. The USACE did not evaluate eco-friendly or traditional Hawaiian flood management systems alternatives;

13. The USACE did not evaluate alternatives such a underground detention storage for Manoa District Park, Palolo District Park, Kanewai Park;

14. The USACE did not evaluate alternatives such as utilizing in stream existing capacities within already concrete culvert areas;

15. Many areas like the upper Palolo Valley areas which show a total of $7,000 property damage do not justify the large detention basins in the Pukele and Waiomao areas and could mitigate flooding using less expensive nonstructural measures;

16. Large upstream detention basins are large with a footprint of around 300' long with riprap and will require the excavation of up to 1000' of natural stream per detention basin. The detention basins and concrete walls are ugly and will destroy views forever;

17. The upstream detention basins are proven to become silt pits and with problematic maintenance issues. It will impact the water quality and downstream flows. They can easily be breached on very small storms by becoming plugged from debris from fallen trees coming miles above up the stream;

18. The USACE basic means for flood protection is by detention (holding water) which is suitable for the mainland with watersheds that are thousands of miles long and no place for the water to go;

19. The Ala Wai Watershed is around 5 miles long from ridgeline to ocean which is a short distance. The watershed is also relatively small. The Ala Wai Canal is a little over a quarter of a mile from the ocean and it makes no sense to be building up concrete walls when the simple objective is to get the water to the ocean;

20. The USACE rejected a flood gate and flood pump measure near the Ala Moana Bridge which would have been a one measure, impact to one location, and not require the 4' concrete wall or detention basins at a reduced price of $133 million;

21. While the flood pump and flood gate is an option. The preliminary design concept that the USACE has in their EIS can be greatly improved. The most compelling benefit to a flood gate and flood pump system is that it can also protect from high tides, tide surges, and sea level rise in the future.

22. The current USACE design with 4' wall does cannot protect from high tides and large tide surge which would fill the Ala Wai Canal and take away storage capacities. The only way the USACE design can be adaptive to sea level rise is to increase the height of the wall above the average 4'.

23. The benefit of a flood gate and flood pump is that instead of building a wall to create capacity, we will lower the water level in the Ala Wai Canal ahead of a storm to create the capacity. Example instead of building a 4' wall we lower the water elevation by 4' creating the same capacity. Note, we can lower the level even further if necessary for additional storage. We can also drain the canal for maintenance dredging which will most likely reduce the cost since heavy equipment can enter the canal like when it was originally built;

24. Should sea level rise become a reality a flood gate or gate lock system that will also allow paddlers and other recreational users of the canal access to the ocean. The Ala Wai Canal will remain below sea level and at an elevation to keep our existing gravity flow storm drainage system functional without major retrofitting and pumping on each outlet.

25. The USACE has recently commented that the pumps that would be required are unfeasible for the Ala Wai Canal and that 20,000 cfs pumps would be required. This is not necessarily true because first the USACE modeling is questionable and accused of being flawed and unrealistic;

26. The USACE has consistently stated that the Ala Wai Canal capacity is only of the 5-yr to 10-yr storm, yet it has only overtopped 2 times from storms and once from Iniki with a total recorded damage of $10,000 in 1967. The 1967 overtopping was blamed on a lack of maintenance and resulted in the dredging of the Ala Wai Canal. So, maybe in the almost 100 years that the Ala Wai has been in existence the capacities based on historic data and historic floods needs to be updated to reality which is to reflect the modeling of the 1965 and 1967 floods to be that of the 100-year and 50-year storms;

27. The USACE plan under utilizes the Ala Wai Golf Course's ability as a potential detention area to handle any size of storm to protect Waikiki from flooding. They basically using the existing topography of the golf course and building a berm around it. Some of the areas of very shallow and underutilized. What should be looked into is a large underground storage facility which can be designed below the water table or below the high tide mark of the Ala Wai Canal. It can be exclusively for detention flood storage or could have multipurpose uses like an underground parking garage. The idea is to place the golf course above the storage facility where no one can see it. Again, only if needed and only if needed to reduce the number of pumps needed to evacuate the water from the canal to a reasonable size;

28. The concept of flood gate and flood pumps can be further improved. The idea is that the flood gates can be closed before a storm tide surge and when the tide is the lowest to allow nature to drain the canal naturally as much as possible. Then the gates are closed and the pumping begins to lower the canal's elevation to create capacity;

29. If at any time the water level in the canal gets higher than the ocean level then the gates will be open to allow natural draining in addition to pumping the flows out to sea;

30. A cause for flooding from the Ala Wai Canal is from the high tides, tide surges which can have water entering the canal as storm water is trying to exit the canal. This causes the canal elevation to rise and possibly overtop, the bigger the surge or higher the tide or if the canal is not protected to sea level rise then the risk of overtopping from a smaller rated meteorological event type of storm becomes greater;

31. The other main problem with the Ala Wai Canal is that it is flat and with no slope you have no head (elevation force) pushing or pulling the water out to sea. With no slope you have no velocity so no matter how wide the Canal is or how deep the Canal is the flow is restricted to the self created slope of the Canal filling up higher than the ocean elevation;

32. The other issue is that the flood water once it hits the Ala Wai Canal has to travel a far flat distance before entering the ocean. The solution is to move the water more quickly from the Manoa Stream confluence straight to the ocean (the largest source) faster. This can be done by either intercepting it further upstream with head pressure and piping it to the ocean or intercepting it at or near the confluence and piping it straight to the ocean.

