Ala Wai Watershed Project

Quarterly Stakeholder Meeting

DATE: March 19, 2010

ATTENDEES: See attached table

1. Introduction

Lisa Kettley started the meeting with a description of the meeting purpose, which was (1) to provide an update to the stakeholders on the status of the project and associated activities, and (2) to discuss the future without-project conditions for the Ala Wai watershed. Each of the meeting participants then introduced themselves.

2. Project Update

Lisa reminded the group that the project goal is to improve the overall quality of the Ala Wai watershed, from the crest of the Ko`olau Mountains to the nearshore waters, while minimizing the risk of flood damages to the public. The primary planning objectives are flood risk management and ecosystem restoration; the secondary objectives are water quality, water supply, infrastructure maintenance, recreation and stakeholder involvement. She reminded the group that the primary objectives are those that are within the USACE's authority and will be comprehensively addressed by the project, noting that Cindy Barger would be further discussing the definition of the project (as opposed to a broader watershed plan). Lisa also reminded the group that the upcoming deliverable that is currently being prepared is a Feasibility Scoping Meeting (FSM) Report, which will include a description of the planning objectives, baseline and future without-project conditions, conceptual measures, and methodology for the alternatives formulation and screening process. Alternatives formulation will be conducted in the next project phase.

Cindy then reminded the group of the ongoing discussion of the "project" and "plan", emphasizing the need to make sure that these concepts are clearly defined and understood by the project stakeholders. She explained that the "project" will consist of the alternatives that will be presented in the Feasibility Report and associated EIS. It will be comprised of jointly funded actions by the project sponsors [U.S. Army Corps of Engineers (USACE), State of Hawaii Department of Land and Natural Resources (DLNR) and City & County of Honolulu Environmental Services (ENV)], as well as actions by other entities (where there is a commitment to implement and the entities provide the documentation for the report). She emphasized that the USACE wants to make sure to not overstep any boundaries in terms of committing other entities to implementation. She then explained that there is generally recognition of the need for a "plan", which in addition to the project includes the broader related actions that comprise a holistic watershed management approach. She explained that development of this plan is not within the budget or schedule for the project. She stressed that this type of "plan" requires long-term ownership, and reminded the group that the USACE is only authorized for involvement through the construction phase of a project. She stated that the concept for the "plan" would be presented in the FSM Report and will include some of the potential actions that have been identified to date (e.g., LID, education and outreach, etc.), but a comprehensive list

will not be presented. She noted that the discussion in the FSM Report will identify the need for long-term ownership of the "plan".

Tom Heinrich informed the group that the City Council recently approved the Use Permit for the University of Hawaii's Master Plan, but noted that it requires an update to the campus Drainage Plan. He noted that this is an action by another entity that should be considered as part of the project. Eric Crispin later explained that the Drainage Plan needs to be completed within 3 years.

Lisa then provided the group with an update on recent and ongoing project activities. She explained that the project team has finished documenting the problems and opportunities, and has identified the sub-objectives and metrics. She reminded the group that the sub-objectives are more detailed statements nested within each objective to help focus project development, and metrics are standards against which the alternatives will be evaluated to determine the extent to which they achieve those sub-objectives. She explained that the inventory of watershed conditions addresses both the existing conditions and future without-project conditions. She provided the group with a list of the resource assessments that have been completed as part of the documentation of existing conditions, and noted that the meeting discussion would be used to help define the future without-project condition. Finally, she explained that the two ongoing efforts are completion of the modeling and economic analyses. Sharon asked if the resource assessments are available on the website. Cindy responded that they are being treated as interim documents, but will be included in the FSM Report, which will be made available for review. Tom noted that emails to the stakeholders should indicate that only final documents are posted to the website, and that interim information will be presented in the upcoming FSM Report.

Lisa then completed the summary of the project status by providing an overview of the path forward. She explained that for the FSM Report, the modeling of future without-project conditions and economic analyses will be completed, and conceptual measures will be identified. She explained the next phase will include detailed alternatives formulation, with the draft/final Feasibility Report and EIS expected in 2011/2012, respectively.