33. The pump stations can be smaller and located at the confluence of every major stream outlet or further upstream whatever is designed. For example, it seems as though Makiki has a build up near Kalakaua and King, a force main pumping station can be installed to pump the flood water under the existing concrete channel and under the Ala Wai Canal or any other route but to the ocean and bypass the Ala Wai Canal;

34. Further improvement can be done by intercepting flood waters laterally into a debris removal culvert near the Roosevelt HS field and using head pressure (gravity force main) or at the Mott-Smith/Lewalani Drive intersection under the roadway and piping it down Piikoi straight to the Ala Moana Park Lagoons thereby bypassing the Ala Wai Canal and protecting Makiki Stream from overtopping;

35. If needed to protect Manoa, underground detention storage can be designed for Manoa District Park that will actually level the park area and make it more usable. It can be a park enhancement and will leave the existing streams alone without having to block or cover it. It will not be an open pit with the dangers of overtopping have safety concerns with kids getting sucked up by the detention basins when filled and the same can be done for Kanewai Park only if determined to be absolutely needed;

36. Other options that can be considered for protecting Waikiki are designated spills ways. In other words creating lower elevation or underground culverts that will direct the water away or under Waikiki straight to the ocean either by gravity flow or pumping. Again, the ocean is ranges from ¼ to ½ mile away from the Ala Wai Canal. These emergency routes will only be utilized during big floods. Kapiolani Park spillway, a culvert under Kapahulu Blvd, a culvert under Kalanimoku/Saratoga, or a Fort Derussy spillway. Giant portable emergency pumps with hoses that would stretch from the Ala Wai Canal straight along the roadways to pump the canal waters to the ocean directly. Instead of hoses we can install underground pipes straight to the ocean.

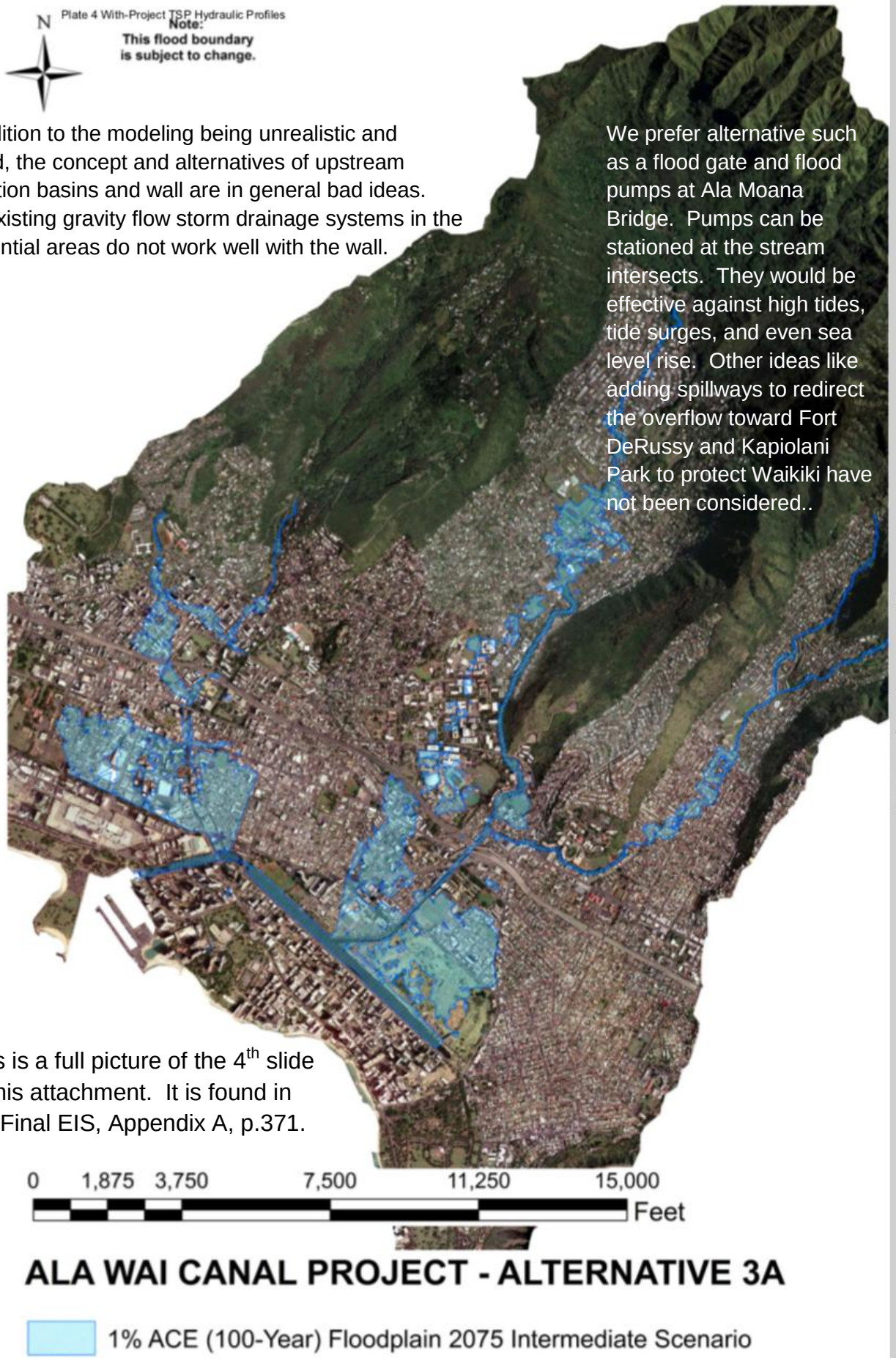
37. Pumping station at the Ala Wai Golf Course would be ideal because there is plenty of usable space in between the holes and there is space to even add silting basins before pumping, screening of trash and floating oils can be removed before pumping out to sea. The pumping can be done through conduits under the Ala Wai Canal at any depth. The outlet can be at the harbor mouth or even further out to sea. If environmentally acceptable the water can be reversed flowed during non emergency times and

These are just some of the points that I've quickly come up with that I think are the issues that will grab your attention. The Final EIS is thousands of pages long and the review and explanation would otherwise take several hours.

Should any of you wish to speak to me, I can easily be reached at (cel) 728-0759.

Mahalo,

Dave Watase



In addition to the modeling being unrealistic and flawed, the concept and alternatives of upstream detention basins and wall are in general bad ideas. Our existing gravity flow storm drainage systems in the residential areas do not work well with the wall.

We prefer alternative such as a flood gate and flood pumps at Ala Moana Bridge. Pumps can be stationed at the stream intersects. They would be effective against high tides, tide surges, and even sea level rise. Other ideas like adding spillways to redirect the overflow toward Fort DeRussy and Kapiolani Park to protect Waikiki have not been considered..

This is a full picture of the 4th slide of this attachment. It is found in the Final EIS, Appendix A, p.371.

flood events in the study area is not high. That is not, of course, to say that lives would not be endangered in the event of a major flood. About 21 percent of the residual flooding expected with the project in place would be residential. In addition, flooding can be flashy and come with little warning. However, these conditions exist primarily in the steeply sloped, less populated hillside communities with relatively narrow flood plains. In the lower flood plain, it is much flatter and floodwater would rise more slowly. The project will include a new, basin-wide flood warning system to ensure that periods of intense and long duration rainfalls are highly monitored and occupants are given as much warning as possible. People should generally have adequate warning and time to move to higher ground or upper floors and out of harm's way. But under without-project conditions, with no such warning system in place, there is always a risk of loss of life in large flood events, especially at night. Further, long-term development trends will lead to more population density in the flood plain as high-rise buildings replace older, lower profile ones.

7.6.3 Iolani School. One area of significance and concern that does not stand to benefit from the project, as it is currently formulated, is the Iolani School buildings and campus grounds. Iolani is a kindergarten through 12th grade private school located on the right bank of reach ALA2. 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 the 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 risk of flooding Iolani School could be further reduced by extending the Ala Wai floodwalls to protect the school, but it would induce higher water surface elevations on the Waikiki side of the Ala Wai, as well as limit the effectiveness of the Ala Wai Golf Course detention improvement. Both hydrologic/hydraulic and economic modeling confirm that this would be an unacceptable trade-off as the additional induced damages caused to Waikiki would greatly exceed any benefit Iolani School would receive.

Nonstructural solutions specifically for the Iolani School site also were evaluated as a means of providing additional protection in lieu of extending the Ala Wai floodwalls, but none were found to be economically feasible. A flood warning system, however, is included in the recommended plan for the benefit of all residual risk areas within the study area.

7.6.4. Ala Wai Golf Course. Similarly, initial evaluation of adding a nonstructural solution to the project to lower the risk of flooding at the Ala Wai Golf Course clubhouse indicates that flood proofing the structure would not be necessary. Its floor elevation appears to be above the with-project water surface elevations, and the impact of large flood events to the clubhouse and its contents should be relatively minor under both with and without-project conditions. Again, this will need to be confirmed during the PED phase with actual surveyed elevation data.

7.6.5. Resiliency and Superiority. Under the risk based concept, the system is expected to protect the project area up to the top of containment - in this case, the top of floodwall along the

At the Manoa-Palolo canal, water overtops the right bank and will inundate the area around the Iolani School. An economic analysis was performed to determine whether extending the floodwall upstream to the Date St. Bridge can be incrementally justified. This analysis showed the floodwall extension to be economically infeasible.

At several locations along the streams modeled, hydraulic jumps appear. These jumps occur at the upstream side of various bridges and culverts and are mainly a result of changes in topography and channel slope as the stream bed transitions from the steep uphill areas to the flatter valley areas.

In general, implementation of the recommended plan reduces peak flows entering the Ala Wai Canal system and the floodwalls protect the surrounding area from damage due to flooding. Plate 4 shows the water surface profiles of the modeled stream for the TSP.

8 INTERIOR DRAINAGE

Along both banks of the Ala Wai canal, there are numerous drainage outlets from the storm sewer system. These outlets will require the installation of flap-gates to prevent water from backing up and inundating areas beyond the floodwalls. During storm events, these flap-gates will close and prevent water from draining into the canal. This will cause residual flood inundation to the areas protected by the floodwalls. This residual flooding is not expected to be significant due to it being shallow sheetflow and not dep ponding.