Chris Ball provided a brief update on the Ala Wai golf course study being conducted by Mitsunaga and Associates. He explained that the hydraulic model was just provided by USACE, and is currently being integrated into the design for detention basins on the golf course. He expected that the draft will be completed sometime this quarter. Dennis Imada provided a brief update on the Woodlawn Bridge chute structure, explaining that 65% design plans have been completed, and will be sent out for review.

Tom asked if the Ala Wai project will be considering the deterioration of the Ala Wai Canal walls, noting that the condition of the walls between Hausten Ditch and McCully Bridge is rapidly worsening. Lisa stated that the integrity of the Canal walls was evaluated as part of the dredging project. Cindy stated that this issue should be considered as part of the conceptual measures in the FSM Report, especially if it is an effort that requires near-term implementation.

Tom also noted that the City & County Department of Facilities Maintenance (DFM) recently completed cleaning the section of Manoa Stream between the District Park and the Woodlawn Bridge, noting the large amount of sediment that had accumulated in the stream.

3. Future Without-Project

Lisa explained to the group that the future without-project condition is the most likely condition expected to exist in the future in the absence of a proposed project (i.e. the no action alternative). She explained that this condition serves as the benchmark against which alternative plans will be evaluated. She explained that for the purposes of this project, the timeframe for defining the future

without-project condition is through the year 2070, as this is 50 years from the expected date for completion of construction (which is when benefits are assumed to start accruing). She stressed that the definition of the future without-project condition should consider present day actions, laws and policies (e.g., regular maintenance of existing structures), as well as reasonably foreseeable actions (e.g., CIP budgeted items). She explained that the future without-project condition cannot be based on conjecture (e.g., assumption of future actions based on anticipated impacts or current trends), and that all assumptions should be based on existing literature or best professional judgment from subject matter experts.

She then explained that the USACE recently issued guidance requiring that all projects that could be affected by sea-level rise consider three scenarios (low, intermediate and high). Starting in 2010, the Honolulu District will be engaging with the various groups working to define climate change scenarios for the State (e.g., ORMP, ICAP, PICCC), and will be using the information generated by these groups to formally adopt scenarios that will be used for all Honolulu District projects. Because this information is not available yet, the scenarios will be defined for the Ala Wai project on a more informal basis, and will be updated as needed, based on the formal coordination process. The informal process for the Ala Wai project involves defining the three scenarios for the physical conditions, with review and input from the technical advisory team (TAT) and subject matter experts. Once consensus is reached on the scenarios, then the social, economic and environmental conditions will be defined (again, with TAT and subject matter expert input). Additional review and input will be obtained through the FSM and peer review process.

Michael Wong then provided the group with an overview of the assumptions and resulting scenarios for the future without-project condition associated with sea-level rise, rainfall intensity, debris generation and impervious surfaces. He explained that for the purposes of the hydrologic and hydraulic modeling, three sets of scenarios will be modeled: the set of low scenarios for each condition, the set of high scenarios for each condition, and a composite set of scenarios considered to be the most probable for each condition. Paula Levin asked how the most probable scenario will be selected. Michael Wong explained that it is currently based on his recommendation, and it will be refined based on input from the stakeholders, TATs and subject matter experts. Cindy also reminded the group that the results of the modeling will be presented with an appropriate risk analysis discussion describing the uncertainty around the assumptions.

The group then discussed the assumptions and resulting scenarios for each condition. With respect to sea-level rise, Tom noted that Chip Fletcher's recent presentation to AWWA indicated that there would be approximately one meter of rise by the year 2100, noting that the intermediate scenario may be adequate to capture this prediction. Gene Dashiell asked if this prediction accounted for accelerated glacial melting. Tom explained that it did, and Cindy noted that it is expected that the effects of accelerate glacial melting in Hawaii may not significantly increase until the end of the century. Sharon Sawdey asked how the sea-level rise will be accounted for in the model; Michael responded that the sea-level rise will be added to the value for the backwater condition, noting that the effects will generally be limited to the downstream areas. Gene emphasized that sea-level rise will affect the benefits analysis, especially for the latter portions of the analysis. Sharon noted that she thinks it is important to use a conservative scenario (e.g., high) to be more consistent with the predictions of the local experts. Mike Smith asked if the scenarios account for other assumptions, such as the shifting of the earth's axis and associated changes in tidal patterns as a result of the recent earthquake. Michael stated that this issue is not considered in the scenarios.