To determine impacts of storm drain or storm sewer outfalls being shut during periods of high water surface elevation in the Ala Wai Canal with the project floodwalls, stormdrains greater than 18-inch diameter pipes along the Ala Wai Canal (21 out of 43 outfalls) were analyzed for backwater impacts. Only the larger stormdrain pipe or culvert sizes were chosen for this analysis since these stormdrains had drainage areas larger than 4 acres and pipe sizes greater than 18-inches. Many of the small outfalls only drain the Ala Wai Boulevard roadway, those of single 18-inch or less diameter pipes (22 out of 43 outfalls), have very minimal drainage areas, will only have minor impacts to Ala Wai Boulevard in case of backwater, and would have only minor residual damages if any.

To evaluate the interior flooding due to backwater in gravity storm drains, the coincident frequency assumption is that the interior flooding input for these gravity outlets to the canal would use the 10% 1-hour rainfall intensity volumes and given the flashy nature of runoff in the watershed, the gates could be closed for up to 6 hours depending on the riverine flood event. Next the pipe and channel storage; i.e. volume capacity; for those stormdrain outfalls were determined based on the pipe or culvert sizes and lengths. Then using existing topographic data to determine the street elevation of stormwater inflow grates and overbank conditions, excess volumes which exceeded the storm drain capacities were mapped assuming that the shallow flooding, up to 1 foot depth, would spread following the local topology with roads serving as the primary channels of this

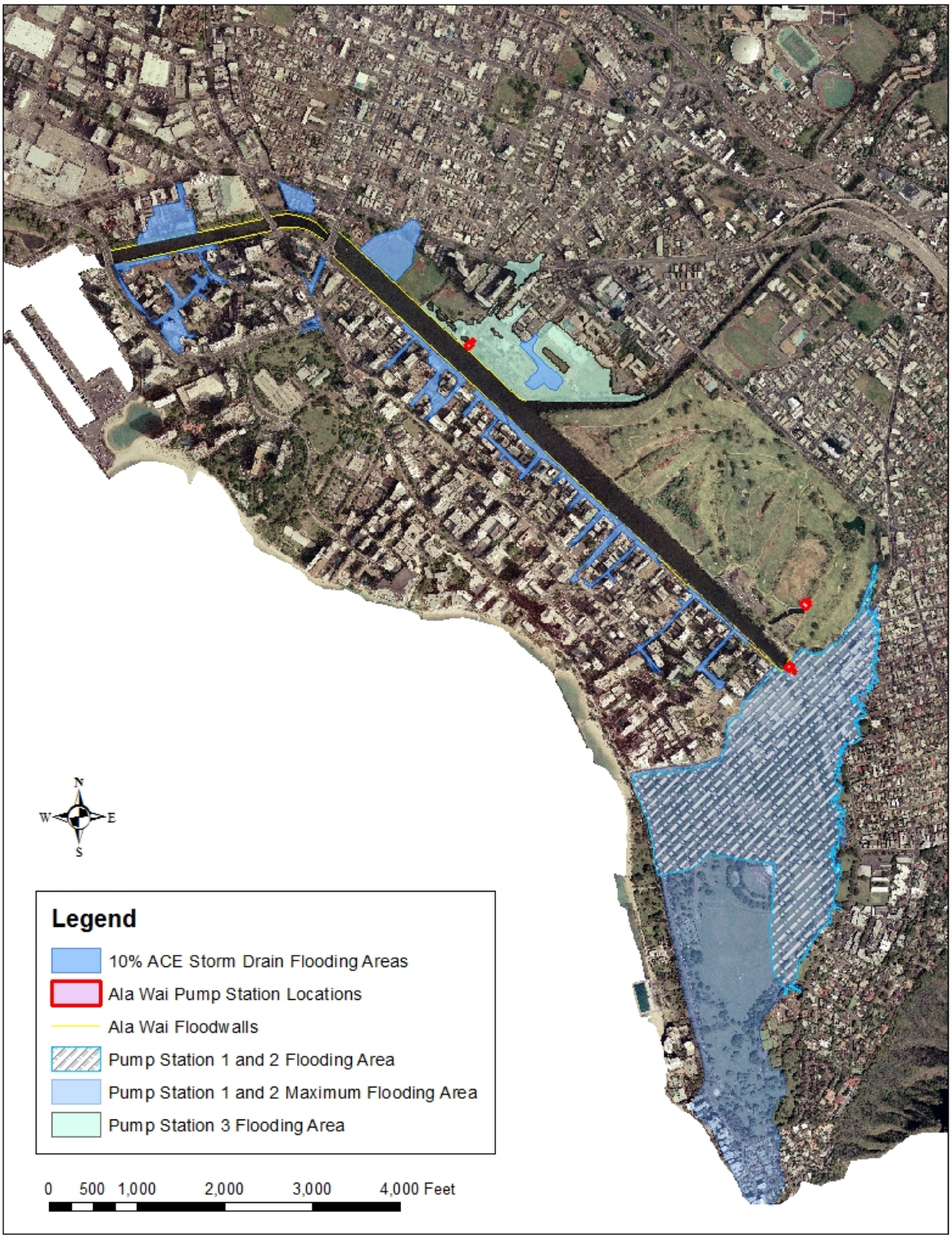
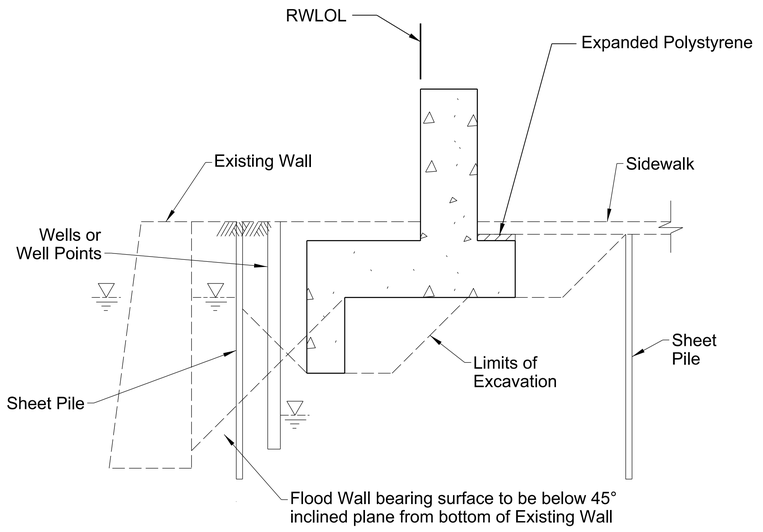
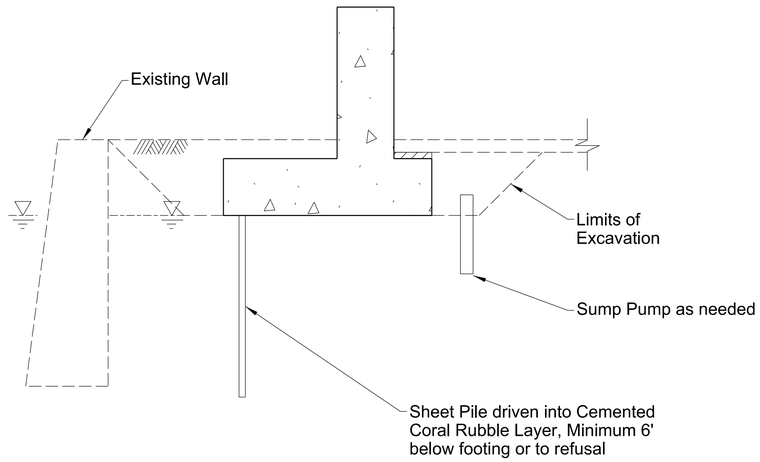