With respect to rainfall intensity, Paula asked if the scenarios were weighted to account for frequency of El Nino events. Michael responded that the model only considers rainfall levels per event, not the frequency of those events. Cindy emphasized that the scenarios utilize historical data, which takes the

frequency of El Nino events into consideration. Tom suggested that the high scenarios may be appropriate, given the types of storm conditions that have been experienced in Manoa (e.g., microburst events, such as what occurred in 2004). Sharon noted the increased values associated with each scenario, noting that the low or intermediate scenarios still represent significantly increased rainfall intensity. Michael explained that the value increases are based on the anticipated impacts presented for the US, but stated that adjustments could be made for localized conditions. Cindy stated that if the stakeholders recommend additional input, then subject matter experts should be consulted. Eric stated that the issue appears to warrant additional review. Cindy stated that the project team would follow up with experts from USGS, NOAA and UH.

The group then discussed the assumptions associated with debris inputs. Eric noted that channel maintenance significantly affects the amount of debris present. He suggested that an assumption about future maintenance be included as part of the scenarios. Tom noted that there are varying conditions between Makiki, Manoa and Palolo; he stated that in Manoa, the presence of vegetative debris is significantly lower below the Woodlawn Bridge. He suggested that the amount of vegetative debris will not significantly increase in the future. Gene asked if there is likely to be more debris contributions from the upper watershed, as the vegetation ages. Cindy noted that the approach to increasing the bulking factor was intended to help address this issue. Paula stated that there is a significant amount of human-generated debris (e.g., trash) in the watershed, and stressed that this should be accounted for. Cindy suggested that it might help to talk with DFM to get a better understanding of any changes in the type and quantity of debris removed from the streams over time. Karen noted that there have been significant changes in the vegetation in the upper watershed, especially with expansion of albizia. Ron Rickman explained that based on his experience in Waiahole Valley, albizia grows rapidly, causing the understory vegetation to die, then the albizia dies and exposes large areas of bare soil. Mike Kido noted that the local expert on albizia is Bill Cowhern (Kauai Mahogany). Tom noted a study by Lyon Arboretum (approximately 20 years old) that discusses the rapid growth and brittle characteristics of albizia. Karen reminded the group of the presence of hau stands along the streams, noting the potential effects on slowing water and trapping debris. Cindy suggested that the team could try to identify any experts/literature related to trends of hau encroachment; if this can't be quantified, it can at least be anecdotally described. Sharon noted that the modeling will also account for blockage at specific bridges.

The group then discussed the scenarios associated with impervious areas. Bob Kinzie asked if the Department of Transportation (HDOT) was considering using pervious pavement in target locations. Michael stated that he wasn't aware of any specific projects. Bob Kinzie also asked about the status of State proposed riparian BMPs. The group wasn't aware of any State proposed riparian BMPs.

Michael then provided the group with an overview of the assumptions related to water quality. He explained that many of the same assumptions will be used, including those related to no changes in land use district boundaries. He noted that the biggest issue that needs to be addressed is the future regulatory requirements (e.g., changes in the Water Quality Standards, TMDLs, etc.). Cindy explained that the project team will be meeting with the relevant agencies, such as EPA, DOH, and ENV, to discuss this issue. Cindy also noted that the assumptions will account for trends such as the nationwide efforts to reduce heavy metals associated with vehicle use. Tom noted that on March 6, a cleanup was conducted along Isenberg St., resulting in the removal of 2.5 tons of urban sediments; he stated that an additional cleanup effort will be held on April 3rd at 8am. The group discussed the fact that much of these materials originate from the urban environment, and street sweeping can be an effective way to reduce the input to the streams. Eric urged the project team to consider the natural progression of the islands relative to erosion. Michael emphasized that the future without-project condition should capture changes in the current rate of erosion (not necessarily the total quantity).