Figure 15. Residual Flood Inundation



OPTION 1



OPTION 2

CONCEPTUAL DEWATERING REQUIREMENTS FOR LEFT BANK FLOOD WALL

SCALE: 1/2"=1'

NOTES:

1. Native soil is subject to caving, and groundwater table must be lowered below the excavation to allow dry construction.
2. Dewatering to construct a concrete key will likely require a positive groundwater cutoff system in addition to pumping from wells or well-points installed inside the positive groundwater cutoff limits.
3. At culvert penetrations, dewatering with more closely spaced deep well systems will be required, because sheet piles cannot be used.

US Army Corps of Engineers®
Honolulu District

35% DESIGN

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: J ELWOOD
DRAWN BY: P WALKER
CHECKED BY:
SUBMITTED BY:
DATE:
REVISION:
SOLICIT. / CONTRACT NO.:
LOCATION CODE
DRAWING NUMBER:
PLOT SCALE: As shown
PLOT DATE: 8/30/2016
SIZE: ANSI D
FILE NAME: Flood Wall Details

ALA WAI CANAL PROJECT

FLOOD WALL DETAILS

SHEET IDENTIFICATION
C-503
SHEET 26 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 Water Shed\Ala Wai Canal Project\01-Drawings\Civil\Final\CH2MHILL\Flood Wall Details
MODEL NAME: C-503
DATE & TIME: 8/30/2016 9:42:33 AM
LAST SAVED BY:
PLOTDRIVER: c:\pw-work\poh-1\j3ecdcp9.d01151194\PDF-AECv3.pltcfg
PEN TABLE: BW_and_Grayscale_Pen
PRINTED BY: j3ecdcp9

WAIKIKI BUFFER ZONE

Note: Construction activity may cause damage to the Beachwalk WWPS force mains from ground vibrations or soil liquefaction. Prevention, mitigation, and/or monitoring measures may need to be taken. It is the responsibility of the owner/contractor to prevent any impacts or potential damage to the force main.

DASHED – FORCE MAINS

SOLID – GRAVITY

N

0 230 460 690 920

Feet

Prepared by: Dept. of Design & Construction
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Final Panel Comment 4

Site conditions for the Ala Wai Canal left bank floodwall may not have sufficient space to design an adequate factor of safety against sliding and overturning.

Basis for Comment

Ala Wai Canal FS/EIS Draft Report Appendix A2, Plate 11, TSP 35% Design sheets C-103, C-309 and C-316 indicate construction of “inverted T” shaped floodwalls for Hausten Ditch Detention Basin and the right bank (mountain side) Ala Wai Canal with foundations 3 feet below grade and 9.5 feet wide, with a key to resist sliding an additional 3 feet deep. Report Appendix A2, Plate 11, TSP 35% Design sheets C-310 and C-311 indicate construction of “L” shaped floodwalls for the left bank (ocean side) of the Ala Wai Canal with no foundation heel, no key, and the toe foundation 1 foot below grade.

The report does not include specific geotechnical data or floodwall design calculations. The Panel expects that geotechnical data and design loading for floodwalls on both sides of the canal would be similar; thus, the floodwall foundations would also be similar. However, as indicated above, the foundations are very dissimilar.

USACE Engineer Manual (EM) 110-2-2502 Retaining and Flood Walls does not provide guidance for the use of “L” shaped floodwalls, though the same general design process for “inverted T” shaped walls can be applied to “L” shaped walls. While EM 110-2-2502 addresses only specific design methodologies, conservative rule-of-thumb professional judgment would begin with a floodwall foundation width equal to wall height, with the foundation heel equal to approximately 2/3 the foundation width and the foundation toe equal to approximately 1/3 the foundation width (Federal Emergency Management Agency [FEMA] Engineering Principles and Practice Chapter 5F). The “L” shaped left bank floodwall includes a foundation equal to only 2/3 the wall height, with all foundation in the toe and no foundation heel. Therefore, the Panel is concerned that the “L” shaped left bank floodwall foundations may not have sufficient factor of safety to resist sliding and overturning.

Ordinarily, this matter would be corrected during the Preconstruction Engineering & Design (PED) phase and increased incremental cost would be covered by the project contingency. However, the left bank site conditions may not provide adequate available space for construction of either the floodwall design indicated in Detail C of Sheet C-311 or any other cantilever design resulting from a re-evaluation of foundation conditions. The already narrow available left bank work area is complicated by existing, possibly historic, canal wall stone work, existing utilities (street lighting and hydrants observed on Google Earth) and trees (indicated on plan drawings and artist renderings), and proximity of heavy vehicular and pedestrian traffic. If a left bank flood wall foundation designed with an adequate factor of safety against sliding and overturning cannot be constructed within the available site without impacts to site constraints, then a significant change in the TSP 35% design may be required. This change may be so major as to change the design concept and cause more environmental impacts to existing canal stone walls, utilities and trees, and traffic. Furthermore, the design is not aligned with the currently assessed level of risk assigned at this stage in the SMART Planning process.

Significance – Medium

The Ala Wai Canal Project is the worse example of Government, the USACE's Public Involvement Plan v.04 dated June 2013 was not followed and elements including upstream detention basins and the 4' concrete wall around the Ala Wai Canal are truly unnecessary. The flood modeling was admitted to be flawed and unrealistic by the United States Army Corp of Engineers (USACE) but continued to be used as a basis to justify the need and funding for this Project.

There are many issues with this Project and it requires many substantial changes. This Project was hastily put together without engaging the affected communities, schools, stakeholders and Neighborhood Boards.

The National Environmental Policy Act (NEPA) and the Hawaii National Environmental Policy Act (HEPA) has protocol that requires community and public input during the Draft EIS stage. This was clearly not done during the time period from October 2012 to November 2015.

The USACE claims to have gone above and beyond in the requirements of engagement and have stated 44 engagement meetings and 160+ notices sent out for review of the Draft EIS prior to the end of public comment period.

Our Legislature and Congressional Representatives should do their due diligence and find out if these claims include all the stakeholders and communities that are most affected by the Project. If those who were invited and participated where examples of self-serving recitation of the benefits and rationalization of the proposed Project and done without the conscientious application of the proper protocols making the EIS meaningless.

The Public Involvement Plan describes the engagement and discussions to be on a level of deal-breakers for each measure. Again, none of this was ever performed with those most affected by this Project.

The Project was re-scoped in October of 2012 and USACE had a 3-year time constraint to complete the Draft EIS. Iolani's letter dated November 9, 2015 concludes 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.

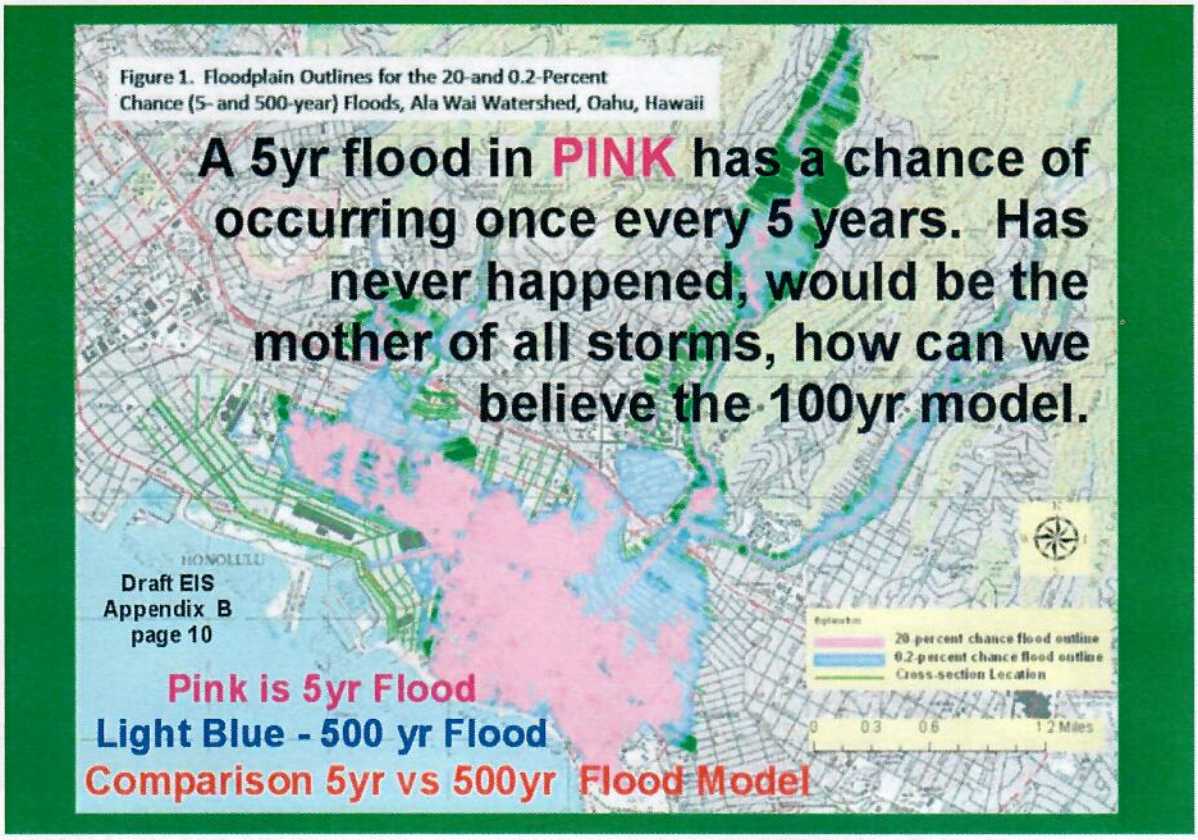
Significant changes were made from the Draft EIS to the Final EIS without public oversight. The total project cost increasing almost 200% from around $185 million to around $345 million and the property damage figure increasing almost 400% from $317 million to $1.14 billion are major changes and should draw a big red flag.