Lisa then discussed the future without-project conditions relative to habitat quality. She explained that, in general, the range of impacts associated with environmental conditions has not been quantified for Hawaii, but more information is expected to be made available through upcoming efforts by ICAP and IPCCC. She explained that, in general, future changes in environmental conditions are expected to include habitat loss and degradation, decreased biodiversity (including extinction of endangered species, and migration and loss of native species), spread of invasive species, and impacts to coral reef habitat (including bleaching and ocean acidification). For the purposes of this project, future changes in habitat quality will be quantified using an ecosystem model; the Hawaii Stream Bioassessment Protocol (HSBP) has been recommended for use. The modeling will not be conducted until the next phase, so for the purposes of the upcoming FSM Report, the assumptions that will be reflected in the model will be generally described. These assumptions will be updated as needed, based on information generated by ICAP and IPCCC. She explained that the assumptions about future changes in habitat quality have been group into four categories, according to the model metrics (instream habitat, floodplain function, riparian habitat, and sediment/debris input).

Sharon asked if there is specific data available for trends in water temperature, noting that low flows are already quite minimal and readily exposed to high temperatures. Bob Kinzie stated that he is not aware of any long-term data. Cindy suggested that changes in the low flow conditions, as indicated in the hydraulic modeling results, can be considered when addressing water temperatures. Tom noted that many homeowners are removing trees along the stream (especially mauka of Dole Street), as well as trying to extend flood walls on private property. Lisa explained that the project team is planning to meet with the relevant agencies (e.g. CWRM, USACE regulatory) to discuss trends relative to installation of in-stream structures, such as flood walls. Tom and Karen noted specific locations in Manoa where bank erosion is a significant concern, including the area behind McDonalds (between East Manoa Road and Woodlawn Bridge) and near the First Hawaiian Bank building. Lisa then provided the group with an overview of the assumptions for the future without-project condition relative to water supply. Bob Kinzie questioned why water demand is increasing at a higher rate than population size. Sherri noted that it may be due to increases associated with agricultural demand. Bob Finch stated that the number of housing units is also expected to increase at a faster rate than the population size. Cindy noted that the national trends point to bigger houses and fewer people per house. Paula emphasized that channel hardening reduces groundwater recharge, and this should be noted to allow for comparison to future with-project conditions (assuming the project includes measures to reduce channel hardening).

Bob Finch then described the economic assumptions associated with the future without-project condition. He explained that the general scope of the economic analysis is to define the flood damages associated with the existing and future without-project conditions. He explained that the work will be based on the hydrology and hydraulic modeling, structural data obtained from various sources (e.g., NRCS Manoa Study, UH data, City & County tax office records and windshield surveys), and nationally accepted damage curves. He stressed that the analyses will primarily focus on national economic development, with some detail on regional economic development (e.g., number of businesses affected, job gain/loss). Sharon asked if impacts to the economics of Waikiki are considered a regional issue; Bob Finch confirmed that these impacts to Waikiki would be captured as part of regional economic development. He explained that this would not be his primary focus, but that he can include regional data and modeling that others provide. Cindy noted that the USACE requires regional economic development to be considered, and any significant differences would be addressed. Cindy explained that the assumptions relative to social conditions (e.g., population and housing density trends) will be primarily based on DPP projections. With respect to recreation, Bob Finch explained that there is very little information available for existing recreational use values, and the project team will need help to estimate these values. He stated that the future without-project will

only assume future projects if they are already a CIP budgeted item. Mike Smith confirmed that the focus is to maintain existing facilities (as opposed to adding new facilities). Sharon asked if the calculation of flood damages accounts for flood insurance policies. Bob Finch replied that the damage calculations consider a reduced number of insurance policies associated with a smaller floodplain area.

Lisa explained that the next steps will be to complete the modeling and economic analysis, then to identify conceptual measures. Cindy stated that she expects the conceptual measures will be discussed at the next stakeholder meeting. She also explained that the project team is working to identify the dates for the next few upcoming meetings, and she will provide those to the group once they are available. Finally, she noted that there is a change in the peer review policy, and members of the public and professional societies will no longer be able to nominate individuals for the review process (due to potential conflicts of interest).

4. Action Items

1. Incorporate uncertainty discussion with all assumptions in final scenarios (USACE & CH2M Hill).
2. Confirm the sea level rise and use of the "high" condition as part of the most probable scenario with UH experts (Chip Fletcher, Mark Merrifield) (USACE)
3. Discuss rainfall scenarios with experts from USGS, NOAA and UH (USACE, CH2M HILL).
4. Include assumption about future maintenance as part of debris input scenarios (USACE)
5. Discuss changes in the type and quantity of debris removed from the streams over time with DFM (USACE, CH2M HILL)
6. Contact experts to discuss albizia trends and potential hau trends – Bill Cowhern, Lyons Aboreum, KWMP, UH (USACE, CH2M HILL)
7. Discuss potential use of permeable pavement with HDOT (USACE)

Ala Wai Watershed Project

Stakeholder Meeting Attendance List

March 19, 2010

Last Name	First Name	Organization	Email Address	Phone Number
Abe	Jordan	City & County of Honolulu, Ala Wai Golf Course Superintendent	jabe@honolulu.gov	733-7384
Ah Mai	Karen	Legislative Aide for Rep. Say	ahmai@hawaii.rr.com	955-7882
Ball	Chris	Mitsunaga and Associates	chrisb@mitsdesign.com	945-7882 x156
Barger	Cindy	U.S. Army Corps of Engineers	Cindy.S.Barger@usace.army.mil	438-6940
Couch	Christina	Mitsunaga and Associates	ChristinaC@mitsdesign.com	945-7882
Crispin	Eric	UH, Assistant Vice Chancellor for Financial & Physical Management	ecrispin@hawaii.edu	
Dashiell	Gene	Environmental Planning Services	dashiell.e@hawaiiantel.net	593-8330
Falzarano	Sarah	U.S. Army Corps of Engineers	Sarah.R.Falzarano@usace.army.mil	438-2036
Finch	Bob	U.S. Army Corps of Engineers	Robert.A.Finch@usace.army.mil	438-1664
Heinrich	Tom	Legislative Aide for Sen. Brian Taniguchi	jtomheinrich@hotmail.com	551-4098
Hiraoka	Sherri	Townscape	sherrihiraoka@townscapeinc.com	536-6999
Hunter	Brian	DOH, Clean Water Branch	brian.hunter@doh.hawaii.gov	586-7525
Imada	Dennis	DLNR Engineering	Dennis.T.Imada@hawaii.gov	587-0257
Kettley	Lisa	CH2M HILL	lisa.kettley@ch2m.com	943-1133
Kido	Mike	UH, Center for Conservation Research and Training	mkido@hawaii.edu	956-4907
Kinzie	Bob	UH	kinzie@hawaii.edu	
Luersen	Paul	CH2M HILL	paul.luersen@ch2m.com	943-1133
Pummell	Justin	U.S. Army Corps of Engineers	Justin.D.Pummell@usace.army.mil	438-7038
Rickman	Ron	USGS	rrickman@usgs.gov	587-2407
Sakai	Marshall	DLNR Engineering	Marshall.I.Sakai@hawaii.gov	587-0248
Sawdey	Sharon	NRCS	sharon.sawdey@hi.usda.gov	541-2600 x125
Smith	Mike	City & County DPR	msmith@honolulu.gov	973-7250
Stercho	Richard	State Civil Defense	rstercho@scd.hawaii.gov	733-4301 x583
Tam	Ryan	City & County, Department of Transportation Services, Rapid Transit	rtam1@honolulu.gov	768-6189
Topp	Agnes	Townscape	agnes@townscapeinc.com	536-6999
Wong	Michael	U.S. Army Corps of Engineers	Michael.F.Wong@usace.army.mil	438-8866