Within the last few months 6 Neighborhood Boards have passed resolutions calling for the USACE to put a hold on further advancing the Project and have asked the State Legislature not to fund the State's portion of the Project.

We believe this Project violates the people of Hawaii's rights to due process, ignores the importance of engaging the community and believe there are many better alternatives with far less impact such as incorporating a flood gate and flood pump and other eco-friendly measure and alternatives.

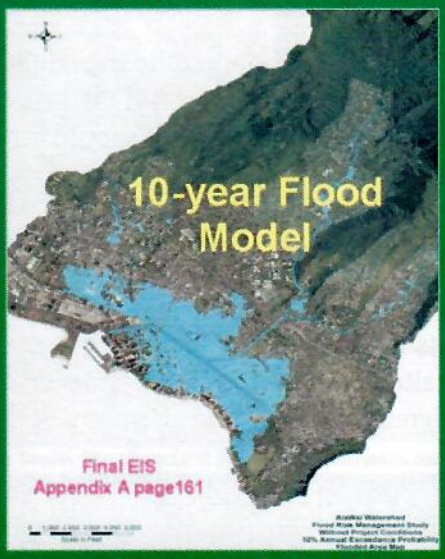
Mahalo,

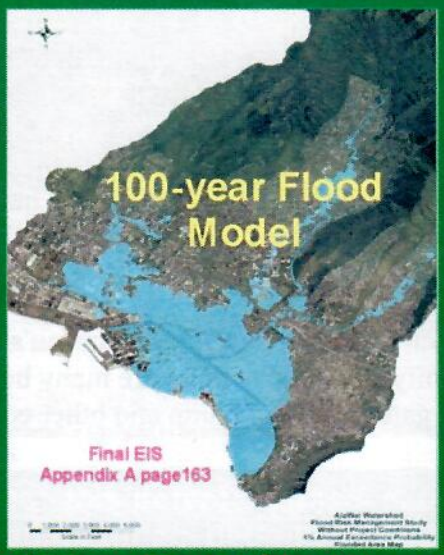
Dave Watase



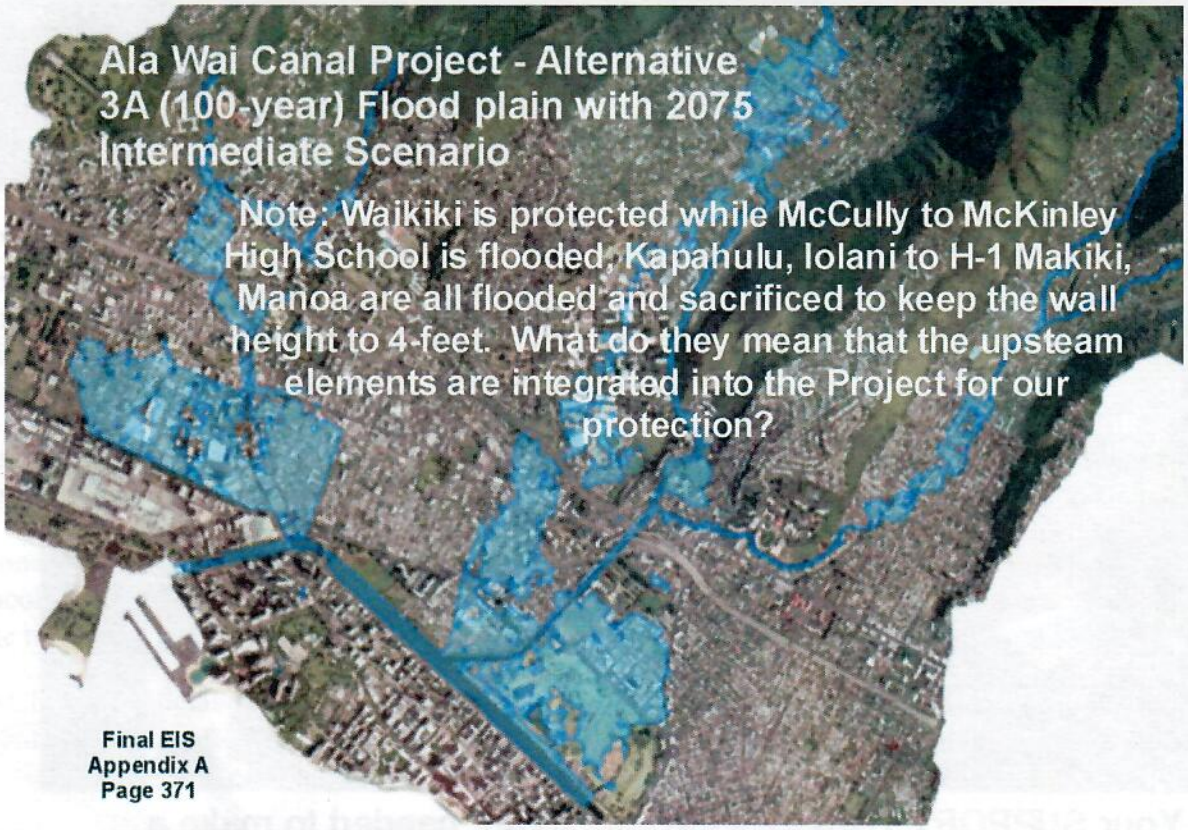
We encourage you to learn more about the Ala Wai Canal Project by reading through the Final EIS and Draft EIS to generate your own independent opinion. They can be found on our website www.stopalawaiproject.com under Resources. Thank you

These models are generated from historic data and should be severely questioned for accuracy because common sense tells us that these models have no correlation to reality and historic events





Comparison 10yr vs 100yr Flood Model



Your SUPPORT THROUGH ACTIONS are needed to make a difference. Please go to our website www.stopalawaiproject.com and sign our petition and it is very important to VOICE YOUR CONCERNS through testimony and emails to our elected officials.

Woodlawn Detention Basin - Manoa

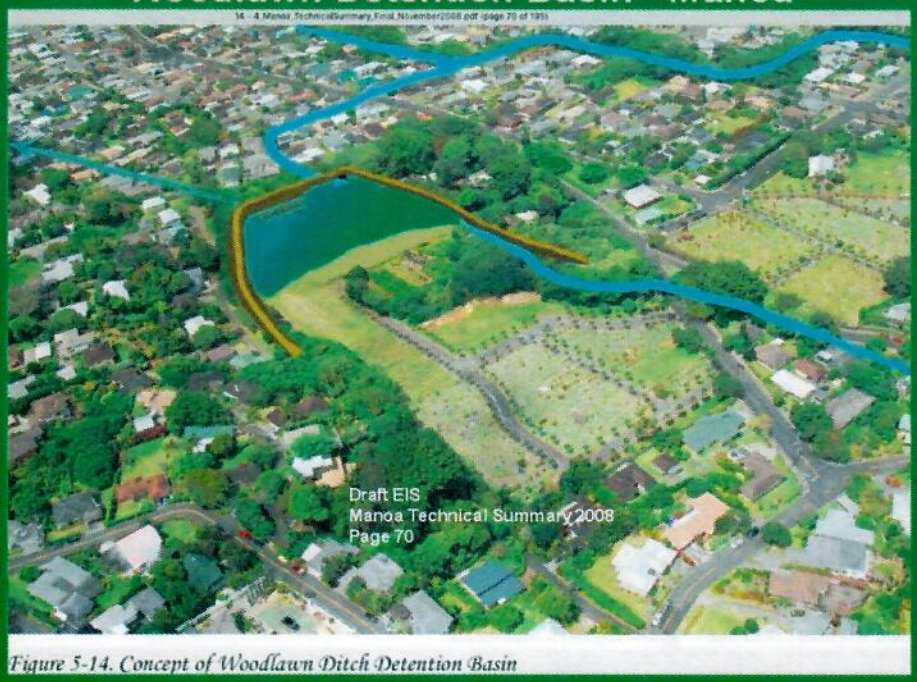


Figure 5-14. Concept of Woodlawn Ditch Detention Basin

Resident living around the detention basin were not notified

Kanewai Park Detention Basin

Your SUPPORT THROUGH ACTIONS are needed to make a difference. Please go to our website www.stopalawaiproject.com and sign our petition and it is very important to VOICE YOUR CONCERNS through testimony and emails to our elected officials.

Environmental Warning - Final EIS Before and After

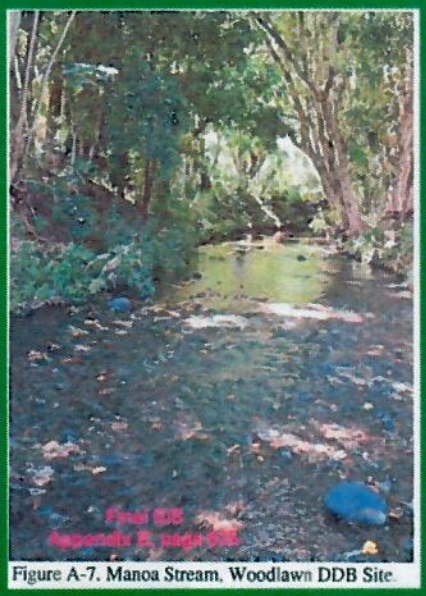


Figure A-7. Manoa Stream, Woodlawn DDB Site.

Manoa Stream

Figure B-4. Examples of Maintenance Dredging in Detention Basin Pool Area – Backhoe removing debris from stream.

Only examples - this detention basin is only a few feet high upstream detention basins are substantially larger